EXAMINING MIDDLE SCHOOL CURRICULA REGARDING OECD E2030'S COMPOUND COMPETENCIES: A MIXED METHOD STUDY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

BEGÜM ERİKÇİ

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
THE DEPARTMENT OF EDUCATIONAL SCIENCES, CURRICULUM AND INSTRUCTION

MAY 2025

Approval of the thesis:

**EXAMINING MIDDLE SCHOOL CURRICULA REGARDING OECD E2030'S COMPOUND COMPETENCIES: A MIXED METHOD STUDY**

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**ABSTRACT**

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May 2025, 333 pages



This study examines the degree of alignment and challenges between the intended and implemented subject-specific curricula regarding the development of compound competencies defined by the OECD Education 2030 initiative (global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking skills, and entrepreneurship). An explanatory sequential mixed-methods design with purposeful sampling was applied. In the quantitative phase, a content analysis was conducted to examine the integration of compound competencies within the 5th–8th Grade Mathematics Curriculum (2018), the 5th–8th Grade Turkish Curriculum (2019), the 5th–8th Grade Science Curriculum (2018), and the 5th–7th

to 450 teachers from a private school network to investigate the extent to which compound competencies are implemented in classroom practices. In the qualitative phase, criterion sampling was used to select 12 teachers from four subject areas for semi-structured interviews to explore the factors that influence the development of these competencies. Integrated findings revealed discrepancies between the intended and implemented curricula and showed that the integration of compound competencies varies from no to strong emphasis across subject areas. Implementation is challenged by factors such as lack of clear targeting of competency development, national education policies, teachers' workload, exam-oriented practices, and curriculum overload. In contrast, supportive school environments, teachers' capacity, and interdisciplinary approaches were identified as promoting factors. The study suggests competency-based curriculum reform requires a clearer framework in curriculum design, enhanced teacher support, and systemic alignment across school-level practices and national education strategies.

**Keywords:** OECD Education 2030, Compound Competencies, Competency-Based Education, Intended Curriculum, Implemented Curriculum

# ÖZ

OECD E2030 BİLEŞİK YETKİNLİKLERİ BAĞLAMINDA ORTAOKUL ÖĞRETİM PROGRAMLARININ İNCELENMESİ: KARMA YÖNTEM ARAŞTIRMASI

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Bu çalışma, OECD 2030 Eğitim Vizyonu çerçevesinde tanımlanan bileşik yetkinliklerin (küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma okuryazarlığı, finansal okuryazarlık, bilgi-işlemsel düşünme ve girişimcilik) ortaokul kademesinde geliştirilme düzeyini incelemektedir. Bu kapsamda amaçlanan ve uygulanan öğretim programları arasındaki uyum düzeyini belirleyerek bileşik yetkinliklerin gelişimini sınırlayan ve destekleyen etkenleri çok boyutlu bir biçimde ortaya koymayı amaçlamaktadır. Araştırma sıralı açıklayıcı karma yöntem deseniyle tasarlanmıştır. Katılımcılar amaçlı örnekleme yöntemiyle belirlenmiştir. Araştırmanın nicel aşamasında; MEB 2018 5–8. sınıf Matematik, 2019 5–8. Sınıf Türkçe, 2018 5-8. Sınıf Fen Bilimleri ve 2018 5–7. Sınıf Sosyal Bilgiler Dersi Öğretim Programları içerik analiziyle incelenerek bileşik yetkinliklerin programlarda ne ölçüde yer aldığı belirlenmiştir. Ardından, bu yetkinliklerin okul içi uygulamalarda ne düzeyde geliştirildiğini belirlemek amacıyla özel bir okul ağına bağlı 450 öğretmenden elde edilen anket yanıtları değerlendirilmiştir. Araştırmanın nitel aşamasında, ölçüt örnekleme yöntemiyle üç okuldan seçilen dörder branş öğretmenleriyle (toplam 12) yarı yapılandırılmış görüşmeler yapılmıştır. Bulgular, amaçlanan ve uygulanan öğretim programları arasında tutarsızlıklar olduğunu göstermiştir. Amaçlanan program olarak değerlendirilen MEB öğretim programlarının bileşik yetkinliklerin gelişimini hedefleme konusunda yetersiz kaldığı; buna karşılık, uygulamalarda öğretmenlerin etkinliklerinin branşlara göre önemli farklılıklar gösterdiği belirlenmiştir. Bileşik yetkinliklerin geliştirilmesine yönelik başlıca güçlükler arasında; öğretim programının tasarımı, yetkinlik odaklı planlamaların yetersizliği, sınav odaklı yaklaşımlar ve öğretmenlerin iş yükü öne çıkmaktadır. Yetkinlik gelişimini destekleyen okul ortamları, materyaller, öğretmen yeterlikleri, öğrenci merkezli yaklaşımlar ve disiplinler arası uygulamalar ise olumlu etkenler olarak öne çıkmıştır. Çalışma, yetkinlik temelli bir eğitimin hayata geçebilmesi için yapılandırılmış öğretim programı çerçevesine, öğretmen eğitimine ve sistem düzeyinde bütüncül uyuma ihtiyaç olduğunu ortaya koymuştur.

**Anahtar Kelimeler:** OECD Eğitim 2030 Vizyonu, Bileşik Yetkinlikler, Yetkinlik Temelli Eğitim, Amaçlanan Öğretim Programı, Uygulanan Öğretim Programı

*To all who believe in the transformative power of education to shape a better future.*

## ACKNOWLEDGMENTS


*"What we call the beginning is often the end*
*And to make an end is to make a beginning.*
*The end is where we start from."*

— T.S. Eliot, *Four Quartets*

First and foremost, I would like to express my sincere and deepest gratitude to my supervisor, Prof. Dr. Cennet Engin, for being an endless source of support, guidance, and encouragement throughout this entire process. Her insight, patience, and belief in my work not only shaped this dissertation but also helped me grow as an academic.

I would like to express my sincere appreciation to my dissertation committee members, Assoc. Prof. Dr. Pervin Oya Taneri and Assoc. Prof. Dr. Sibel Akın-Sabuncu. Their constructive feedback and thought-provoking questions during the committee meetings have been incredibly valuable to me. I also extend my heartfelt thanks to my jury members, Assoc. Prof. Dr. Nur Akkuş Çakır and Assoc. Prof. Dr. Sevinç Gelmez-Burakgazi. Their insights and suggestions have greatly contributed to the refinement of this dissertation and to my academic development. I also feel truly fortunate to have had the chance to learn from Prof. Dr. Ahmet Ok, Prof. Dr. Hanife Akar, and Prof. Dr. Yeşim Çapa Aydın throughout my academic path in the field of Curriculum and Instruction at METU. It has been both an honor and a privilege to be their student.

I would also like to thank the institution where this research took shape, my workplace, my learning ground, and a source of inspiration. This distinguished non-governmental organization has long carried the torch of education, lighting the way not only for its students but also for the future of education in this country. I am especially grateful to my supportive managers and colleagues, whose trust and genuine encouragement allowed me to pursue this study.

I am also deeply grateful for having friends who never stopped believing in me. Among them, I would like to thank my dear friend Zeynep Ünlü Mutlu for sparking the flame that led me to begin this dissertation, and my dear colleague Dr. Merve Dilberoğlu for reigniting it when I needed the strength to continue. Their presence and support at the right moments gave me the momentum I needed.

This unforgettable academic experience at METU reached one of its most meaningful milestones thanks to the love and support of my beloved family. I owe my deepest gratitude to my parents, Hatice Ereyi and Burhan Ereyi, who have been the foundation beneath my every step. My mother gifted me the fire of resilience and taught me to hold on to determination no matter the weight. My father gave me the trust I needed to carry on, even when the path felt uncertain. Their love and support have been both the starting point and the shelter throughout it all.

I am also grateful to Felix and Sofi, the ever-mischievous duo, whose names mean “luck” and “wisdom,” and who have been exactly that throughout this process. More than companions, they brought comfort and calm to my days, curling up beside me through countless writing hours and offering peace in their own quiet way.

And to my life partner, Kerem, who stood beside me through every high and low. With his love, endless support, and thoughtful reasoning, he became my balance when I faltered and my clarity when things grew cloudy. No one was more affected by this process than him. I am profoundly grateful for his presence, his patience, and his unwavering belief in me. I also extend my heartfelt thanks to his family, whose understanding and kind encouragement have meant a great deal along the way.

Finally, I thank myself for showing up, holding on when it got hard, owning both the missteps and the milestones, and for not giving up on a dream I’ve carried since childhood. Now, I’m ready for the next chapter!

## TABLE OF CONTENTS

PLAGIARISM ........ iii
ABSTRACT ........ iv
ÖZ ........ vi
DEDICATION ........ viii
ACKNOWLEDGMENTS ........ ix
TABLE OF CONTENTS ........ xi
LIST OF TABLES ........ xiv
LIST OF FIGURES ........ xv
LIST OF ABBREVIATIONS ........ xvii
CHAPTERS
1. INTRODUCTION ........ 1
1.1. Background to the Study ........ 1
1.2. Purpose of the Study ........ 5
1.3. Research Questions ........ 5
1.4. Significance of the Study ........ 5
1.5. Definition of Terms ........ 8
2. LITERATURE REVIEW ........ 11
2.1. The Curriculum in a Changing World ........ 11
2.2. Curriculum Types ........ 15
2.3. The Future of the Curriculum ........ 17
2.3.1. The OECD Future of Education and Skills 2030 (Education 2030) ........ 20
2.3.2. Bronfenbrenner's Ecological Systems Approach ........ 23
2.3.3. The OECD Education 2030 Ecosystem Approach ........ 26
2.3.4. Competence-Based Approach ........ 31
2.3.5. Compound Competencies ........ 35
2.4. Summary of the Literature Review ........ 45
3. METHODOLOGY ........ 49
3.1. Research Design ........ 49

3.2. Context of the Study ........................................................................ 52
3.2.1 Intended Curricula Documents in Middle School .................................... 55
3.3. Participants ........................................................................ 57
3.3.1. Participants in the Quantitative Study ........................................ 57
3.3.2. Participants in the Qualitative Study ........................................ 59
3.4. Data Collection Instruments ........................................................ 61
3.4.1. Data Collection Instruments in the Quantitative Study ......................... 62
3.4.2. Data Collection Instruments in the Qualitative Study .......................... 66
3.5. Data Collection Procedures ......................................................... 68
3.5.1. Data Collection Procedures in the Quantitative Study .......................... 68
3.5.2. Data Collection Procedures in the Qualitative Study ........................... 70
3.6. Data Analysis ...................................................................... 72
3.6.1. Quantitative Data Analyses .................................................... 72
3.6.2. Qualitative Data Analysis ..................................................... 77
3.6.3. Mixed Methods Comparative Data Analysis and Integration ....................... 80
3.7. Validity, Reliability, and Trustworthiness of the Study ............................ 81
3.7.1. Validity and Reliability of the Quantitative Study ............................ 81
3.7.2. Trustworthiness of the Qualitative Study ...................................... 84
3.8. The Role of the Researcher in the Study ............................................ 88
3.9. Limitations of the Study ........................................................... 90
4. RESULTS ............................................................................... 92
4.1. Integration of Compound Competencies into Middle School Intended Curricula ......... 93
4.1.1. Analysis of Compound Competencies in Middle School Intended Curricula .......... 93
4.2. Extent of Compound Competencies' Development in Implementation ..................... 97
4.2.1. Teachers' Responses on the Extent of Developing Compound Competencies in Implementation ... 98
4.3. The Factors that Promote or Hinder the Development of Compound Competencies ........ 139
4.3.1. The Role of Targeting the Development of Compound Competencies ................ 142
4.3.2. The Role of Individual and Social Dynamics in Promoting or Hindering Compound Competencies ... 148

4.3.3. The Role of Educational System in Promoting or Hindering Compound Competencies ..... 154
4.3.4. The Role of Teacher's Capacity in Promoting or Hindering Compound Competencies ..... 174
4.3.5. The Role of Instructional Strategies Dynamics in Promoting or Hindering Compound Competencies ..... 185
4.4. Summary of the Results ..... 195
5. DISCUSSION ..... 209
5.1. Discussion of the Findings ..... 209
5.1.1. Developing Compound Competencies in Intended (Written) and Implemented Curricula ..... 209
5.1.2. Compound Competencies in Curricula and Implementation ..... 211
5.1.3. Ecosystem Approach to Understand Factors Influencing the Development of Compound Competencies ..... 238
5.2. Implications for Theory and Practice ..... 250
5.3. Recommendations for Further Research ..... 256
REFERENCES ..... 259
APPENDICES
A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE ..... 285
B. RATING SCALE FOR ANALYZING CURRICULUM DOCUMENTS ..... 286
C. INFORMED CONSENT FORM: ONLINE SURVEY PARTICIPATION ..... 288
D. DESCRIPTIVE STATISTICS OF TEACHERS' RESPONSES TO ONLINE SURVEY, INCLUDING FREQUENCY, MEAN, AND STANDARD DEVIATION ..... 289
E. INFORMED CONSENT FORM: INTERVIEW PARTICIPATION ..... 299
F. SEMI-STRUCTURED TEACHER INTERVIEW QUESTIONS ..... 300
G. CURRICULUM VITAE ..... 303
H. TURKISH SUMMARY / TÜRKÇE ÖZET ..... 306
I. SAMPLE TEZ İZİN FORMU / THESIS PERMISSION FORM ..... 333

## LIST OF TABLES


Table 1 Current Weekly Lesson Schedule for Middle Schools in Türkiye ............... 55
Table 2 Demographic Characteristics of the Survey Participants .............................. 58
Table 3 Characteristics of the Participants in the Qualitative Study .......................... 60
Table 4 Research Question, Data Collection Instruments, Data Analysis, and Data Sources ........................................................................................ 61
Table 5 Cronbach's Alpha Values of the Survey ...................................................... 65
Table 6 Frequency Distribution of Each Competency Across Four Subject-Specific Curricula ............................................................................ 93
Table 7 Teachers' Responses to the Survey's Global Competency Subset ............. 100
Table 8 Teachers' Responses to the Survey's Media Literacy Subset ...................... 106
Table 9 Teachers' Responses to the Survey's Literacy for Sustainable Development Subset ...................................................................... 112
Table 10 Teachers' Responses to the Survey's Financial Literacy Subset .............. 119
Table 11 Teachers' Responses to the Survey's Computational Thinking Skills Subset ........................................................................................... 126
Table 12 Teachers' Responses to the Survey's Entrepreneurship Subset ................ 133
Table 13 Summary of Themes, Categories, and Codes on Factors Influencing the Development of Compound Competencies ........................................ 140
Table 14 The Overview of Integrated Results ........................................................ 196

## LIST OF FIGURES

Figure 1 The OECD Learning Compass 2030. ........................................................ 21
Figure 2 The Education 2030 Ecosystem Approach.. ............................................... 27
Figure 3 Explanatory Sequential Design: Mixed Method Approach ......................... 51
Figure 4 Survey Development Process ..................................................................... 64
Figure 5 The Flowchart of the Interview Schedules Development Process .............. 66
Figure 6 Heat Map Representation of Curriculum Coding for Compound Competencies ............................................................................................ 69
Figure 7 Distribution of Teachers' Responses in the Global Competency Subset ('Frequent and Always') Across Subjects ................................................. 103
Figure 8 Distribution of Teachers' Responses in the Media Literacy Subset ('Frequent and Always') Across Subjects ................................................. 109
Figure 9 Distribution of Teachers' Responses in the Literacy for Sustainable Development Subset ('Frequent and Always') Across Subjects ............... 116
Figure 10 Distribution of Teachers' Responses in the Financial Literacy Subset ('Frequent and Always') Across Subjects ................................................ 123
Figure 11 Distribution of Teachers' Responses in the Computational Thinking Skills Subset ('Frequent and Always') Across Subjects .......................... 130
Figure 12 Distribution of Teachers' Responses in the Entrepreneurship Subset ('Frequent and Always') Across Subjects ............................................... 137
Figure 13 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Global Competency (As Main or Sub Target), By Learning Area ......................................................................................... 211
Figure 14 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Media Literacy (As Main or Sub Target), By Learning Area ......................................................................................... 214
Figure 15 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Literacy for Sustainable Development (As Main or Sub Target), By Learning Area .............................................................. 218

Figure 16 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Computational Thinking Skills (As Main or Sub Target), By Learning Area ........ 223
Figure 17 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Financial Literacy (As Main or Sub Target), By Learning Area ........ 228
Figure 18 Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Entrepreneurship (As Main or Sub Target), By Learning Area ........ 233

## LIST OF ABBREVIATIONS

| | |
|---|---|
| CBE | Competency-Based Education |
| CCM | Curriculum Content Mapping |
| DeSeCo | The OECD’s Definition and Selection of Competencies Project |
| E2030 | Education 2030 |
| HEC | Higher Education Council |
| IBE | International Bureau of Education |
| METU | Middle East Technical University |
| MoNE | Ministry of National Education |
| MUN | Model United Nations |
| NGO | Non-governmental Organization |
| OECD | Organization for Economic Co-operation and Development |
| SDGs | Sustainable Development Goals |
| UbD | Understanding by Design |
| UN | United Nations |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |

# CHAPTER 1

# INTRODUCTION

This chapter provides a comprehensive background of the study, outlines the study's purpose and research questions, highlights its significance, and clarifies key terms used throughout the research.

## 1.1. Background to the Study

As a fundamental pillar of education, curriculum could be shaped by the way it is understood and applied. While some perspectives view it as a fixed framework for delivering knowledge, progressive approaches emphasize its dynamic and learner-centered nature by highlighting the importance of student engagement and meaningful experiences in the learning process (Ornstein & Hunkins, 2014). According to Dewey (1938), education should not be confined to abstract knowledge; however, it should be connected to real-life experiences. In this respect, he argued that learning should emerge naturally through students' interactions with their social and natural surroundings, making education a continuous and adaptive process.

In light of this understanding, the design and development of the curriculum have significantly evolved and moved away from rigid, predetermined frameworks toward more adaptable, competency-based, and interdisciplinary approaches. This shift is largely aroused from the increasing need to equip 21st-century learners with essential skills and competencies that are crucial for thriving in an increasingly complex and rapidly changing world (Darling-Hammond & Oakes, 2019; Schleicher, 2018). In today's interconnected society, education has no longer solely concerned with the transmission of knowledge; it has also focused on fostering skills and competencies, including the transferring of the knowledge into real-world contexts (Brears, MacIntyre, & O’Sullivan, 2011; Schleicher, 2012).

Curriculum also functions as a multi-dimensional construct shaped by political, institutional, and societal forces (OECD, 2020b). Its development and implementation have varied across different levels, influenced by policymakers, educators, and stakeholders who bring diverse perspectives and priorities (Stein et al., 2007). Considering these different levels' interpretation, curriculum has been mostly analyzed through three primary types, including intended, implemented, and attained, each representing a distinct phase in translating educational goals into practice (Goodlad et al., 1979; Schmidt et al., 1996; Travers & Westbury, 1989). These variations demonstrate that curriculum is a living framework that evolves through its interpretation, application, and perception in diverse educational settings. As globalization, technological advancements, and societal transformations continue to reshape the skills required for modern life, education systems gain importance in responding with forward-thinking curriculum models that integrate both knowledge and competencies. It is emerged as a challenge to design such curricula and to ensure their effective implementation to prepare students for an unpredictable future. Research suggests that, by embracing a holistic, competency-based approach, education can bridge the gap between theory and practice, ensuring that learning remains relevant and responsive to the demands of the 21st century (Marope et al., 2017; OECD, 2020b).

Kress (2000) argues that, traditional subject-based curricula struggle to keep pace and often leaving students ill-prepared for the uncertain ties of the future (Kress, 2000). Recognizing this challenge, education systems worldwide are shifting toward a competence-based approach, which emphasizes adaptable and transferable skills over rote learning (OECD, 2020b). In this respect, the competence-based approach intends to facilitate holistic learning experiences and equip students with the confidence and resilience they need to navigate complexity and change, unlike subject-centered, content-heavy models in educational systems. Within the framework of the competence-based approach, curriculum design also undergoes a transformation by moving beyond the mere transmission of knowledge to 21st-century skills and competencies (Darling-Hammond & Oakes, 2019). In response to this shift and the growing need for long-term educational planning, the OECD launched the Future of Education and Skills 2030 project, advocating for evidence-based, systematic curriculum reform to prepare students for future challenges (OECD, 2019a; 2019b; 2020a). As part of this initiative, the OECD developed a framework that identifies key competencies, which encompass knowledge, skills, attitudes, and values required to thrive in complex and uncertain futures. To examine the extent to which these competencies are reflected in national curricula, the OECD conducted the Curriculum Content Mapping (CCM) exercise, a document-based analysis involving participating countries (OECD, 2020a). This study mapped the curricula of seven learning areas, identified 28 competencies, and outlined how these competencies are intended to be promoted within the curricula. Within this framework, among the 28 competencies, six compound competencies/literacies emerged, referring to context-specific and multidimensional abilities that integrate cognitive, emotional, and social dimensions. The CCM exercise identified these six compound competencies/literacies as particularly relevant for the 2030 vision: computational thinking skills, financial literacy, entrepreneurship, media literacy, global competency, and literacy for sustainable development (OECD, 2020a).

These six compound competencies are particularly compelling for this study, as they embody the multidimensional nature of education by integrating knowledge, skills, attitudes, and values. However, the development of these competencies, along with curriculum design and implementation, does not occur in isolation. Since schools function as dynamic environments where teachers, students, policymakers, and communities collectively influence learning experiences, the development of such competencies should be considered within a broader educational ecosystem shaped by institutional policies, societal expectations, and the interactions of key stakeholders (OECD, 2020b).

To better understand these broader complexities, this study adopts Bronfenbrenner's Ecological Systems Theory (1979), which examines how various environmental layers impact human development. Applied to the field of education, the OECD's Education 2030 Ecosystem Approach offers a holistic perspective on the interactions among educational stakeholders. This perspective provides a structured framework for analyzing how multiple systemic factors influence curriculum design, implementation, and overall effectiveness. As education systems worldwide shift toward competence-based curricula to prepare students for the challenges of an evolving world, aligning intended and implemented curricula becomes increasingly critical. However, discrepancies between curriculum design and classroom practice continue to create obstacles in fostering future-ready skills. In this context, the extent to which middle school curricula in Türkiye align with the OECD's multidimensional conceptual learning framework for future skills remains unclear (OECD, 2019a).

Türkiye has been undergoing a period of rapid curriculum change, with a new curriculum introduced in the 2018–2019 academic year. A more recent update was introduced in 2024; however, this revision currently applies only to 1st, 5th, and 9th-grade students. As a result, the majority of middle school students will continue to be educated under the 2018–2019 curriculum until the end of the 2027–2028 academic year. While these curriculum changes emphasize the development of skills and competencies, it remains uncertain whether they sufficiently align with the OECD 2030 Learning Compass and the compound competencies it promotes (OECD, 2019b). These competencies refer to integrated, context-specific capacities that combine knowledge, skills, attitudes, and values essential for thriving in the 21st century. Specifically, this study focuses on the compound competencies which identified through the OECD's Curriculum Content Mapping (OECD, 2020b) including computational thinking skills, financial literacy, entrepreneurship, media literacy, global competency, and literacy for sustainable development, are examined as indicators of curriculum alignment.

Given the importance of competencies in enabling students to thrive in 2030, it is essential to assess whether these skills are adequately embedded in both the curriculum documents, which are valid until 2028, and their implementation in practice. This study aims to examine the degree of alignment and the challenges associated with integrating compound competencies into Türkiye’s middle school curricula, and to offer insights with respect to the ecosystem approach for competence-focused curriculum reform.

### 1.2. Purpose of the Study

Depending on the problem statement, the overall aim of this study to examine the extent to which the current use of the mathematics, Turkish, science, and social studies (MoNE, 2018; 2019) curricula for middle school education in Türkiye aligns with the OECD E2030’s competencies/literacies. The findings gathered from this study will serve as essential data for competence-focused future curriculum reform in Türkiye.

Accordingly, the purpose of the study is to determine the degree of alignment and the challenges between the intended and implemented subject-specific middle school curricula with regard to the development of compound competencies, which are considered essential future skills that students need to thrive in 2030 (OECD, 2019a).

### 1.3. Research Questions

In line with the purpose of the study, the research questions were presented below:

1. To what extent do middle school intended curricula promote the development of compound competencies among students?
2. To what extent do teachers promote the development of compound competencies among middle school students?

   2.1. To what extent do teachers from different subject areas promote the development of compound competencies among middle school students?
3. What factors promote or hinder the development of compound competencies in practice?

### 1.4. Significance of the Study

Education systems worldwide are struggling to adapt to the rapid pace of social, technological, and economic changes. As global trends continue to evolve, schools and educational institutions face increasing pressure to update their curricula, equipping students with a more comprehensive set of knowledge, skills, values, and attitudes necessary to navigate the new challenges they will encounter (OECD, 2019a; 2019b; 2019c; 2020b). Like many countries, Türkiye is confronted with the pressing issue of how best to prepare its students for an unpredictable and evolving future. To create future-ready learners, education systems must go beyond imparting essential knowledge; they must also cultivate a wide range of skills, values, and attitudes that empower students to innovate and effectively address complex dilemmas and uncertainties (OECD, 2019c; 2020b).

The subject-specific curricula that actively in use (MoNE, 2018; 2019) are already burdened with extensive content (OECD,2019c; 2020c). Traditionally structured around distinct disciplines or learning areas, these curricula face significant challenges when incorporating new competencies. Introducing additional subjects may contribute to this overload, while integrating new competencies into existing subjects is complicated by their conceptual complexity (OECD, 2020c). These challenges highlight the need for a more cohesive and integrated curriculum approach that prioritizes the development of compound competencies, ensuring that students not only acquire knowledge but also cultivate the essential skills and abilities to apply this knowledge effectively across various contexts (OECD, 2020c).

The development of compound competencies is increasingly seen as vital for student success in the 21st century. These competencies allow students to apply knowledge in dynamic and interconnected ways, preparing them for both academic and real-world challenges. Therefore, the incorporation of a competence-based curriculum is crucial to ensure students are equipped not only with content knowledge but also with the skills necessary to thrive in complex, evolving environments (OECD, 2020b). Although there have been several efforts to reform the curriculum in recent years in Türkiye, the gap between the intended and implemented curriculum remains somehow. Addressing this issue requires attention to teachers' curriculum literacy and delivery skills, which play a crucial role. Teachers need to be provided with the appropriate tools and knowledge to effectively incorporate compound competencies into their lessons, helping promote students' holistic development.

Despite the growing emphasis on competence-based education, no study was found that specifically examines the integration of OECD-defined compound competencies within the core subjects of middle school education in Türkiye, namely Turkish (language), mathematics, science, and social studies curricula, across a comprehensive review of sources including METU Library, HEC (tezYÖK), EBSCOhost, JSTOR, ULAKBİM, ERIC, Google Scholar, and DergiPark. The findings of this study are expected to contribute both to the national education system and to the field of international comparative education by providing data aligned with the OECD E2030 framework. In this regard, the study holds the potential to inform curriculum design and development processes, policy decisions, and future educational research both within Türkiye and in global contexts (OECD, 2020b; 2024).

In addition to examining the alignment between curriculum documents and classroom practices with respect to the competence-based approach, this study seeks to identify the key factors that either promote or hinder the development of compound competencies. Uncovering these dynamics is essential for building a deeper understanding of how competence-based education can be effectively implemented in real-world school settings. The insights gained from this research can inform teacher training programs, guide curriculum design and development efforts at the national and interconnected ecosystem levels, and influence school-based practices by addressing barriers and supportive mechanisms for the effective implementation of competence-based education.

Ultimately, this research positions itself within the OECD's Education 2030 Ecosystem Approach, acknowledging the interconnected nature of educational actors and systems. Through its findings, the study aspires to support systemic and sustainable transformation toward a more future-ready, competence-based educational landscape in Türkiye (OECD, 2020b). In this context, this study seeks to provide insights into the opportunities and challenges related to competence-based education. It aims to shed light on the gap between intended and implemented curricula, offering a comprehensive view of the current state of competence development in both design and practice, in alignment with the OECD's Education 2030 Ecosystem Approach.

## 1.5. Definition of Terms

The key terms utilized in this study are defined as follows:

**The intended (written) curriculum:** In this study, the intended curriculum refers to the written (officially documented) curriculum developed by the Ministry of National Education (MoNE). While the intended curriculum generally encompasses both the ideal curriculum, which reflects the overarching vision and educational philosophy, and the formal curriculum, which includes content and instructional guidelines, this study specifically focuses on the intended learning objectives outlined in official curriculum documents (Goodlad et al., 1979; Van den Akker, 2003).

**The implemented curriculum:** In this study, the implemented curriculum refers to how the curriculum is enacted in practice, based on teachers' self-reports. It encompasses the perceived curriculum, which reflects how teachers interpret and understand the written curriculum, and represents what they claim to implement in their teaching practices (Goodlad et al., 1979; Van den Akker, 2003).

**Learning objectives:** In this study, learning objectives refer to the specific knowledge, skills, attitudes, and competencies that students are expected to acquire, representing the targeted acquisitions outlined in the subject-specific national curriculum.

**Compound competencies**: As defined in OECD curriculum analyses, compound competencies refer to “competencies that encompass knowledge, skills, attitudes, and values essential for individual, social, and environmental well-being in 2030” (OECD, 2020a; 2024). These competencies encompass six specific competencies/literacies: global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking, and entrepreneurship (OECD, 2020a, p. 22; 2024).

**Global competency:** As defined in OECD curriculum analyses, global competency refers to “the capacity to examine local, global, and intercultural issues, to understand and appreciate the perspectives and worldviews of others, to engage in open, appropriate, and effective interactions with people from different cultures, and to act for collective well-being” (OECD, 2020a, p. 23).

**Media literacy:** As defined in OECD curriculum analyses, media literacy refers to "the ability to think critically and analyze what one reads in the media, including social media and news sites. This includes recognizing 'fake news' or the ability to distinguish what is true from what is not as well as to be able to assess, evaluate, and reflect on the information that is given in order to make informed and ethical judgments about it" (OECD, 2020a, p. 23).

**Literacy for sustainable development:** As defined in OECD curriculum analyses, literacy for sustainable development refers to "the knowledge, skills, attitudes, and values needed to promote sustainable development. To be literate in sustainable development requires understanding how social, economic, and environmental systems interact and support life, recognizing and appreciating different perspectives that influence sustainable development, and participating in activities that support more sustainable ways of living" (OECD, 2020a, p. 23).

**Financial literacy:** As defined in OECD curriculum analyses, financial literacy is “the ability to apply financial knowledge and skills to real-life situations involving financial issues and decisions. It involves knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts” (OECD, 2020a, p. 23).

**Computational thinking skills:** As defined in OECD curriculum analyses, computational thinking skills refers to “formulating problems and developing solutions that can be carried out by computer-based technologies. Programming and coding involve the development of knowledge, understanding, and skills regarding the language, patterns, processes, and systems needed to instruct/direct devices such as computers and robots." (OECD, 2020a, p. 23).

**Entrepreneurship:** As defined in OECD curriculum analyses, entrepreneurship is "the ability to add value. It involves evaluating situations, organizing resources, and creating and developing opportunities for adding value. This value might be a product, service, idea, or a solution to address an issue or satisfy a need." (OECD, 2020a, p. 24).

# CHAPTER 2

# LITERATURE REVIEW

## 2.1. The Curriculum in a Changing World

The term "curriculum" has its roots in the Latin word “currere,” meaning "a track" or "a course to be run." Historically, this term was closely tied to structured paths of learning and instruction. Over time, however, the term evolved within educational contexts and adopted various definitions that reflect the diverse perspectives in which it is understood and applied (Oliva, 1997).

Ornstein and Hunkins (2004) specified five basic different definitions of curriculum, each representing a different perspective. The first defines curriculum as "a plan for action or a written document that outlines strategies for achieving specific educational outcomes (Taba ,1962; Tyler,1949)”. The second broadens it to "the experiences of learners." The third approaches curriculum as a system in which there are people and thus focuses on its truly human-oriented aspects. Fourth, it is referred to as "a field of study with its own foundations, knowledge base, research, theories, principles, and experts." Lastly, the curriculum is also identified simply as "a course" (Ornstein & Hunkins, 2004). The curriculum can be understood narrowly as a list of subjects to be taught or, more broadly, as the range of experiences necessary for individuals to function actively and meaningfully in society. The curriculum "as a field of study", does not seek to arrive at definitive answers but to enhance the understanding of the complexities and paradigm changes that characterize this intellectual and practical field. Ornstein and Hunkins (2004) stress that the curriculum is, in essence, a product of social interaction, where it is a result of both deliberate design and shifting objectives. In the modern society characterized by uncertainty and ambiguity among its members, the curriculum operates as a deliberate attempt to engage these challenges and foster meaningful learning (Ornstein & Hunkins, 2004).

The way we choose to define the curriculum also reflects our perspective and approach toward it. Progressive views consider curriculum to be a dynamic and learner-oriented phenomenon, where experiences and interaction of students in the learning environment are emphasized (Ornstein & Hunkins, 2004). Dewey (1938) advocated for a curriculum that integrates education with life experiences and stated that learning must come out of the active relations of learners with their social and natural environments.

The structure of the curriculum is commonly described through four core elements: “aims or objectives, content or subject matters, methods or procedures, and evaluation or assessment” (Marope, 2017). Building on these foundational ideas, more recent scholarship has sought to reconcile these perspectives by acknowledging the multifaceted nature of curriculum. As Ornstein and Hunkins (2004) cited Marsh and Wills (2003) defined curriculum as "all the experiences in the classroom that are planned or enacted", highlighting the interaction between planning and practice. However, Ornstein and Hunkins (2004) made the distinction between what is officially planned and prescribed by educational institutions (such as schools or ministries) and what is actually implemented by teachers in the classroom. They also broadened this definition to include what is learned by students whether intended or unintended.

Eisner (1994) expands on these ideas by pointing out that societal values are also an essential component of the curriculum. He asserts that the curriculum is "an expression of what society values and what it therefore expects from its education system." This perspective extends the concept of curriculum beyond being merely a course of study or a learning plan. Exclusion is another way to convey values when the curriculum is seen as an indication of societal values. Eisner refers to this as “null curriculum” and broadens the definition of the curriculum to encompass things that are left out, ignored, or intentionally excluded (Eisner, 1994). Although debates continue on the definition of the curriculum, there is also no common consensus on the use of the term 'curriculum' itself (Marope, 2017). Some prefer to use terms like programs, syllabi, course of study, teaching subjects, courses and etc. Post-secondary education is rarely referred to by the term curriculum. The way curriculum is currently conceptualized, it is closely related to schools, young learners, and general education (K -12) (Marope, 2017).

However, as educational priorities shift in response to scientific and technological advancements, recently the scope of the curriculum is being reconsidered (Williamson, 2013). Generally, the educational policies, techniques, priorities, and concepts that shape a system of education are expressed in the curriculum. In its most restrictive form, it outlines learning objectives. In a broader sense, curriculum refers to the principles, objectives, and material that support the curriculum of an educational system. That reconsideration of the curriculum conveys both a heritage from the past and hopes and concerns for the future at the same time (Williamson, 2013). In the 21st century, where change is the only constant, the curriculum has become even more dynamic, giving rise to a new curriculum paradigm (Gouëdard, et al., 2020; OECD, 2020b; Scott, 2015). Therefore, a revised definition is needed which recognizes the curriculum as a fluid and transformative reflection of shared expectations regarding the purpose, quality, and relevance of education. This perspective highlights the curriculum's role in fostering holistic, inclusive, equitable, peaceful, and sustainable development while enhancing the well-being and fulfillment of both present and future generations (Marope, 2017).

To keep education systems aligned with contemporary demands, many countries have initiated curriculum reforms at varying speeds and through different approaches (Gouëdard, et al., 2020.) These reforms primarily aim to better prepare students for an ever-changing world. Beyond equipping learners with 21st-century skills, the adoption of a specific curriculum can significantly influence student learning outcomes, making it a critical area of focus (Schleicher, 2018; Voogt & Roblin, 2012). However, implementing curriculum reforms is a complex process, as it challenges existing beliefs, institutional structures, and educational traditions. Moreover, several factors including high costs, uncertainty of outcomes, and resistance from stakeholders create additional obstacles to initiating and sustaining curriculum changes (Fullan, 2016). The introduction of a new curriculum often requires extensive investments in teacher training, capacity-building within schools, and the development of innovative pedagogical approaches and learning resources (Gouëdard, et al., 2020.) As seen in multiple educational contexts, institutions and individuals tend to favor stability over change, further complicating the implementation process (Hargreaves & Shirley, 2020).

Given these challenges, a key concern for teachers and policymakers is determining how curriculum reforms can be effectively translated from policy to practice. Fullan (2007) argues that meaningful education reforms require transformation across three key dimensions: instructional materials, teaching methodologies, and educators' beliefs. Additionally, Schleicher (2018) highlights the growing influence of decentralized governance, increased stakeholder engagement, and a stronger focus on measurable educational outcomes.

As the 21st century progresses, traditional top-down education policies are giving way to more collaborative, stakeholder-driven reforms. This shift alters the roles of education policymakers, requiring them to engage in more participatory decision-making processes (Voogt & Roblin, 2012). However, there remains a limited body of research focusing specifically on the implementation of curriculum reforms from a policy-making perspective (O'Donnell, 2008; Pietarinen et al., 2017).

As education systems adapt to technological advancements, societal shifts, and economic demands, curriculum development has become a dynamic process. The traditional notion of a fixed curriculum is being replaced by more flexible, competency-based, and interdisciplinary models that cater to the needs of 21st-century learners (Schleicher, 2018). This evolution reflects the growing emphasis on not only knowledge acquisition but also the development of competencies that students need to thrive in the future (OECD, 2020b). Given this evolving landscape, curricula can take various forms depending on their structure, delivery methods, and intended learning outcomes. Understanding the different types of curricula provides insight into how education systems design learning experiences to meet diverse learner needs and policy objectives.

### 2.2. Curriculum Types

As educational systems evolve to meet the demands of a rapidly changing world, the curriculum is understood as a multi-dimensional construct that operates at different levels of society. These dimensions reflect varying interpretations, stakeholders' influences, and implementation strategies emerging to distinct perspectives on curriculum based on how it is perceived and applied at each level. (Glatthorn 2000; Goodlad et al., 1979; OECD, 2020b, Stein et al., 2007; van den Akker, 2003) Recognizing these distinctions is key for analyzing how educational goals are structured, implemented, and ultimately experienced by students. To better understand these perspectives, Goodlad et al. (1979), categorizes the curriculum into five dimensions, which van den Akker (2003) groups into three main layers: intended, implemented, and attained curriculum.

The intended curriculum includes the ideal and formal (written) aspects, where the ideal curriculum reflects the overall vision and educational philosophy, while the formal curriculum specifies the goals and content outlined in official documents and teaching materials (Goodlad et al., 1979; van den Akker, 2003). The implemented curriculum demonstrates how the curriculum is put into practice, including the perceived curriculum, which is how teachers interpret and understand the curriculum, and the operational curriculum, which is the actual teaching and learning process occurring in the classroom (Goodlad et al., 1979; van den Akker, 2003). Finally, the attained curriculum captures the learning outcomes, consisting of the experiential curriculum, representing students' learning experiences, and the learned curriculum, which denotes the knowledge and skills students actually gain (Goodlad et al., 1979; van den Akker, 2003). This categorization also highlights the dynamic nature of curriculum as it interchanges from policy to classroom practice. Building on this, van den Akker (2003; 2010) and Kuiper et al. (2013) propose that the curriculum operates on multiple levels within society, which are influenced by political, administrative, institutional, and individual factors. Reflecting this, three primary forms of curriculum also have historically been the focus of analytical approaches to curriculum (Goodlad et al., 1979; Schmidt et al., 1996; Travers and Westbury, 1989). At the macro-level, political and administrative decisions about the curriculum are made by government bodies where the foundational goals and frameworks of education are determined. These decisions are formally articulated in the intended (or written) curriculum, which becomes visible in official documents, such as core objectives, curriculum standards or guidelines (Glatthorn, 2000; Thijs & van den Akker, 2009; Travers and Westbury, 1989; Schmidt et al., 1996; van den Akker, 2003). The intended (or written) curriculum documents outline the learning outcomes for students, the skills or competencies they are expected to develop, and the individuals they are intended to become. Accordingly, it serves as a blueprint for translating national educational priorities into actionable goals in educational institutions and learning settings (OECD, 2020b).

At the school and classroom level (meso-level) these decisions become real where teachers interpret and implement the curriculum (Schmidt et al., 1996; Thijs & van den Akker, 2009; Travers and Westbury, 1989; van den Akker, 2003). As teachers enact the curriculum within the classroom by interpreting its content and standards, delivering lessons, and shaping educational experiences, is referred to as the implemented or taught curriculum (Glatthorn, 2000; Schmidt et al., 1996; Travers and Westbury, 1989). Finally, at the learner level (micro-level), the effect of the curriculum is assessed through the student outcomes. It is referred to as the attained (achieved or learned) curriculum which denotes what students are able to demonstrate that they have learned (Glatthorn, 2000; Schmidt et al., 1996; Thijs & van den Akker, 2009; Travers and Westbury, 1989; van den Akker, 2003). Essentially, the attained curriculum represents the end product of the intended and implemented curriculum (OECD, 2020b).

In this respect, the curriculum can be understood as a continuum, encompassing multiple dimensions that reflect the different stages of curriculum development and application. As classified by Marope (2017) these dimensions include (i) official, intended, written, formal, ideal, planned, and specified curriculum (Cuban, 1993;

Schmidt et al., 1996; Schugurensky, 2002; Wiseman & Brown, 2003), (ii) implemented, mediated, taught, operational, or in-use curriculum (Schmidt et al., 1996; Glatthorn, 2000; Werner, 1991); (iii) actual, experiential, learned, received, achieved, and internalized curriculum (Cuban, 1993; Menis, 1991; Wiseman & Brown, 2003), and (iv) assessed curriculum (Wiseman & Brown, 2003).

However, the development and application of these curriculum dimensions are shaped by various stakeholders operating at different levels of the education system (van den Akker, 2003). Decisions on educational objectives are made at every level, with diverse stakeholders influencing how the curriculum is perceived and enacted. This variation among curriculum levels significantly impacts teaching, as the alignment (or misalignment) between the intended, implemented and attained curriculum directly affects the quality of education and its outcomes (Phaeton & Stears, 2017). Research in language, mathematics, science, and social studies education draws attention the alignments and disparities among the intended, implemented, and attained curriculum at both primary and secondary levels (Hajer, & Norén, 2017; Herbel-Eisenmann, 2007; Levitt, 2001; O'Donnell et al., 2006; Schmidt et al., 1996; Smith & Southerland, 2007). Building on these, this study particularly focuses on the alignments and discrepancies between the intended (written) and implemented curricula in four subject areas in middle school. As a reflection of changing curriculum perspectives in ever-evolving world, it emphasizes the development of competencies that serve as a future-oriented curriculum. In line with this approach, the OECD Future of Education and Skills 2030 project provides insights into the recent shifts in curriculum focus by emphasizing skills and competencies that prepare education systems for future challenges.

### 2.3. The Future of the Curriculum

Curriculum has traditionally encompassed the content, objectives, and organization of learning, serving as a blueprint for educational experiences (Walker, 2003). However, in today's rapidly changing world, it represents both a legacy from the past and a vision for the future, reflecting societal values, educational goals, and evolving expectations

(Williamson, 2013). As globalization, technological advancements, and societal shifts redefine the skills needed for life, work, and citizenship, traditional educational paradigms are no longer sufficient. To meet the demands of the 21st century, curriculum design must evolve beyond knowledge acquisition to include the development of critical competencies such as creativity, problem-solving, adaptability, and digital literacy (Darling-Hammond & Oakes, 2019). This necessitates an education system that emphasizes powerful learning experiences tailored to the challenges of modern society, equipping students with not only knowledge but also the skills needed for active citizenship in an interconnected world (Brears et al., 2011; Schleicher, 2012).

In an era of rapid social, cultural, and economic transformations, traditional curricula designed for stability and predictability are increasingly inadequate (Kress, 2000). Kress (2000) argues that modern education systems must prepare students for instability by emphasizing adaptability, creativity, and innovation through a curriculum that promotes design thinking. This approach empowers students as active agents who construct and shape knowledge, fostering critical thinking, problem-solving, and transformative learning essential for thriving in uncertain futures. To ensure relevance and sustainability, Stoll (2006) suggests adopting a system thinking approach that fosters continuous learning, capacity building, and adaptive competences. This involves creating dynamic learning environments where students, educators, and policymakers engage in collaborative problem-solving and reflective practices. By integrating design thinking with system thinking, curricula can remain flexible and responsive to emerging societal needs while promoting a culture of continuous improvement and renewal (Kress, 2000; Stoll, 2006).

Recognizing the limitations of traditional curricula, the transition to a competence-based curriculum is increasingly seen as essential for aligning education systems with the demands of the 21st century (OECD, 2020b). According to Marope, Griffin, and Gallagher (2017), competence-based curricula are designed to equip learners with adaptive and transferable skills, enabling them to navigate complex and rapidly changing environments. This approach moves away from subject-based learning, focusing on holistic competencies such as critical thinking, problem-solving, digital literacy, and social responsibility. It also emphasizes real-world applications, interdisciplinary learning, and continuous self-renewal.

Regarding that, the future of curriculum lies in its capacity to adapt and respond to rapid social, economic, and technological changes. As traditional educational paradigms become increasingly inadequate, shifting from knowledge reproduction to design thinking, embracing multiliteracies, and adopting a system thinking approach enables education systems to prepare learners for an unpredictable and interconnected world (Kress, 2000; Stoll, 2006). In this context, competence-based curriculum is gaining more attention for its capacity to provide a framework for equipping students to engage effectively and ethically in diverse social and professional settings (Marope et al., 2017). In response to the demands of the 21st century, educational systems are increasingly adopting competency-based curricula that emphasize interdisciplinary learning. According to the OECD (2020b), this approach integrates critical competencies such as global competency, media literacy, financial literacy, and computational thinking, ensuring that students are equipped with the necessary tools to navigate complex societal challenges. Building on this foundation, this study examines the development of compound competencies within subject-specific curricula, aiming to provide strategic insights into preparing middle school students to be future-ready.

By analyzing the subject-specific curricula both at the intended and implemented levels, this research seeks to reveal how future-oriented these educational frameworks truly are and which gaps need to be addressed for more effective competence-based education. In this respect, the purpose of the study aligns with the overarching objectives of The OECD Future of Education and Skills 2030 project, which emphasizes preparing education systems for long-term challenges through evidence-based and systematic curriculum design (OECD, 2019a, 2019b, 2020a). By exploring the interplay between future-oriented curriculum frameworks, an interconnected systems-level approach, competence-based education, and compound competencies, the upcoming sections will provide a comprehensive theoretical foundation for this study.

### 2.3.1. The OECD Future of Education and Skills 2030 (Education 2030)

In 2015, the OECD Education Policy Committee launched the Future of Education and Skills 2030 project which highlights the need to prepare education systems for the future (OECD, 2019a). This project aims to make curriculum design more evidence-based and systematic by focusing on long-term challenges in education. This project includes two phasis and its first phase (2015-2019) focused on the knowledge, skills, and values that students need to succeed in the future, while the second phase (2019 and beyond) focused on how to develop these competencies (OECD, 2019a). During 2016 to 2018, policymakers, researchers, teachers, and students worked under this project to create a learning framework that sets out the competencies today's learners need to succeed in the future. Though this OECD Learning Framework 2030 primarily focused on secondary education, it is also designed to help individuals realize their potential and contribute to society by providing a common language applicable to all levels of education and lifelong learning. Thereby, it aims to facilitate the exchange of good practice through comparisons between education systems and to stimulate debate at a global level (OECD, 2019a).

The OECD's Future of Education and Skills 2030 project builds on the foundations of the DeSeCo (Definition and Selection of Competencies) project, which was developed between 1997 and 2003. That framework intended to identify the core competencies that individuals need to thrive successful lives and contribute effectively to society. To this end, three main categories of competencies were defined including 'using tools interactively', 'interacting in heterogeneous groups' and 'acting autonomously' (OECD, 2005). In accordance with that, the OECD Learning Framework 2030 was created as part of the E2030 project to make the DeSeCo framework more relevant to today's education policies and to provide a structure linked to curriculum design.

As reported by the OECD (2019a), this new framework has been shaped through continuous and multifaceted consultations between academics, policy makers, teachers, and students from different disciplines and as a result, it provided a structure that is both globally valid and flexible enough to be adapted to local circumstances. In this regard, the first phase of the project involved the design of a "learning compass," which is a key metaphor to emphasize the importance of empowering students to orient themselves and find their own way in unfamiliar contexts, rather than taking specific instructions from their teachers or the adults around them.

This learning compass articulates how individuals and societies can navigate toward the competencies essential for future success OECD (2019a). The Figure 1 illustrates the OECD Learning Compass 2030, which includes seven elements: core foundations, transformative competencies, student agency/co-agency, knowledge, skills, attitudes and values, and the anticipation-action-reflection cycle.

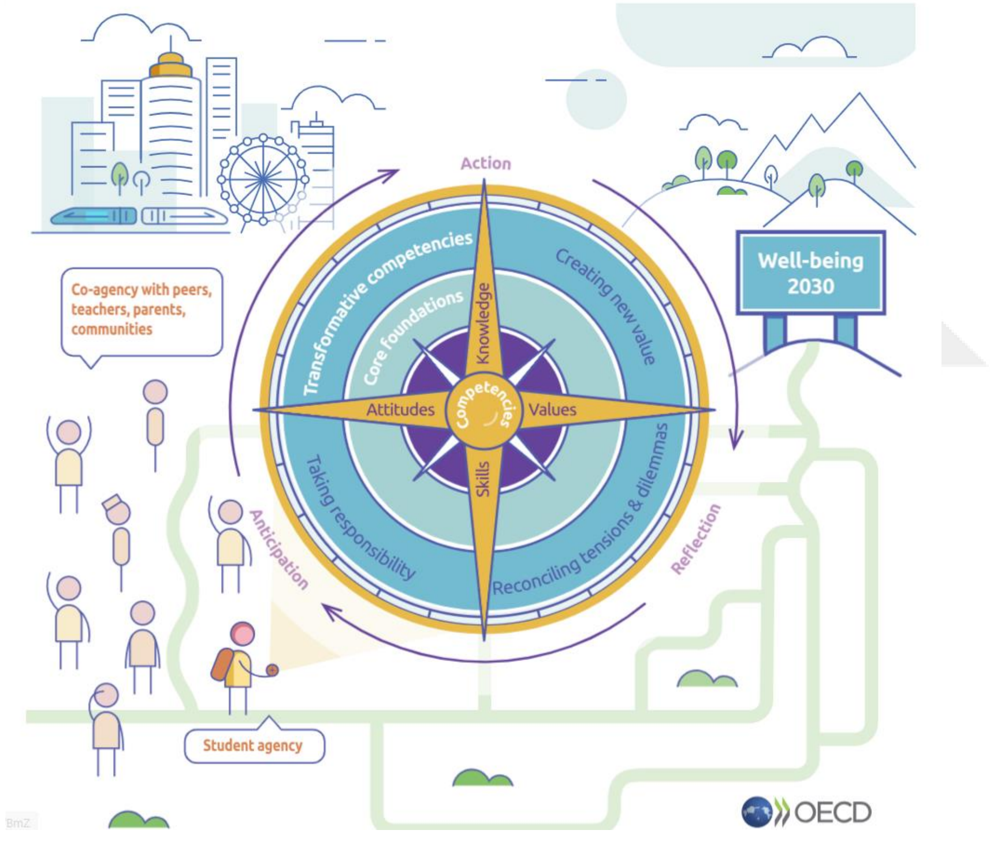



**Figure 1.** *The OECD Learning Compass 2030.* Reprinted from OECD Learning Compass 2030, by OECD, n.d., OECD. Copyright OECD. In the public domain.

The OECD Learning Compass 2030 which is rather than being a passive assessment or curriculum framework, it purposes to enrich the intrinsic value of learning in a broader perspective and to demonstrate that learning has significant value beyond school. In this sense, it provides a guiding conceptual framework for achieving individual and collective well-being by supporting the broader and longer-term goals of education (OECD, 2019b; TEDMEM, 2022). The OECD Learning Compass 2030 defines transformative competencies based on the OECD key competencies identified in the DeSeCo project. The three transformative competencies (OECD, 2019b) include 'Creating New Value', which is rooted in adaptability, creativity, curiosity and open-mindedness and enables individuals to contribute to economic and societal progress. The second competency, 'Reconciling Conflicts and Dilemmas', involves navigating complex and often conflicting perspectives to find balanced and constructive solutions. Finally, 'taking responsibility' is seen as fundamental to the other two competencies, emphasizing accountability and ethical decision-making in both personal and societal contexts. The second phase of the OECD Future of Education and Skills 2030 project shifted the focus from ‘learning for 2030’ to ‘teaching for 2030’. Thereby, they declared that from 2019 onwards, the focus of Education 2030 has been on two important issues in education including teacher competences/profiles and curriculum implementation. In this context, the OECD indicated that the Teaching Compass for 2030 has already under construction, as teachers are key components of effective curriculum implementation. Additionally, the Education 2030 initiative aims to design globally applicable, future-oriented curricula, providing a strong foundation for preparing students to meet future challenges. As part of this effort, various subject-specific curriculum analyses have been conducted to establish principles for competency-based curriculum design (OECD, 2020b).

In line with these developments, this study focusses on examining the degree of alignment and identify the challenges between the intended and implemented middle school subject-specific curricula in terms of developing compound competencies. These competencies, recognized as context-specific competencies for 2030 (OECD, 2019c), and they also form the basis of transformative competencies which can be transferred to various contexts. By examining the consistency between curriculum design and its practical application, this study contributes to the broader discussion on effective curriculum implementation within the framework of Education 2030. However, neither curriculum design nor its implementation occurs in isolation; it is embedded within a broader system that encompasses individual, institutional, or societal factors (OECD, 2020b). Schools function within a dynamic ecosystem in which teachers, students, policymakers, and communities interact and influence both the intended and implemented learning experiences. Bronfenbrenner's Ecological Systems Theory (1979) provides a valuable framework for understanding how various systems influence human development. By integrating this perspective into education, this study intends to emerge the role of multiple interdependent factors in shaping the effectiveness of competency-based curricula for 2030.

### 2.3.2. Bronfenbrenner's Ecological Systems Approach

Humans are cultural beings with biological, psychological, and social dimensions. They not only shape their environment through their behaviors but are also influenced by the environmental systems they are part of (Ashman & Hull, 1999, p. 15). Building on this perspective, it can be argued that individuals' competency development may also be shaped by their surrounding environments. The Ecological Systems Approach, which examines the dynamic interaction between individuals and their environment, provides a crucial framework for understanding human development in developmental psychology (Bronfenbrenner, 1979). Ecology, derived from the Greek words oikos (house, environment) and logos (knowledge), refers to the study of how living organisms depend on their surroundings within an ecological system. Bronfenbrenner (1979) explored the relationship between humans and their environment, emphasizing this interdependence in his seminal work, The Ecology of Human Development, (Härkönen, 2007). From the outset, it becomes clear that Bronfenbrenner's ecological systems theory is not solely an educational or pedagogical framework, nor is it primarily focused on care, teaching, learning, or cognitive development (Härkönen, 2007). Instead, it is fundamentally a theory of human development, outlining how individuals socialize and integrate into society. At the same time, this theory provides valuable insights into education and its associated challenges, offering a broader perspective on the interaction between individuals and their environment (Härkönen, 2007). It is notable that, the term "systems" refers to a structured framework of interconnected components and should not be confused with "systematic," which implies a methodical approach. The explorations of Bronfenbrenner (1989) on how individuals evolve into fully competent members of society, made it a fundamental theory in developmental psychology. It is also referred to as the theory of socialization (Härkönen, 2007). This theory conceptualizes human development as a process influenced by multiple environmental layers, each exerting a unique impact on an individual's growth. These layers as the microsystem, mesosystem, exosystem, macrosystem, and chronosystem, highlight the complex and multidirectional interactions between individuals and their surroundings. Layers of Bronfenbrenner's Ecological Systems Theory is described below:

***Microsystem.*** The microsystem represents the closest and most direct environment in which an individual interacts, shaping their development through face-to-face experiences and relationships (Bronfenbrenner, 1979). It consists of specific physical, social, and symbolic settings that influence daily activities, social roles, and interpersonal connections. Key components of this system include family, peer groups, and school, where direct interactions play a crucial role in personal growth (Bronfenbrenner, 1989; Härkönen, 2007).

***Mesosystem.*** The mesosystem refers to the interactions and connections between different microsystems that an individual is part of. It focuses on how different aspects of a person's life influence one another, creating a dynamic interplay between various environments (Bronfenbrenner, 1979). It is described as a linking structure that connects distinct microsystems in which can be exemplified as the communication between home and school, parents and teachers or the influence of peer relationships on family life illustrates this system in action (Härkönen, 2007).

***Exosystem.*** The exosystem includes external factors that indirectly influence an individual's development, even though the person may not be actively involved in these settings. These external forces shape the individual's experiences by affecting people or environments closely connected to them (Bronfenbrenner, 1989). Examples of this system include economic conditions, governmental policies, transportation infrastructure, and media influences, all of which exert indirect yet meaningful effects on personal development (Bronfenbrenner, 1976, Härkönen, 2007).

***Macrosystem.*** The macrosystem encompasses the wider social, cultural, and institutional framework that influences an individual’s life. It includes societal values, traditions, resources, and overall living conditions, which collectively shape behaviors and opportunities. Cultural norms, political ideologies, and economic systems are key elements of this system, determining the broader context in which individuals develop (Bronfenbrenner, 1989).

***Chronosystem.*** The chronosystem, introduced by Bronfenbrenner (1989) as the most comprehensive and time-related system, focuses on how life events, transitions, and historical changes shape development over time. It captures the evolving nature of personal and societal influences throughout an individual’s lifespan. Significant examples include parental divorce, economic recessions, wars, technological advancements, and major societal transformations, all of which affect long-term adaptation and growth.

Building on Bronfenbrenner's ecological systems theory, which explains human development in terms of interconnected environmental layers, this study extends its application to the educational ecosystem. Rather than focusing on individual development, it examines the roles and interactions of different actors within the education ecosystem, including those involved in the intended curriculum and the implemented curriculum. It also considers the wider influences of other stakeholders who shape the educational experience at different systemic levels. While Bronfenbrenner’s model primarily focuses on individual development within these nested systems, the OECD’s Education 2030 Ecosystem Approach adapts this perspective to explore the complex interactions between key educational stakeholders, such as students, teachers, families, policymakers, and institutions. Such an approach allows for a holistic understanding of how educational inputs and processes are shaped not only by immediate actors but also by broader socio-political and cultural dynamics. This systems thinking lens is particularly valuable in analyzing curriculum coherence and alignment across policy and practice. By integrating this adapted framework, the study aims to examine how various systemic influences across different levels of the ecosystem while influencing competency development among middle school education. In this context, the adapted OECD framework, which provides a structured approach to understanding the multidimensional interactions within the education system, is presented below.

### 2.3.3. The OECD Education 2030 Ecosystem Approach

Education plays a central role in shaping individuals within their social and cultural contexts, as curriculum development is deeply rooted in social and psychological foundations (Ornstein & Hunkins, 2004). Throughout modern history, curriculum has functioned as a governing tool, with different countries adopting varied approaches and structures (Karseth, Bernotaite & Sundby, 2024). Beyond its instructional purpose, curricula have often been designed to foster national identity and instill ideological perspectives, shaping future citizens in alignment with societal values and priorities (Tröhler, 2020). Such ideological and identity-forming functions make curriculum a powerful yet contested space, where political, historical, and cultural influences converge. It is worth noting that this issue has also drawn the attention of the OECD, which has launched initiatives to address the evolving demands of education.

As part of *The Future of Education and Skills: Education 2030* initiative, the OECD launched a project designed to establish a shared understanding of the knowledge, skills, attitudes, and values essential for shaping the future leading up to 2030 (OECD, 2019a; 2019b; 2019c). This initiative is particularly timely, given the rapid transformations in society due to globalization, digitalization, climate change, and shifting labor markets. Through this initiative, the OECD seeks to synthesize the most relevant research, drawing on a diverse range of internationally comparative data and country-specific case studies to analyze current curriculum approaches, identify common challenges, highlight effective strategies, and extract key lessons from various national experiences (OECD, 2020a). In line with that, the OECD emphasizes the importance of adaptability and forward-thinking in curriculum design to meet both present needs and future uncertainties.

Building on this, the OECD has conducted curriculum analyses that synthesize these insights within a comprehensive framework, providing a structured approach to understanding and improving curriculum development globally (OECD, 2020b). As part of this broader effort, the OECD E2030 curriculum analysis expands upon existing models by incorporating an ecological systems perspective into curriculum analysis (in Figure 2).

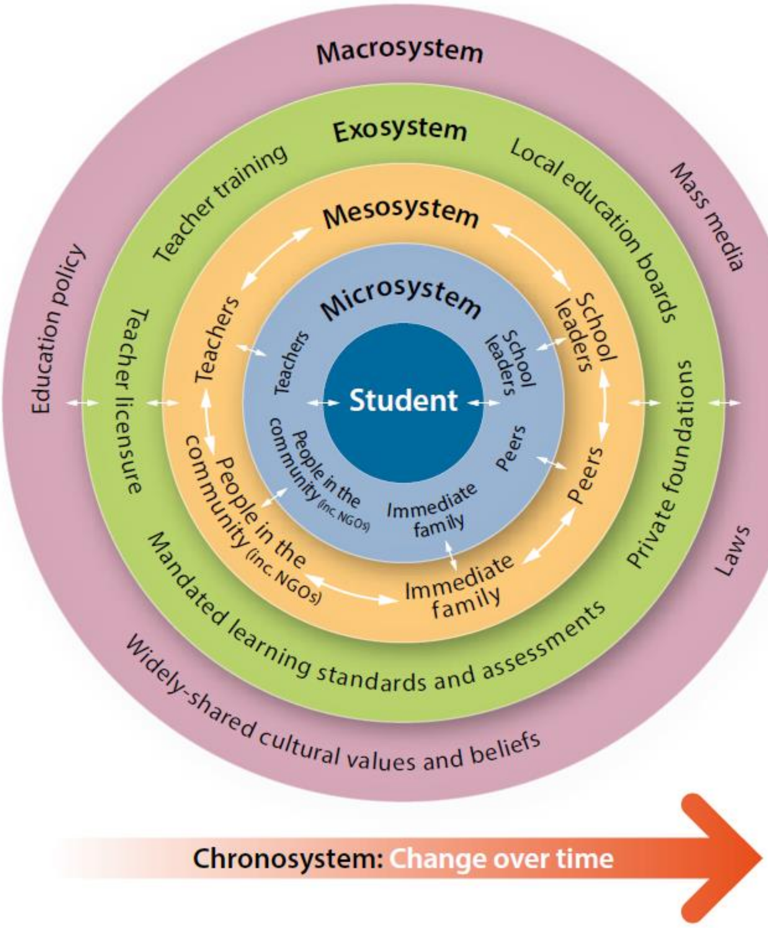



**Figure 2.** *The Education 2030 Ecosystem Approach.* Adapted from Bronfenbrenner (1979), developed by the Education 2030 team (OECD, 2020b). This model is reprinted for non-commercial academic purposes.

In Figure 2, the framework is aligned with Bronfenbrenner's (1976; 1979; 1989) ecological systems theory, which emphasizes the multifaceted and dynamic nature of human development. The E2030 Ecosystem Framework conceptualizes an individual's environment as a network of interconnected systems that exert both direct and indirect influences on lifelong development. It also highlights the multi-directional interactions in curriculum design, involving schools, teachers, students, families, local communities, and society at large (OECD, 2020b).

Building on this perspective, the OECD's Education 2030 Ecosystem Approach refines Bronfenbrenner's model by contextualizing its systemic levels within the field of education. Each level, including the microsystem, mesosystem, exosystem, macrosystem and chronosystem, plays a distinct role in curriculum analysis. The following sections explore these systems from the OECD's perspective, illustrating how different actors and structures interact to influence educational processes and outcomes.

***Microsystem.*** The microsystem (as adopted and described in OECD, 2020b) represents the environment closest to the student and includes direct interactions with key actors in his or her immediate environment, such as family, teachers, peers and school leaders. In the context of curriculum implementation, it is at this level that students engage with learning activities, teaching materials and assessments. The educational experiences of students are shaped by a variety of factors, including classroom interactions with teachers and peers, as well as out-of-school and community-based learning opportunities. The home environment and family involvement of students also play a role in influencing their engagement with the curriculum (OECD, 2020b).

***Mesosystem.*** The mesosystem (as adopted and described in OECD, 2020b) encompasses the relationships and interactions between different elements of the microsystem. Within a school setting, this involves collaboration among teachers across various classrooms, the role of school leaders in fostering connections between teachers, families, and the broader school community, as well as the engagement between teachers and families, which can directly impact a student's learning environment. These interactions enable teachers to develop a deeper understanding of the curriculum and its significance. The way teachers implement curriculum is largely influenced by the social environment in which they operate. These contextual factors shape their instructional strategies and relationships with students, ultimately affecting learning outcomes. When teachers feel supported and have a clear sense of purpose, students tend to engage more effectively and experience a stronger sense of security within the classroom. Additionally, the way curriculum is implemented in classrooms is shaped by how school leaders communicate its purpose and importance, along with their efforts to create collaborative spaces where teachers can exchange ideas and strategies. Establishing strong connections between home and school further strengthens the learning process. When teachers and school leaders encourage open, culturally responsive two-way communication with families, students develop a greater sense of relevance toward their education and benefit from parental support in achieving academic goal (OECD, 2020b).

***Exosystem.*** The exosystem (as adopted and described in OECD, 2020b) includes elements that shape the microsystem, yet it does not have a direct impact on students. For instance, curriculum design is influenced by various levels of administration, including schools, municipalities, states/provinces, and national authorities, depending on the degree of autonomy granted to these entities. Each level of governance is part of the exosystem as they regulate different aspects of education that determine teaching guidelines, training, schedules, and instructional materials, all of which indirectly affect students. Examples of such influences include mandated learning standards, assessments, teacher licensing and evaluation requirements, recognition programs, and financial support, distributed through budget allocations and grants for staffing, resources, and professional development. Additionally, external organizations, such as universities and non-governmental organizations, belong to the exosystem since they indirectly shape how teachers engage with curriculum by offering teacher training, instructional materials, grants, and technical assistance for its implementation. Beyond the school environment, the exosystem also extends to external conditions, such as a parent losing their job, which could impact whether a student receives parental support for homework or has an appropriate place to study at home (OECD, 2020b).

***Macrosystem.*** The macrosystem (as adopted and described in OECD, 2020b), represents the external layer that encompasses the social and cultural ideologies and beliefs that shape a student's educational environment. This layer includes views on education's purpose and goals, which vary across countries and can be controversial. These beliefs play a crucial role in determining both what is taught and how it is delivered within education systems. The influence of the macro-system extends through mass and social media, reinforcing or challenging these educational ideologies. Several fundamental questions arise about the role of education. Some argue that schools should focus on preparing students for university entrance exams and ensuring that they meet the academic standards required for higher education. Others believe that education should address the holistic development of students, promoting their cognitive, social, emotional, and physical well-being. There is also debate about whether schools should serve as socializing institutions that promote national identity by fostering shared cultural and historical values. In addition, some perspectives emphasize that schools should equip students with the necessary skills to succeed in a knowledge-based economy, ensuring that they are prepared for the demands of the modern labor market. These overarching beliefs about education shape policy and practice in both direct and subtle ways. They are embedded in policy documents, curriculum choices made by teachers and standardized assessments, and ultimately influence how education is structured and delivered at all levels (OECD, 2020b).

***Chronosystem.*** The chronosystem (as adopted and described in OECD, 2020b) refers to specific points in time during the implementation process when designated activities occur. Examples of these moments include the period before a new curriculum is officially approved or mandated, the first year following its adoption, three years after its implementation, and a decade after its initial introduction. Moreover, the chronosystem encompasses how relationships and interactions within or between systems evolve over time. For instance, student-teacher relationships may develop over the years due to personal life events, such as transitioning to a new grade or school, or in response to broader local, national, or global occurrences, such as the COVID-19 pandemic (OECD, 2020b).

In summary, with this adapted version of Bronfenbrenner's ecological systems approach, the OECD's approach (2020b) suggests that a comprehensive curriculum analysis should not be limited to examining the content of intended (written) curricula. Instead, it suggests taking into account the multiple interacting factors that influence student outcomes and the experiences that shape these outcomes. As indicated by OECD (2020b), education systems are influenced by the multifaceted layers of society, and the role of curriculum expands to encompass competencies required for the 21st century. These competencies are not just about acquiring knowledge but also about preparing students for complex social, technological, and economic challenges. Therefore, curriculum design and implementation today tend to strike a balance between preserving foundational knowledge and embracing new skills essential for future challenges, aligning with competence-based education, which prioritizes the development of adaptive and transferable skills for lifelong learning (Marope et al., 2017; OECD, 2020b).

In this regard, this study adopts a holistic perspective and utilizes the OECD E2030 Ecosystem Approach to examine the factors promoting or hindering the development of compound competencies in middle school education. Building on this, it also integrates the perspectives and experiences of teachers to identify the key challenges and opportunities that shape competency-based learning in an interconnected world.

### 2.3.4. Competence-Based Approach

The competency-based approach gained prominence in the early 21st century as part of discussions on educational modernization and reform. Rather than solely focusing on the transmission of knowledge, which quickly becomes outdated, this approach emphasizes the development of core competencies, enabling individuals to continuously acquire and apply knowledge independently (Makulova., Alimzhanova, Bekturganova, Umirzakova, Makulova, & Karymbayeva, 2015). This shift towards competency-based learning aligns with global educational trends, where the focus has increasingly moved towards equipping learners with adaptable skills for the future. In this context, the competence-based approach has gained significant attention, largely influenced by the OECD's DeSeCo (Definition and Selection of Competencies) project, conducted between 1997 and 2003. Driven by the need to prepare students for the complexities of the 21st century, the DeSeCo project set out to redefine educational priorities by identifying key competencies essential for success in modern society. Building on this, within the E2030 project, the OECD Learning Compass 2030 defined transformative competencies needed to thrive in a rapidly changing world. Since this first attempt, these initiatives have influenced educational priorities worldwide by prioritizing competence-based education and highlighting the importance of preparing young people not only as knowledgeable individuals but also as adaptive workers and engaged citizens. This shift has significantly impacted educational policies globally, leading to a growing focus on competence-based approach in education (Miettinen, 2022).

During this period, several countries adopted competence-based approaches to address evolving educational needs. Belgium in 1994 and 2001, Luxembourg in 2001, Japan in 1998, and Quebec in Canada in 2001 revised their curricula to integrate competence-based frameworks. In Latin America, UNESCO also promoted similar reforms, reflecting a global shift towards competence-based education (Anderson-Levitt, 2017). Similarly, in Türkiye, these initiatives were prioritized with the establishment of the Türkiye Qualifications Framework (TQF) in 2015, which was further referenced to European Qualifications Framework (EQF) in 2017. This reference of TQF to EQF provided solid ground to confirm that Türkiye's education, training, and qualification systems are aligned with the principles and standards at the European level. Subsequently, in 2018, competence-based elements were incorporated into the national curricula under the framework of key competencies. Since The TQF aims to develop individuals with integrated knowledge, skills, and attitudes essential for national and international contexts, eight key competencies were outlined in national curricula, including 1) communication in the mother tongue, 2) communication in foreign languages, 3) mathematical competence and basic competencies in science/technology, 4) digital competence, 5) learning to learn, 6) social and civic competencies, 7) initiative-taking and entrepreneurship, and 8) cultural awareness and expression (MoNE, 2018). Regarding that, this aims to develop individuals with integrated knowledge, skills, and attitudes essential for national and international contexts also aligns with the OECD's framework for defining competencies, which emphasizes the interrelation of knowledge, practical skills, and attitudes.

There are definitions for the terms of *competency* and *competence.* Even though these two terms are often used interchangeably, there is a slight difference between them, and in the scope of this study, it is better to distinguish between the two to provide a clearer understanding of performance and development. *Competency* refers to the underlying attributes that enable individuals to navigate complex and evolving situations. It encompasses the integration of knowledge, skills, and attitudes that empower people to adapt and respond effectively to various challenges. Competency is not merely about having information or technical skills; it is about how individuals bring together their understanding, abilities, and perspectives to face real-world situations. It reflects the potential and capability of a person, highlighting their adaptability, problem-solving approach, and willingness to grow (Dubois, 1998; Gonczi 1999; OECD, 2005; Teodorescu & Binder, 2004; Torr, 2008). On the other hand, c*ompetence* refers to more about performance and outcomes. Therefore, it represents the ability to achieve valuable results efficiently and effectively which directly contributes to organizational goals (Gilbert, 1996; Teodorescu & Binder, 2004). Competence could be measured by the impact and efficiency of the actions taken. It evaluates whether individuals meet or exceed predefined objectives, focusing on the quality of what is accomplished. Unlike competency, which explores how tasks are approached, competence assesses the end result, whether the goals were met, how efficiently resources were used, and the overall value created (Le Deist & Winterton 2005; Gilbert, 1996; Teodorescu & Binder, 2004).

Based on this distinction, this study is grounded in the terms *competency* and *competence-based approach* as part of global reforms in K-12 education, particularly in middle school or lower secondary grades. Therefore, the notion of competence as an end product in vocational and technical high schools or in higher education, which is associated with job qualifications, is not the focus of this study. Instead, this study embraces competencies as an integral part of human development through the integration of knowledge, skills, and attitudes. It also adopts competence-based education as an approach that enables students to develop specific competencies through meaningful and relevant learning experiences, aligned with learner-centered approach (Schweisfurth, 2013; OECD, 2005; 2019).

Within growing international attempts to redefine educational paradigms in response to 21st-century demands, UNESCO International Bureau of Education (IBE) has clarified the defining and guiding the adoption of competence-based approaches in education. UNESCO IBE asserts that this shift towards competence-based approach in education is driven by the need to ensure "development-relevance" of education systems in the context of Industry 4.0 and rapidly changing 21st-century environments (Marope et al., 2017). In this respect, competence-based approach in education is defined as a framework that equips learners with the ability to "interactively mobilize and ethically apply information, data, knowledge, skills, values, attitudes, and technology", allowing them to effectively navigate and engage in diverse 21st-century contexts (Marope et al., 2017). By emphasizing the equipping of learners with specific skills and competencies, competence-based education has its roots in active learning and learner-centered approaches, grounded in the principles of constructivism, which align with applying knowledge in real-world contexts (Anderson-Levitt, 2017; Schweisfurth, 2013; Catacutan, Kilag, Diano, Tiongzon, Malbas, & Abendan, 2023).

As Marope et al. (2017) distinguished the attributes of competence-based education in *Future Competences and the Future of Curriculum*, competence-based curricula are grounded in contextual understanding, ensuring that learning is relevant to students' current and future contexts. It prioritizes learner-centeredness by structuring educational environments that motivate active acquisition and application of competencies. It has an emphasis on the evident use of competence, where the focus is on students’ ability to demonstrate and apply their knowledge. These curricula also highlight outcomes or impact, aiming to equip learners with skills that yield meaningful real-world results. A key feature is trans-disciplinarity, fostering connections across various disciplines to enhance comprehensive understanding. Moreover, careful consideration of curriculum structure and sequence is essential, as progression is based on competence acquisition rather than subject difficulty. It also requires a high mastery of content, ensuring that effective application across disciplines is supported by a deep understanding of the subject matter (Marope et al., 2017).

Building upon this foundation, the OECD has taken a pivotal role in defining the competencies necessary for education in the 21st century. Through the E2030 project, the OECD embarked on an international comparative analysis of curricula to develop a comprehensive knowledge base that supported evidence-based and systematic curriculum design and development (OECD, 2019a; 2019b; 2019c). Among these in-depth analyses, one of the significant efforts had been the Curriculum Content Mapping (CCM) exercise. This analysis involved countries examining how various competencies were integrated into their curricula, covering areas including transformative competencies and foundational literacies for 2030, compound competencies for 2030, and skills, attitudes, and values for 2030. By mapping out the learning areas of countries against a defined set of competencies, the OECD aimed to foster an education system that was not only knowledge-rich but also equipped to nurture essential skills and attitudes for the future (OECD, 2020a). In light of these comprehensive analyses and the competence-based education insights from international education initiatives, this study takes compound competencies into consideration to further examine their extent within middle school education in Türkiye.

### 2.3.5. Compound Competencies

As described in earlier sections, the OECD Learning Framework 2030 (2019a) suggests that competencies are grounded in core foundations, comprising essential knowledge, skills, attitudes, and values that enable students to navigate complex and uncertain futures. In this view, competency development is seen as a continuous, adaptive process where learners leverage these fundamentals to meet evolving demands (OECD, 2019c). In this respect, the Learning Framework 2030 emphasizes transformative competencies as key to empowering students to shape a sustainable future, thereby addressing the challenges of the 21st century. The OECD Learning Compass 2030 identifies three transformative competencies crucial for this goal: creating new value, reconciling tensions and dilemmas, and taking responsibility. These competencies also lay the groundwork for developing context-specific skills necessary for 2030, including compound competencies (OECD, 2019a; 2019b; 2019c).

The OECD E2030 Curriculum Content Mapping (CCM) exercise revealed compound competencies for 2030 and defined them as "competencies that are inclusive of knowledge, skills, attitudes, and values essential for individual, social, and environmental well-being in 2030" (OECD, 2020a, p. 22; 2024). In line with this, these context-specific skills include computational thinking, financial literacy, entrepreneurship, media literacy, global competency, and literacy for sustainable development. These compound competencies are multi-dimensional, requiring an integration of cognitive, emotional, and social capabilities to prepare students for the complex challenges of the future.

#### 2.3.5.1. Global Competency

Global Competency is defined as the ability to understand and act on global issues while engaging with people from different cultural backgrounds in a respectful, effective, and meaningful way (Boix Mansilla & Jackson, 2011). It involves the capacity to investigate the world, understand and appreciate cultural perspectives, communicate ideas clearly, and take responsible action to improve global conditions (Sälzer & Roczen, 2018). According to Reimers (2009), global competency encompasses three interdependent dimensions: a positive disposition towards cultural differences, including empathy and respect for diverse perspectives; linguistic and communication skills that enable effective intercultural dialogue; and deep knowledge of global systems and issues, along with the ability to think critically and creatively about complex global challenges. In addition to these broad definitions, the OECD (2020a, p.23) defines global competency as "the capacity to examine local, global, and intercultural issues, to understand and appreciate the perspectives and worldviews of others, to engage in open, appropriate, and effective interactions with people from different cultures, and to act for collective well-being." This comprehensive perspective highlights the multidimensional nature of global competency, emphasizing intercultural understanding, effective communication, and responsible global citizenship.

To effectively cultivate global competency, the literature emphasizes integrative and experiential learning approaches. Project-based learning engages students in real-world global issues through collaborative projects that require research, problem-solving, and cross-cultural communication (Reimers, 2009). Cross-cultural interactions provide opportunities for students to engage with peers from diverse cultural backgrounds through exchange programs, virtual collaborations, or multicultural group activities, fostering open-mindedness and cultural understanding (Sälzer & Roczen, 2018). Interdisciplinary learning integrates global topics across subjects such as history, geography, economics, and environmental studies to provide a comprehensive understanding of global systems (Wiseman, 2016). Additionally, critical thinking and reflective dialogue encourage students to analyze global issues from multiple perspectives and engage in discussions that promote critical thinking and empathy (Boix Mansilla & Jackson, 2011). Experiential education, including study-abroad programs, virtual exchanges, and community engagement projects, allows students to gain first-hand cultural experiences and global awareness, enhancing their ability to navigate complex global challenges (Reimers, 2009).

#### 2.3.5.2. Media Literacy

Media Literacy is defined as the ability to access, analyze, evaluate, create, and act using various forms of media (Hobbs, 2009). It involves critical thinking and reflective skills to interpret media messages, understand the constructed nature of media content, and recognize the influence of media on individual and societal perceptions (Wallis & Buckingham, 2019). Media literacy also encompasses the ability to produce content, enabling individuals to express themselves creatively and participate in the digital world as informed and active citizens (Hobbs, 2004; Stein & Prewett, 2009). According to Hobbs (2009), media literacy integrates theoretical and critical frameworks from constructivist learning theory, media studies, and cultural studies, emphasizing both protectionist and empowerment approaches. This includes teaching students to critically analyze media representations, recognize bias, and understand media's role in shaping public perception and cultural norms (Hobbs, 2004).

Wallis and Buckingham (2019) further explain that media literacy enables individuals to decode and challenge the underlying power dynamics in media narratives, fostering critical citizenship and democratic engagement. Similarly to these comprehensive definitions, the OECD (2020a, p. 23) defines media literacy as "the ability to think critically and analyze what one reads in the media, including social media and news sites. This includes recognizing 'fake news' or the ability to distinguish what is true from what is not as well as to be able to assess, evaluate, and reflect on the information that is given in order to make informed and ethical judgments about it" (OECD, 2020a). Considering its emphasis on critical thinking and ethical reasoning, this definition has been adopted in this study as a guiding framework for understanding media literacy in the digital age. To foster the development of media literacy, research suggests contextualized, interactive, and reflective learning experiences. According to Hobbs (2009), media literacy education enhances critical thinking by engaging students with real-world media issues, encouraging them to analyze and create media messages in authentic contexts that reveal the influence of media on society and shape their own perspectives. In accordance with that, interdisciplinary integration is essential for connecting media literacy with other academic subjects, such as social studies, language arts, and science.

Stein and Prewett (2009) emphasize that embedding media literacy within diverse content areas allows students to explore the cultural, political, and ethical dimensions of media, deepening their understanding of complex social issues while fostering a holistic perspective that enables them to make connections across subjects. In addition, experiential learning also fosters media literacy by involving students in hands-on media production and collaborative projects. Through activities such as digital storytelling, video creation, and social media campaigns, students enhance their technical skills and learn to express themselves creatively and responsibly in digital spaces, promoting participatory citizenship and empowering them to contribute meaningfully to the digital world (Hobbs, 2004).

Critical thinking and reflective dialogue are also integral components of media literacy education. Korona and Hutchison (2023) highlight the importance of encouraging students to critically evaluate media messages, identify biases, and reflect on their own media consumption habits, fostering open discussions that promote ethical reasoning and intercultural understanding. Overall, learner-centered approaches that prioritize student voice and choice increase engagement by allowing students to explore topics relevant to their lives and interests, leading to a more personalized and meaningful learning experience (Hobbs, 2009).

#### 2.3.5.3. Literacy for Sustainable Development

Literacy for Sustainable Development is defined as the knowledge, skills, attitudes, and values required to foster sustainable development. It involves understanding the complex interactions between social, economic, and environmental systems, recognizing diverse perspectives that shape sustainable development, and participating in actions that promote sustainable living (Hanemann, 2015). This multidimensional literacy equips individuals with the capacity to critically analyze global sustainability challenges, make informed decisions, and contribute to collective well-being (Dere & Ateş, 2022). According to Lafuente-Lechuga et al. (2020), literacy for sustainable development emphasizes the integration of sustainability across educational content, encouraging students to connect theoretical knowledge with real-world environmental, social, and economic issues. Thereby, it supports critical thinking and problem-solving by enabling learners to understand the systemic nature of sustainability challenges and develop solutions that consider long-term impacts. Su et al. (2023) emphasize the role of education in promoting sustainability by integrating essential themes such as climate change, resource management, and social equity into the curriculum. Thisosters a deeper understanding of sustainability issues and also empowers students to engage in transformative actions that promote sustainable development in real life.

In addition to these broad definitions, the OECD (2020a, p.23) defines literacy for sustainable development as "the knowledge, skills, attitudes, and values needed to promote sustainable development. To be literate in sustainable development requires understanding how social, economic, and environmental systems interact and support life, recognizing and appreciating different perspectives that influence sustainable development, and participating in activities that support more sustainable ways of living". Given its comprehensive and integrative approach, this definition has been adopted in this study as a foundational framework for understanding literacy for sustainable development. This conceptualization of literacy for sustainable development is closely aligned with the 17 Sustainable Development Goals (SDGs) established by the United Nations. These goals provide a comprehensive framework for addressing global challenges, including poverty eradication, zero hunger, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry and innovation, reduced inequalities, sustainable cities, responsible consumption and production, climate action, life below water, life on land, peace and justice, and partnerships for the goals (UN, 2015). By fostering an understanding of the 17 SDGs, literacy for sustainable development empowers learners to contribute to achieving these global objectives through informed decision-making, ethical reasoning, and transformative actions. This aligns with the vision of creating a more equitable, inclusive, and sustainable world, equipping individuals to participate as responsible global citizens who are capable of addressing complex sustainability challenges.

Research indicates effective educational strategies to foster the development of literacy for sustainable development. The use of interdisciplinary learning approaches provides connections for sustainability with different subjects and encourages students to explore complex global issues from multiple perspectives (Aytar & Özsevgeç, 2019). Suaco (2024) suggests that hands-on projects and community-based activities allow students to apply theoretical knowledge to real-world challenges and encourage active participation (Suaco, 2024). Such instructional approaches not only enhance cognitive engagement but also help students internalize values essential for sustainable living. Embedding sustainability themes into classroom practices fosters a deeper sense of responsibility and agency among learners. By utilizing of critical thinking and reflective dialogue in societal challenges, students engage in analyzing diverse perspectives and questioning assumptions which also fosters ethical decision-making and intercultural understanding (Lafuente-Lechuga et al., 2020). In overall, learner-centered approaches that prioritize student choice and voice enhance engagement and motivation, allowing students to explore sustainability topics relevant to their lives. These strategies promote holistic learning experiences, equipping students with the skills and values necessary for sustainable living and responsible global citizenship (Dere & Ateş, 2022; Lafuente-Lechuga et al., 2020).

#### 2.3.5.4. Financial Literacy

Financial literacy is a fundamental life skill that enables individuals to make informed financial decisions, manage personal finances effectively, and navigate complex financial systems. It encompasses knowledge, skills, confidence, and critical thinking abilities that allow individuals to assess financial products, evaluate risks, and make responsible financial choices (Erner et al., 2016; Kasman et al., 2018). Zhu (2021) highlights the importance of financial literacy, particularly for adolescents, emphasizing its role in fostering responsible financial behaviors and ensuring long-term financial well-being. By equipping students with the ability to budget, save, invest, and manage debt, financial literacy education strengthens their financial independence and resilience against economic challenges (Zhu, 2021).

According to the OECD (2020a, p. 23), "Financial literacy is the ability to apply financial knowledge and skills to real-life situations involving financial issues and decisions. It involves knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts." Financial decisions play a role in every stage of life, from managing allowances and entering the workforce to budgeting, making purchases, saving for future needs, understanding loans and credit, and planning for retirement. Financial literacy equips individuals with the necessary skills to handle these decisions effectively, enhancing both personal financial stability and overall societal well-being by fostering inclusive economic growth and strengthening financial systems (OECD, 2020a).

Building on this definition, financial literacy is not only about understanding financial concepts but also about having the confidence to apply this knowledge in diverse real-life situations (Erner et al., 2016). Kasman et al. (2018) emphasize that financial literacy education helps individuals develop the capacity to plan and manage their financial resources responsibly, contributing to financial security and stability. Effective financial literacy education requires context-based learning, interdisciplinary integration, and problem-solving approaches to enhance students' financial competencies. Research highlights that embedding financial literacy into real-life contexts improves decision-making skills and knowledge retention of students (Arıkan & Çakmak, 2023). Integrating financial concepts into subject areas such as mathematics or social studies strengthens comprehension and application of it (Güvenç, 2017; Tural Sönmez & Topcal, 2022). Barrot et al. (2022) argue that teaching students how to analyze financial information, evaluate risks, and understand the long-term consequences of financial choices fosters sustainable and responsible financial behaviors. In this regard, financial literacy serves as a crucial tool for both individual well-being and broader economic resilience, empowering individuals to make sound financial decisions throughout their lives.

#### 2.3.5.5. Computational Thinking Skills

Computational thinking skills are recognized as fundamental problem-solving skills that integrates logical reasoning, pattern recognition, abstraction, decomposition, and algorithmic thinking to develop efficient solutions across various disciplines (Wing, 2006; Üzümcü & Bay, 2018). It enables individuals to break down complex problems, analyze their structures, and formulate step-by-step procedures that can be executed by both humans and computers (Lu & Fletcher, 2009). According to the OECD (2020a, p. 23), "Computational thinking involves formulating problems and developing solutions that can be carried out by computer-based technologies. Programming and coding involve the development of knowledge, understanding, and skills regarding the language, patterns, processes, and systems needed to instruct/direct devices such as computers and robots." Moreover, it nurtures a mindset that is systematic, iterative, and oriented toward optimization in problem-solving. Computational thinking is not merely about programming but rather involves recognizing computational aspects in the surrounding world and applying computational tools and techniques to analyze, model, and reason about both natural and artificial systems and processes (Lamprou & Repenning, 2018). In the context of K-12 education, Barr and Stephenson (2011) emphasize that *"*Computational thinking is an approach to solving problems in a way that can be implemented with a computer… It is a problem-solving methodology that can be automated, transferred, and applied across subjects*"* (Lamprou & Repenning, 2018).

Computational thinking is widely regarded as a 21st-century skill, essential for navigating an increasingly digital world (Lamprou & Repenning, 2018). It is not limited to computer science; rather, it fosters cross-disciplinary applications in mathematics, social studies, and language education (Settle et al., 2012). Research suggests that it contributes to problem-solving abilities, enhances critical thinking, and supports decision-making in various real-life scenarios (Düzalan, 2022). From an educational perspective, it is increasingly integrated into curricula worldwide, emphasizing hands-on activities such as coding, algorithm development, and simulations to improve students' cognitive flexibility (Güven & Gülbahar, 2020). However, teaching computational thinking effectively requires structured pedagogical approaches, including interactive tools, gamification, and interdisciplinary learning strategies to support student engagement and retention (Jacob & Warschauer, 2018). As computational technologies continue to evolve, computational thinking serves as a core competency that empowers individuals to analyze data, optimize processes, and develop innovative solutions in diverse domains (Wolz et al., 2011).

### 2.3.5.6. Entrepreneurship

Entrepreneurship is broadly defined as the ability to recognize opportunities, take initiative, and transform ideas into value-generating activities, often under conditions of uncertainty (Heilbrunn, 2008). Entrepreneurs are individuals who identify needs, develop innovative solutions, and take calculated risks to bring their visions to life, whether through starting businesses, creating social enterprises, or driving organizational change (Jónsdóttir & Macdonald, 2019). As defined by the OECD (OECD, 2020a, p. 24), "Entrepreneurship is the ability to add value. It involves evaluating situations, organizing resources, and creating and developing opportunities for adding value. This value might be a product, service, idea, or a solution to address an issue or satisfy a need." This definition underscores the broader applicability of entrepreneurship beyond business creation, emphasizing its role in problem-solving and innovation across various domains (OECD, 2020a).

Entrepreneurship involves a diverse set of competencies, including creativity, critical thinking, problem-solving, risk-taking, teamwork, and effective communication, which enable individuals to navigate complex economic and social environments (Deveci, 2018). These competencies extend beyond business creation to career readiness and adaptability, positioning entrepreneurship as a key 21st-century skill (Rodriguez & Lieber, 2020). It is increasingly recognized as a driver of economic growth and employment, particularly among youth, as it fosters innovation and self-sufficiency (Fute et al., 2024). Research suggests that early exposure to entrepreneurial education enhances students' ability to identify opportunities, develop proactive mindsets, and build resilience in facing challenges (Rina et al., 2019).

Entrepreneurship is also increasingly understood as a dynamic and iterative process that involves problem-solving, experimentation, and adaptation, rather than solely business creation (Fisher, 2012; Sarasvathy, 2001). Ries indicates that (2011), the lean start-up methodology, which emphasizes continuous experimentation, learning, and refinement, has become widely used in entrepreneurial practice to develop sustainable business models. Moreover, entrepreneurial learning is also linked to STEM fields, as it promotes creativity and problem-solving in technology-driven industries (Meral & Yalçın, 2022). From an educational perspective, school-based financial education programs can enhance children's financial capability by fostering skills such as decision-making, problem-solving, and planning for the future (Sherraden, Johnson, Guo, & Elliott, 2011). As a problem-driven approach, project-based learning encourages students to actively engage in learning by addressing real-world challenges, fostering both non-cognitive skills and social-emotional learning (Helle et al., 2006). While entrepreneurship education does not always focus solely on business creation, it leverages project-based learning and lean start-up approaches to enhance students' ability to navigate uncertainty and build resilience (Dhliwayo, 2008; Jones & Iredale, 2010; Moberg, 2014). By integrating these pedagogical models, entrepreneurship education fosters an adaptive and innovative mindset, preparing individuals to recognize opportunities, develop creative solutions, and apply their skills across diverse contexts.

Building on the literature, global competency, media literacy, literacy for sustainable development, computational thinking, financial literacy, and entrepreneurship emerge as essential context-specific skills for the future. With this theoretical foundation established for the future of curriculum and a competence-based approach, the following section outlines the summary of the literature review for this study.

### 2.4. Summary of the Literature Review

In response to growing global challenges driven by rapid social, technological, and economic change, the concept of curriculum has undergone significant transformation. Traditionally, curricula were understood as fixed, content-heavy structures primarily focused on knowledge transmission (Ornstein & Hunkins, 2004). However, the 21st century has seen a shift toward more dynamic, learner-centered approaches that emphasize the integration of knowledge with skills, values, and attitudes needed to thrive in uncertain futures (Kress, 2000; Williamson, 2013). Curriculum is now viewed not only as a written plan but also as a multidimensional construct that encompasses what is intended, implemented, and attained across educational systems (OECD, 2020b; van den Akker, 2003). This evolving perspective highlights the role of curriculum in equipping learners with the competencies required for personal fulfillment, active citizenship, and sustainable development (Marope et al., 2017; OECD, 2020b).

In this context, the OECD’s Future of Education and Skills 2030 project serves as a critical framework for guiding curriculum design and development. Initiated in 2015, the project promotes a future-oriented vision of education by identifying essential competencies and providing a globally relevant yet adaptable structure for curriculum design (OECD, 2019a). The OECD Learning Compass 2030, a key output of the project, defines a holistic framework consisting of core foundations (knowledge, skills, attitudes, and values), transformative competencies (creating new value, reconciling tensions and dilemmas, and taking responsibility), and the anticipation-action-reflection cycle. This compass aims to empower students as active agents of their own learning and contributors to society, supporting lifelong learning and adaptability (OECD, 2019b; OECD, 2020a).

A central element of this framework is the shift from knowledge acquisition toward the development of competencies through a competence-based approach. Competence-based education emphasizes learners’ ability to mobilize knowledge, skills, attitudes, and values in real-world contexts. It promotes learner-centered and experiential methodologies aligned with the principles of constructivism (Marope et al., 2017; Schweisfurth, 2013). Unlike traditional models, Competence-based education requires a rethinking of both content and pedagogy, aiming for transdisciplinary learning and real-life application. As OECD (2020b) outlines, competence-based curricula are crucial for fostering students' adaptability, critical thinking, collaboration, and ethical reasoning in response to 21st-century demands.
Within the scope of the OECD Learning Compass 2030, six key compound competencies, also referred to as literacies, are identified as particularly relevant for the year 2030: global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking, and entrepreneurship (OECD, 2020a; OECD, 2024). These competencies are described as context-specific,

multidimensional capacities that require the integration of cognitive, emotional, and social skills. They serve as tools not only for academic success but also for navigating complex social, environmental, and economic realities. Each compound competency reflects the need for learners to act responsibly, think critically, and contribute meaningfully to society in the face of global uncertainty.

To support the development of these six compound competencies, research emphasizes the importance of learner-centered, interdisciplinary, and experiential instructional strategies. Project-based learning has been shown to be particularly effective for promoting global competency and entrepreneurship, as it encourages collaboration, problem-solving, and real-world application of knowledge (Reimers, 2009; Helle et al., 2006). Similarly, interdisciplinary approaches that integrate subjects such as social studies, language arts, and science can deepen students' understanding of complex issues related to sustainability and media literacy (Stein & Prewett, 2009; Aytar & Özsevgeç, 2019). Context-based financial education embedded within mathematics or social science curricula enhances decision-making skills and reinforces students' ability to manage real-life financial situations (Arıkan & Çakmak, 2023; Tural Sönmez & Topcal, 2022). In the domain of computational thinking, hands-on coding activities, gamified learning environments, and algorithm-based problem-solving tasks are effective in fostering logical reasoning and digital literacy (Güven & Gülbahar, 2020; Jacob & Warschauer, 2018). Furthermore, fostering critical reflection, discussion-based learning, and community engagement projects can enhance students' media literacy and sustainability awareness, equipping them with the ethical reasoning and civic responsibility needed in diverse 21st-century contexts (Hobbs, 2009; Suaco, 2024). These strategies align with the principles of the competence-based approach by encouraging active engagement, contextual learning, and the meaningful integration of knowledge, skills, attitudes, and values across educational experiences.

To understand how such competencies can be effectively cultivated, the OECD developed the Education 2030 Ecosystem Approach, adapted from Bronfenbrenner's Ecological Systems Theory (1979). This approach emphasizes that curriculum implementation and competency development are not isolated processes; they occur within a complex educational ecosystem shaped by interactions between students, teachers, school leaders, families, policymakers, and broader sociocultural forces (OECD, 2020b). The ecosystem framework organizes these influences across five interrelated systems: the microsystem (e.g., classroom interactions), mesosystem (e.g., teacher-family collaboration), exosystem (e.g., administrative policies), macrosystem (e.g., societal beliefs about education), and chronosystem (e.g., curriculum reforms over time). By employing this holistic ecosystem framework, educational stakeholders are better equipped to identify the promoting and hindering factors that affect curriculum implementation. For instance, curriculum overload, conceptual complexity, and misalignment between intended and implemented curricula are frequently cited barriers (OECD, 2014; 2020c). The OECD's Curriculum Content Mapping (CCM) exercise further demonstrates how countries integrate 28 core competencies into their subject-specific curricula. Among these, the six compound competencies were particularly highlighted for their multidimensional nature and their potential to be embedded across traditional disciplines (OECD, 2020a).

In summary, the review of the literature revealed a shift in curriculum thinking, marked by a transition from rigid, subject-based models toward competence-based, adaptive, and future-oriented frameworks. The OECD Learning Compass 2030 and the associated ecosystem model provide both conceptual insights and frameworks for implementation to support the development of compound competencies for 2030. These insights form the foundation for the present study, which examines the alignment between Türkiye's middle school curricula, specifically in the subjects of Turkish, mathematics, science, and social studies, and the development of the OECD-defined compound competencies, considering both intended and implemented dimensions.

# CHAPTER 3

# METHODOLOGY

This chapter provides a comprehensive explanation of the study's methodology, covering the research design, the quantitative and qualitative approaches, and the process of integrating the results. It describes the sampling methods, data collection techniques, data analysis procedures used in each phase, and the role of the researcher in the qualitative study. The chapter concludes by addressing the limitations of the study.

## 3.1. Research Design

This study utilizes a mixed methods research approach, a comprehensive procedure that integrates the collection, analysis, and combination of both quantitative and qualitative data within a single study or a series of studies. This approach aims to provide a holistic understanding and validation of the research problem by leveraging the strengths of both quantitative and qualitative methodologies (Creswell & Plano Clark, 2018). Greene, Caracelli, and Graham (1989) identified several rationales for using mixed methods, including triangulation for consistency, complementarity to enrich insights, development to inform subsequent phases, initiation to explore unexpected results, and expansion to capture broader dimensions of the research problem.

Taking these rationales into account, this study employs mixed methods approach, to capture the complexity of the research issue, offering a more comprehensive analysis that addresses both the breadth and depth of the topic under investigation. In this study, as a mixed method approach *"Explanatory Sequential Design"* was employed (Plano

Clark & Creswell, 2014). This design begins with a quantitative phase for data collection and analysis, followed by a qualitative phase informed by the initial quantitative results (Creswell & Plano Clark, 2018). According to Creswell (2014), a sequential mixed-methods approach allows the researcher to extend the findings from one method by employing another. In this respect, the primary objective of the explanatory sequential design is to use the insights gained from the quantitative data to inform and shape the qualitative inquiry, providing a more comprehensive understanding of the research problem (Creswell, 2014). Building on this, the quantitative and qualitative methods in this research complemented each other, creating a comprehensive approach to answer the research questions.

The data analysis process began with a quantitative phase, where the middle school curricula's written documents were analyzed to determine the extent to which the learning objectives promoted the development of compound competencies among students. Simultaneously, data from a descriptive survey were collected and analyzed to determine the extent to which middle school teachers foster compound competencies through curricular, co-curricular, and extracurricular activities. The survey provided insights into teachers' incorporation of activities that promote these competencies, while the document analysis evaluated the presence of compound competencies within the written curriculum. Following the quantitative analysis, the findings informed the qualitative phase of the study. In-depth interviews with middle school teachers were conducted to gain detailed insights into their strategies, challenges, and the outcomes of their efforts in enhancing compound competencies in practice. The qualitative data provided a deeper understanding of the factors that promote or hinder the development of compound competencies in practice. This explanatory sequential design provided a solid approach, integrating quantitative data to establish an initial framework and qualitative data to explore the teachers' practices. This method ensured a comprehensive understanding of how middle school teachers, particularly in Turkish, mathematics, science, and social studies, incorporate and promote compound competencies in their students, in line with the alignment and challenges between the intended and implemented curricula. The flow of the mixed-method research design is presented below in Figure 3.

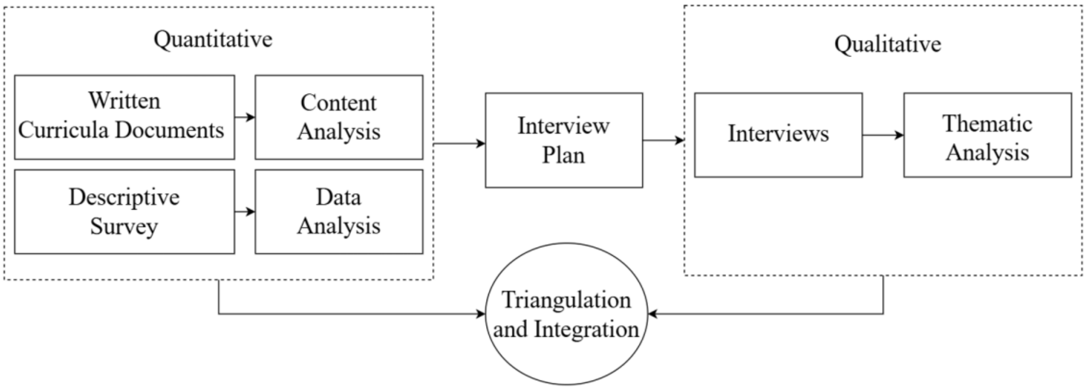



**Figure 3.** *Explanatory Sequential Design: Mixed Method Approach*

As illustrated in the Figure 3, the research design follows an explanatory sequential design. The process begins with a quantitative phase in which written curriculum documents and descriptive survey data are subjected to content and data analysis in parallel. This phase is followed by the development of an interview plan, transitioning into the qualitative phase, which involves conducting interviews and performing thematic analysis. Each phase is designed to inform the next, ensuring a logical and cohesive progression throughout the research process.

The final stage of triangulation and integration combines insights from both phases to ensure a comprehensive understanding of how middle school teachers incorporate and promote compound competencies within their subject area.

In this respect, the research questions that guide this research are as follows:

1. To what extent do middle school intended curricula promote the development of compound competencies among students?
2. To what extent do teachers promote the development of compound competencies among middle school students?

   2.1. To what extent do teachers from different subject areas promote the development of compound competencies among middle school students?
3. What factors promote or hinder the development of compound competencies in practice?

### 3.2. Context of the Study

This study was conducted within a private school network, selected as the research setting due to its relevance to the study aims and its potential to offer rich, context-specific insights into the development of compound competencies. Both the setting and the participants were selected through purposeful sampling (Patton, 2002), allowing for in-depth exploration of the alignment and challenges between intended and implemented middle school subject curricula. The researcher's direct access to the field further supported the data collection process, ensuring contextual depth and practical feasibility throughout the study.

This intentional choice ensures access to information-rich cases, providing comprehensive and relevant data aligned with the research objectives and guiding questions (Patton, 2002; Lincoln & Guba, 1986). Miles and Huberman (1994) emphasize the importance of selecting settings that offer a wide range of perspectives and rich data. By selecting a setting that embodies these characteristics, the study could effectively evaluate how current educational practices align with the OECD E2030 initiative. This alignment is crucial for understanding the practical implementation of compound competencies and providing valuable insights for future curriculum reforms (Palinkas et al., 2011). Regarding that, the identity of the research setting has been anonymized in accordance with the institution's request. However, contextual information about this institution, drawn from publicly available sources, is presented below to provide background on the research setting. In this respect, the setting of the study is a private school network founded and operated by a non-governmental organization, with branches in several cities across Türkiye.

This extensive network of schools serves approximately 40,000 students across its kindergartens, primary, middle, and high schools. These schools are known for their comprehensive educational vision and mission, which prioritize the intellectual, emotional, physical, and social development of each student. This private school network describes itself as a project that is shaping the future of Türkiye. In this respect, its schools strive to cultivate individuals who possess historical, national, and international awareness. They offer many opportunities, combining national and international programs with a strong emphasis on foreign languages. Their educational approach is reinforced by various sports, arts, and social facilities, providing a well-rounded learning environment. Although these schools adhere to the national curriculum mandated by Türkiye, they enrich it with extensive instructional opportunities and activities. In this respect, they declare their aims to educate students who:

- *Have a high level of awareness about societal problems and the consciousness to generate solutions:* The schools encourage students to think critically about societal issues and develop innovative solutions.
- *Speak at least one foreign language and use it effectively:* A strong emphasis is placed on language acquisition, ensuring students are proficient in at least one foreign language.
- *Possess high moral values:* Character education is a cornerstone of the curriculum, fostering integrity and ethical behavior.
- *Have excellent communication skills, empathy, and respect for differences:* Students are taught to communicate effectively, empathize with others, and appreciate diversity.
- *Are aware of social responsibility practices:* The schools instill a sense of social responsibility, encouraging students to engage in community service and other socially beneficial activities.
- *Use technology effectively and positively in all areas of life:* The curriculum integrates modern technology, teaching students to use it responsibly and productively.
- *Are environmentally conscious:* Environmental education is emphasized, promoting sustainability and ecological awareness.
- *Have the knowledge, skills, and values to succeed in business, arts, and sports:* Students receive a balanced education that prepares them for success in various fields.
- *Value world citizenship:* The schools foster a global perspective, encouraging students to appreciate and engage with the broader world.

These distinguished aims and this rich educational environment serve as the foundation for this study, providing a context where innovative teaching practices and comprehensive student development are at the forefront. It is assumed that this setting could provide rich data evaluating how well the current use of Turkish, mathematics, science, and social studies curricula of the Ministry of National Education (MoNE, 2018; 2019) for middle school education align with the OECD's multidimensional conceptual learning framework for future skills (OECD, 2019a; 2019b; 2019c). The choice of this private school network setting is justified by several key factors:

- *Diverse Teacher Population:* The schools' diverse teacher population, spread across various cities, provides a broad and representative sample for the study. This diversity ensures that the findings are relevant to a wide range of educational contexts within Türkiye, capturing various teaching styles, perspectives, and experiences.
- *Holistic Education Approach:* The schools' commitment to a holistic education that develops students intellectually, emotionally, physically, and socially aligns well with the OECD E2030, which emphasizes the importance of multidimensional learning for future skills (OECD, 2019a; 2019b; 2019c).
- *Innovative Curriculum Implementation:* These schools are known for their innovative approaches to curriculum implementation, offering a mix of national and international programs. This makes them an ideal setting to study how well the current curricula prepare students for future challenges as defined by the OECD E2030 (OECD, 2019a; 2019b; 2019c).
- *Focus on Foreign Languages and Extracurricular Activities:* The strong emphasis on foreign language proficiency and the availability of various extracurricular activities provide a rich context for evaluating the development of compound competencies, which include communication skills, social responsibility, and global citizenship (OECD, 2019a; 2019b; 2019c).
- *Alignment with Research Objectives:* The schools' educational mission to foster critical thinking, problem-solving, and ethical behavior among students directly supports the research objective of assessing the alignment of the curricula with future skills (OECD, 2019a; 2019b; 2019c).

All those factors described above demonstrated that this setting was well-suited for the study, providing a comprehensive view of how current educational practices in this setting align with the goals of preparing students for future demands as envisioned by the OECD E2030 initiative (OECD, 2019a; 2019b; 2019c). Additionally, it highlights the importance of developing competency focused education, which is essential for equipping students with the necessary skills and abilities to thrive in a rapidly changing world (Marope et al., 2017; OECD, 2019a).

### 3.2.1 Intended Curricula Documents in Middle School

In this study to determine the alignment of intended and implemented curricula in middle school, the written documents of the 5th-8th Grade Turkish Curriculum (MoNE, 2019), the 5th-8th Grade Mathematics Curriculum (MoNE, 2018), the 5th-8th Grade Science Curriculum (MoNE, 2018), and the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) (as Social Studies is not included in Grade 8 lessons) were utilized. Those subjects were selected to be examined due to their dramatic weight in the overall middle school experience of the students. Table 1, presents the current weekly lesson schedule for middle schools in Türkiye, set by the MoNE.

**Table 1.** *Current Weekly Lesson Schedule for Middle Schools in Türkiye*

| Compulsory Subjects | Lesson Hours | | | |
|---|---|---|---|---|
| | 5th | 6th | 7th | 8th |
| Turkish | 6 | 6 | 5 | 5 |
| Mathematics | 5 | 5 | 5 | 5 |
| Science | 4 | 4 | 4 | 4 |
| Social Studies | 3 | 3 | 3 | - |
| History of the Turkish Revolution and Atatürk's Principles | - | - | - | 2 |
| Foreign Language | 3 | 3 | 4 | 4 |
| Religious Culture and Ethics | 2 | 2 | 2 | 2 |
| Visual Arts | 1 | 1 | 1 | 1 |
| Music | 1 | 1 | 1 | 1 |
| Physical Education and Sports | 2 | 2 | 2 | 2 |
| Technology and Design | - | - | 2 | 2 |
| Information Technology and Software | 2 | 2 | - | - |
| Guidance and Career Planning | - | - | - | 1 |
| Total Compulsory Lesson Hours | 29 | 29 | 29 | 29 |

Table 1 reveals that Turkish, mathematics, science, and social studies subjects are allocated more instructional hours compared to other compulsory subjects. Given the higher instructional time dedicated to these four subjects, it is expected that they are more likely to cultivate the development of students' skills, including compound competencies. Therefore, analyzing these subjects would provide valuable insights into how they contribute to or hinder the promotion of compound competencies, aligning with the study's overall purpose.

Moreover, there is an emphasis on the subject areas of Turkish (language), Mathematics, Science, and Social Studies in international assessments such as OECD's PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study). These assessments evaluate student competencies in key areas that are aligned with the instructional content of these subjects, providing global benchmarks for educational success (Mullis et al., 2020; OECD, 2020d).

**PISA**: The PISA assessment, which measures 15-year-olds' abilities in reading, mathematics, and science, underscores the importance of these subjects in developing students' skills to solve real-world problems. By focusing on these areas, PISA highlights the critical role of Turkish (language), Mathematics, and Science in fostering students' literacy, numeracy, and scientific reasoning. These domains serve as essential entry points for understanding how foundational knowledge connects with broader competency development. These subjects are fundamental in evaluating not only academic proficiency but also students' preparedness to tackle complex challenges in a globalized world, directly linking to the study's emphasis on compound competencies (OECD, 2020a).

**TIMSS**: TIMSS assesses students' knowledge and skills in mathematics and science in both 4$^{th}$ and 8$^{th}$ grades. This assessment provides a detailed analysis of how well students are prepared in these foundational areas. Since TIMSS focuses on the quality of education in mathematics and science, these subjects' prominence in the curriculum justifies their selection in the study, as they are key indicators of students' cognitive development and critical skillsets (Mullis et al., 2020). While PISA and TIMSS focus primarily on mathematics and science, global frameworks like the OECD Learning Compass 2030 emphasize the importance of social and civic skills. In this respect, social studies encompassing history, geography, and citizenship education, plays a crucial role in fostering global competencies, including social awareness, ethical reasoning, and cultural understanding, all of which are vital for developing students' compound competencies (OECD, 2020d).

By focusing on these four subjects, this study aligns with international benchmarks, such as PISA and TIMSS, which emphasize the critical role that language, mathematics, science, and social studies play in the development of future-ready competencies. These international assessments reinforce the idea that these subjects are not only core to national curricula but also pivotal in equipping students with the skills necessary for thriving in an increasingly complex and interconnected world (Mullis et al., 2020; OECD, 2020d). Analyzing these subjects offers a comprehensive view of how these subject areas contribute to the promotion of compound competencies within the context of both national and international educational goals.

### 3.3. Participants

The purpose of the study is to determine the alignment and challenges between the intended and implemented subject-specific middle school curricula with regard to the development of compound competencies. To gather enriched data, the research setting was first identified as described in the earlier section. In accordance with that, in the overall study, purposeful sampling (Patton, 2002) was utilized to determine the participants for the quantitative and qualitative phases of the study, which are described in the following sections.

#### 3.3.1. Participants in the Quantitative Study

A descriptive survey was administered in 45 private middle schools to 450 teachers including Turkish, mathematics, social studies, and science teachers ($N$ = 450) to determine the extent of developing compound competencies in practice. Table 2 demonstrates the characteristics of the teachers who participated in the study below.

**Table 2.** *Demographic Characteristics of the Survey Participants*

| Category | *n* | % |
|---|---|---|
| Gender | | |
| Female | 348 | 77.3 |
| Male | 102 | 22.7 |
| Title* | | |
| Teacher | 350 | 77.8 |
| Expert Teacher | 99 | 22 |
| Master Teacher | 1 | 0.2 |
| Faculty of Graduation | | |
| Faculty of Education | 204 | 45.3 |
| Faculty of Science of Humanities | 244 | 54.2 |
| Other | 2 | 0.4 |
| Educational Background | | |
| Bachelor's Degree | 316 | 70.2 |
| Master's Degree | 129 | 28.7 |
| Ph.D. | 5 | 1.1 |
| Participant's Subject in Middle School | | |
| Mathematics Teacher | 139 | 30.9 |
| Turkish Language Teacher | 116 | 25.8 |
| Science Teacher | 125 | 27.8 |
| Social Studies Teacher | 70 | 15.6 |
| Total Teaching Experience | | |
| 0-1 year | 4 | 0,90% |
| 2-5 years | 43 | 9,60 |
| 6-10 years | 118 | 26,20 |
| 11-14 years | 88 | 19,60 |
| 15-19 years | 127 | 28,20 |
| 20 years and more | 70 | 15,60 |
| Experience at the Current School | | |
| 0-1 year | 110 | 24,40 |
| 2-5 years | 188 | 41,80 |
| 6-10 years | 95 | 21,10 |
| 11-14 years | 32 | 7,10 |
| 15-19 years | 16 | 3,60 |
| 20 years and more | 9 | 2,00 |

*Note.* The "Title" refers to the career progression levels for teachers in Türkiye: "Expert Teacher" is awarded after completing specific training, passing exams, and achieving a certain level of seniority, leading to higher salaries and professional recognition. "Master Teacher" is the highest career level, attained after years of service and meeting specific requirements.

Table 2 presents the demographic characteristics of the survey participants ($N$ = 450). The gender distribution shows that 77.3% of the participants are female teachers, while

22.7% are male teachers. In terms of professional titles, the majority of the participants (77.8%) hold the title of "Teacher," while 22% are "Expert Teachers." Only one individual in the sample (0.2%) holds the title of "Master Teacher." Regarding their educational background, 54.2% of the participants were graduated from the Faculty of Science and Humanities, while 45.3% were graduated from the Faculty of Education. Those who graduated from the Faculty of Science and Humanities completed a pedagogical formation certificate program to become teachers within this specific school network. The majority of the participants hold Bachelor's degrees (70.2%), followed by those with Master's degrees (28.7%), and a small percentage have a Ph.D. (1.1%). In terms of subject areas, the largest group of participants were mathematics teachers (*n* = 139, 30.9%), followed by science teachers (n = 125, 27.8%), Turkish (language) teachers (*n* = 116, 25.8%), and social studies teachers (*n* = 70, 15.6%). The distribution of participants across subject areas differs because of the weekly lesson hour allocations set by the MoNE. Specifically, subjects like Turkish (language), mathematics, and science are allocated more weekly lesson hours compared to social studies, resulting in more Turkish, mathematics, and science teachers being employed in schools. On the other hand, the fewer weekly lesson hours allocated to social studies lessons leads to fewer social studies teachers at the middle school level. Therefore, the number of social studies teachers participating in the survey is lower compared to other subjects' teachers.

The overall teaching experience of the teachers varies widely. While only 0.9% of participants have less than a year of experience, the majority (26.2%) have 6-10 years of experience, and 15.6% have over 20 years of experience. In terms of the participants' work experience at their current school, 41.8% of participants have been at their current school for 2-5 years, while 24.4% have been there for 0-1 years which reflects a balance between relatively new and experienced teachers.

### 3.3.2. Participants in the Qualitative Study

The descriptive survey results were used to identify schools based on the extent to which they promoted the development of compound competencies. Based on these findings, the schools were categorized into three groups: most likely, moderately likely, and least likely to promote the development of compound competencies. Criterion sampling (Patton, 2002) was then employed to select schools for participation in the qualitative phase based on these survey findings. Three schools from each of the three categories were purposefully selected to ensure a comprehensive understanding of the study. Within these schools (*n* = 3), either the department head teachers or the most experienced teachers of the department were purposefully chosen for interviews (*N* = 12), representing the four subject areas. In this respect, in-depth interviews were conducted with 12 teachers from the subjects of Turkish (language) (*n* = 3), mathematics (*n* = 3), social studies (*n* = 3), and sciences (*n* = 3). Table 3 presents the characteristics of the participants to interview below.

**Table 3**.*Characteristics of the Participants in the Qualitative Study*

| Participant | Gender | Overall teaching experience in Years | Experience at the current school in years | Subject Area | Bachelor Graduation |
|---|---|---|---|---|---|
| T1 | Male | 17 | 1 | Turkish | Faculty of Education |
| T2 | Female | 12 | 9 | Turkish | Pedagogical form. |
| T3 | Female | 13 | 10 | Turkish | Faculty of Education |
| M1 | Female | 5 | 2 | Mathematics | Faculty of Education |
| M2 | Female | 11 | 4 | Mathematics | Faculty of Education |
| M3 | Female | 11 | 2 | Mathematics | Pedagogical form. |
| S1 | Female | 21 | 7 | Social Studies | Pedagogical form. |
| S2 | Male | 9 | 4 | Social Studies | Faculty of Education |
| S3 | Male | 10 | 7 | Social Studies | Faculty of Education |
| F1 | Female | 6 | 3 | Science | Faculty of Education |
| F2 | Female | 13 | 5 | Science | Faculty of Education |
| F3 | Female | 18 | 8 | Science | Faculty of Education |

### 3.4. Data Collection Instruments

In alignment with the research questions and the overall purpose of the study, the data collection instruments were developed and employed by the researcher. These instruments were designed to gather comprehensive data from both quantitative and qualitative phases of the research. The instruments include a rating scale for analyzing the intended curricula which refers to the written curriculum documents, a descriptive survey to determine the extent of the implementation of compound competencies, and in-depth semi-structured interview schedules to further explore the factors promoting or hindering the development of these competencies in practice. Table 4 illustrates the design of the study according to each research question, associated data collection instruments, type of data analysis and data sources below.

**Table 4.** *Research Question, Data Collection Instruments, Data Analysis, and Data Sources*

| Research Questions | Data Collection Instruments | Data Analysis & Data Sources |
|---|---|---|
| 1. To what extent do middle school intended curricula promote the development of compound competencies among students? | A Rating Scale:<br><br>The researcher developed a rating scale to analyze the middle school curricula using criteria defined in the rating scale. | Data Analysis:<br>Quantitative data is analyzed by content analysis.<br><br>Data Sources:<br>Written curriculum documents of:<br>- The 5th-8th Grade Turkish Curriculum (MoNE, 2019)<br>- The 5th-8th Grade Mathematics Curriculum (MoNE, 2018)<br>- The 5th-8th Grade Science Curriculum (MoNE, 2018)<br>- The 5th-7th Grade Social Studies Curriculum (MoNE, 2018) |
| 2. To what extent do teachers promote the development of compound competencies among middle school students?<br><br>2.1. To what extent do teachers from different subject areas promote the development of compound competencies among middle school students? | Descriptive survey:<br><br>The researcher developed and employed a descriptive survey containing 68 items about the development of compound competencies in practice. | Data Analysis:<br>Quantitative data is analyzed by descriptive analysis.<br><br>Data Sources:<br>Middle school teachers from four subject areas *(N* = 450):<br><br>- Mathematics (n = 139, 30.88%)<br>- Turkish (n = 116, 25.77%)<br>- Science (n = 125, 27.77%)<br>- Social Studies (n = 70, 15.55%). |

**Table 4** *(continued)*

| | | |
|---|---|---|
| 3. What factors promote or hinder the development of compound competencies in practice? | In-depth semi-structured interview schedule:<br><br>The researcher developed and the semi-structured interview schedule. | Data Analysis:<br>Qualitative data gathered from 12 teachers is analyzed by thematic analysis.<br><br>Data Sources:<br>- Mathematics (n = 3)<br>- Turkish (n = 3)<br>- Social Studies (n = 3)<br>- Sciences (n = 3) |

### 3.4.1. Data Collection Instruments in the Quantitative Study

#### 3.4.1.1. A Rating Scale for Analyzing Intended (Written) Curricula

In order to determine the extent to which middle school intended curricula promote the development of compound competencies among middle school students, the researcher developed a rating scale based on a low-inference approach to systematically analyze the learning objectives of the middle school written curriculum documents. Thereby, this rating scale examined the learning objectives by categorizing them into three distinct levels based on their alignment with compound competency development. The categories were designed in accordance with a low-inference approach, which ensures that the researcher would make coding only on what is explicitly stated in the data, rather than coding based on subjective interpretations (Sandelowski, 2000).

Initially, the researcher developed a rating scale that included categories and criteria aligned with the purpose of the study. It was then applied to a small sample of learning objectives to evaluate its applicability and clarity. During this preliminary phase, it became evident that the criteria used in the category definitions required further refinement to ensure consistency in coding. Accordingly, the researcher revised the category descriptions and their criteria before implementing the full scale. To enhance the validity of the rating scale, it was presented to the thesis committee for review. Based on their feedback, illustrative examples were added the rating scale template to guide the coding process, and necessary revisions were made to improve its clarity, consistency, and applicability. Subsequently, a PhD-level expert in educational sciences reviewed the rating scale template and conducted a small-scale pilot coding on a limited set of learning objectives. This final step provided an additional layer of validation, ensuring that the rating scale was both practical and effective for its intended use. Based on this expert review, minor refinements were made, and the rating scale was finalized in its current form.

The finalized rating scale template included clearly defined categories, explicit criteria, and illustrative examples to guide the coding process. In this framework, the rating scale consists three distinct categories for assessing the integration of compound competencies within the intended curricula. The first category, "not targeted," refers to learning objectives that do not explicitly address or contribute to the development of a compound competency. The second category, "partially targeted," refers to learning objectives that indirectly promote a competency without explicitly stating it, in which the sub-dimensions of the competency are embedded within the descriptions or statements of the objectives. The third category, "explicitly targeted," refers to learning objectives that directly and explicitly aim to foster the development of a compound competency. The final form of the rating scale enabled the researcher to systematically evaluate the extent to which compound competencies are integrated into the intended curricula by identifying learning objectives classified as Category 1, which do not explicitly target to develop these competencies, and as Categories 2 and 3, which contribute to competency development either partially or explicitly.

#### 3.4.1.2. Descriptive Survey

The survey-based research approach was selected to systematically collect and analyze data on the extent to which teachers integrate compound competencies into their teaching practices. The purpose of this approach is to describe the characteristics of a population (Fraenkel et al., 2012) and, based on data, to illustrate what a group of people think about a specific topic, how they behave, or how frequently they perform a particular practice (Cohen, 1994). According to Weisberg et al. (1996), surveys are helpful for obtaining information as well as data on attitudes and preferences, beliefs and expectations, actions, and experiences. In this respect, to examine the extent to which teachers promote the development of compound competencies among middle school students, a descriptive survey was designed. The survey was composed of 68 items divided into 6 subsets, each designed to encompass the extent to which the four subject teachers practice fostering the development of compound competencies. These subsets were structured to align with six competencies such as global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking skills, and entrepreneurship skills. The items in each subset were developed based on a comprehensive review of literature to ensure that the items reflected current theoretical and practical understandings of compound competencies. To identify the extent of teachers' practices for each competency, a Likert-type scale including the options Never, Rarely, Sometimes, Frequently, and Always was employed. The systematic approach followed in the survey development process, including its design, refinement, and validation steps, is visually summarized in Figure 4.

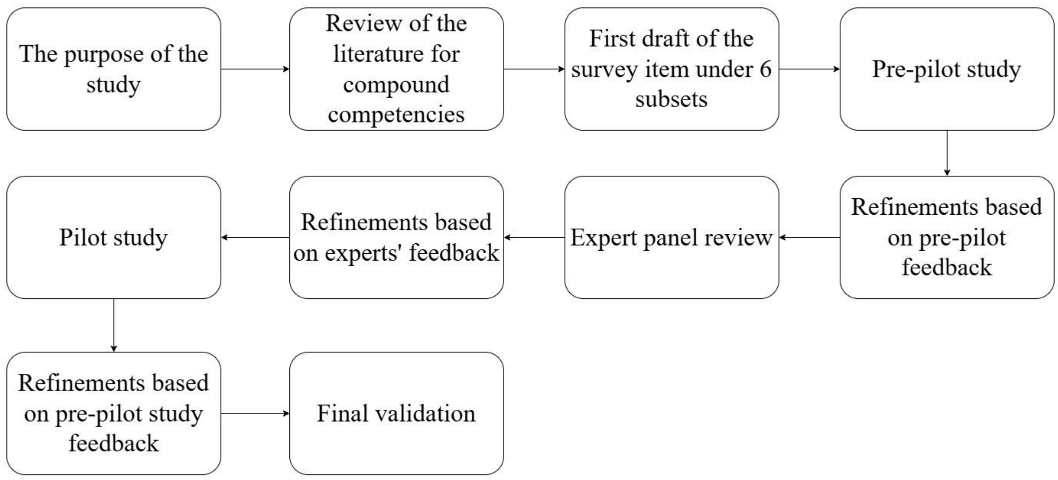



**Figure 4.** *Survey Development Process*

As it is illustrated in Figure 4, to ensure the validity and reliability of the survey, the first draft of the survey was tested in a pre-pilot study with four teachers in middle school to identify any immediate issues related to item clarity, structure, or wording. The feedback gathered from these teachers during the pre-pilot study helped refine the wording and improve ambiguous structures. Based on their feedback, 4 items were also consolidated to avoid redundancy. Following that, the refined survey was reviewed by a panel of two PhD-level experts in education studies and adjustments were made accordingly. In alignment with that, the pilot study was conducted with 12 middle school teachers, including 3 mathematics teachers, 3 Turkish (language) teachers, 3 science teachers, and 3 social studies teachers with respect to the study's purpose. The feedback gathered from the pilot study allowed to improve the clarity and the reliability of the survey instrument. In this respect, the items were refined and eliminated from the ambiguous structures. The final version of the survey included 68 items divided into six subsets the following subsets: global competency (*n* = 11), media literacy (*n* = 9), literacy for sustainable development (*n* = 12), financial literacy (*n* = 14), computational thinking skills (*n* = 12), and entrepreneurship skills (*n* = 10) for a total of 68 items. The reliability of the survey is presented in Table 5 which indicates the internal consistency of the instrument.

**Table 5.** *Cronbach's Alpha Values of the Survey*

| Subsets | Cronbach's Alpha | Number of Items |
|---|---|---|
| Global Competency | .863 | 11 |
| Media Literacy | .899 | 9 |
| Literacy for Sustainable Development | .943 | 12 |
| Financial Literacy | .954 | 14 |
| Computational Thinking Skills | .899 | 12 |
| Entrepreneurship | .917 | 10 |
| **Overall** | **.97** | **68** |

Table 5 presents the Cronbach's alpha values for both the overall survey and its subsets. The overall Cronbach's alpha value of the survey is 0.970 which indicates a high level of internal consistency (Cronbach, 1951). Cronbach's alpha values of the subsets are also evaluated which reveals .863 for global competency, .899 for media literacy, .943 for literacy for sustainable development, .954 for financial literacy, .899 for computational thinking skills, and .917 for entrepreneurship. Accordingly, these results indicate that the subsets of the study are highly reliable for identifying the intended constructs (Nunnally & Bernstein, 1994). These values also reflect the overall robustness of the survey instrument.

### 3.4.2. Data Collection Instruments in the Qualitative Study

#### 3.4.2.1. Interview Schedules

As a research technique, an interview is described as a controlled and purposeful verbal communication between the researcher and the participant, who serves as the subject of the research (Cohen & Manion, 1994). In this respect, interviews are highly effective method for uncovering individuals' perspectives, experiences, emotions, and perceptions (Bogdan & Biklen, 1992), were employed to identify the factors that promote or hinder the development of compound competencies in practice. For this study, the researcher developed interview schedules that adhered to a systematic approach (Coffey & Atkinson, 1996; Wolcott, 1994). The systematic approach employed in the development of the interview schedules is outlined in Figure 5.

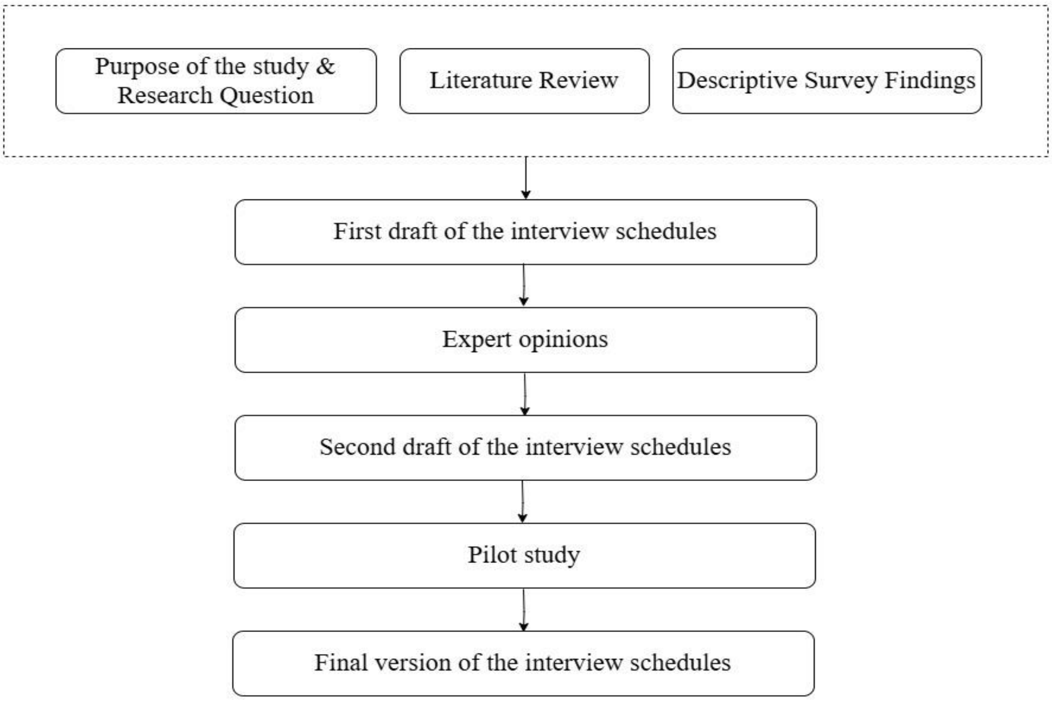



**Figure 5.** *The Flowchart of the Interview Schedules Development Process*

As illustrated in the flowchart, in Figure 5, the initial drafts of the semi-structured interview questions were informed by the purpose of the study, the literature review, and descriptive survey findings. The semi-structured interview technique was chosen for its flexibility compared to structured interviews (Yıldırım & Şimşek, 2016). While the researcher prepared a schedule with pre-planned questions, the flow could be adapted by asking follow-up or alternative questions based on the interview's progression, allowing the respondents to elaborate and provide detailed answers. If specific questions were addressed indirectly during the conversation, the researcher could skip them. This balance of standardization and flexibility makes the semi-structured interview technique particularly suitable for educational research (Türnüklü, 2000). Specifically, the results from the descriptive survey played a significant role in shaping the interview questions, allowing for differentiation based on subject areas.

After the first draft, expert opinions were sought from a PhD-level researcher in the field of educational sciences and two educational specialists with expertise in K-12 education to ensure the validity of the interview questions. The experts reviewed the questions and provided their feedback. Following their input, feedback was shared with the experts to explain how their suggestions were incorporated into the data collection tool. The survey results also influenced the structuring of questions based on subject areas. While the main interview questions were designed to remain consistent for all participating teachers, questions related to the six competencies were adapted for each of the four subject areas, as the survey results revealed variations in the extent to which these competencies were implemented across subjects. In this context, the interview schedule was developed to include questions that explored why teachers incorporated certain competencies frequently or rarely into their subject areas, in order to provide deeper insights into the factors promoting or hindering their implementation.In this regard, the second draft was developed and utilized in a pilot study, during which one preliminary interview was conducted with a middle school mathematics teacher. The aim of this pilot interview was to assess the clarity and comprehensibility of the questions and to determine the average interview duration. Following the pilot interview, feedback and suggestions from the participant regarding

the questions were collected, and necessary adjustments were made accordingly. The teacher who participated in the pilot interview was not included among the participants in the main study. As a result, the final version of the interview schedules was prepared.

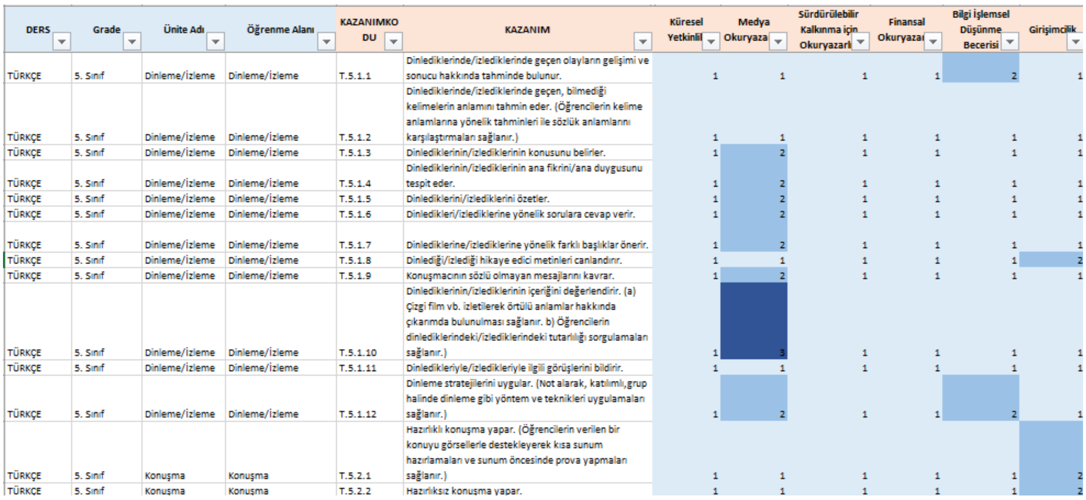
### 3.5. Data Collection Procedures

Following the review of the data collection instruments by the advisor and members of the thesis committee, the study was reviewed and approved by the Human Subjects Ethics Committee at Middle East Technical University (see Appendix A) with the protocol number 0348-ODTUİAEK-2023. This section explains the processes for collecting both quantitative and qualitative data.

#### 3.5.1. Data Collection Procedures in the Quantitative Study

##### 3.5.1.1. Data Collection Procedure for Intended Curriculum Analysis

The data collection process for the intended curriculum analysis was conducted systematically using the rating scale developed by the researcher. This rating scale was specifically designed to evaluate the extent to which compound competencies were integrated into middle school curricula by categorizing learning objectives into three distinct levels: not targeted, partially targeted, and explicitly targeted. For this purpose, the written curriculum documents of the 5th–8th Grade Turkish Curriculum (MoNE, 2019), the 5th–8th Grade Mathematics Curriculum (MoNE, 2018), the 5th–8th Grade Science Curriculum (MoNE, 2018), and the 5th–7th Grade Social Studies Curriculum (MoNE, 2018) were accessed through the official website of MoNE at *https://mufredat.meb.gov.tr/Programlar.aspx*. All retrieved curriculum documents were systematically transferred into an Excel file, where the subject area, grade level, units, learning areas, learning objectives, and their descriptions were recorded. Additionally, separate columns were created for each compound competency to facilitate the coding process. An example of this systematic preparation is illustrated in Figure 6, demonstrating how learning objectives were organized and coded according to the rating scale for the six compound competencies.



| DERS | Grade | Ünite Adı | Öğrenme Alanı | KAZANIMKODU | KAZANIM | Küresel Yetkinli | Medya Okuryaza | Sürdürülebilir Kalkınma için Okuryazarl | Finansal Okuryaza | Bilgi İşlemsel Düşünme Becerisi | Girişimcilik |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.1 | Dinlediklerinde/izlediklerinde geçen olayların gelişimi ve sonucu hakkında tahminde bulunur. | 1 | 1 | 1 | 1 | 2 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.2 | Dinlediklerinde/izlediklerinde geçen, bilmediği kelimelerin anlamını tahmin eder. (Öğrencilerin kelime anlamlarına yönelik tahminleri ile sözlük anlamlarını karşılaştırmaları sağlanır.) | 1 | 1 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.3 | Dinlediklerinin/izlediklerinin konusunu belirler. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.4 | Dinlediklerinin/izlediklerinin ana fikrini/ana duygusunu tespit eder. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.5 | Dinlediklerini/izlediklerini özetler. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.6 | Dinledikleri/izlediklerine yönelik sorulara cevap verir. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.7 | Dinlediklerine/izlediklerine yönelik farklı başlıklar önerir. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.8 | Dinlediği/izlediği hikaye edici metinleri canlandırır. | 1 | 1 | 1 | 1 | 1 | 2 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.9 | Konuşmacının sözlü olmayan mesajlarını kavrar. | 1 | 2 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.10 | Dinlediklerinin/izlediklerinin içeriğini değerlendirir. (a) Çizgi film vb. izletilerek örtülü anlamlar hakkında çıkarımda bulunulması sağlanır. b) Öğrencilerin dinlediklerindeki/izlediklerindeki tutarlılığı sorgulamaları sağlanır.) | 1 | 3 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.11 | Dinledikleriyle/izledikleriyle ilgili görüşlerini bildirir. | 1 | 1 | 1 | 1 | 1 | 1 |
| TÜRKÇE | 5. Sınıf | Dinleme/İzleme | Dinleme/İzleme | T.5.1.12 | Dinleme stratejilerini uygular. (Not alarak, katılımlı,grup halinde dinleme gibi yöntem ve teknikleri uygulamaları sağlanır.) | 1 | 2 | 1 | 1 | 2 | 1 |
| TÜRKÇE | 5. Sınıf | Konuşma | Konuşma | T.5.2.1 | Hazırlıklı konuşma yapar. (Öğrencilerin verilen bir konuyu görsellerle destekleyerek kısa sunum hazırlamaları ve sunum öncesinde prova yapmaları sağlanır.) | 1 | 1 | 1 | 1 | 1 | 2 |
| TÜRKÇE | 5. Sınıf | Konuşma | Konuşma | T.5.2.2 | Hazırlıksız konuşma yapar. | 1 | 1 | 1 | 1 | 1 | 2 |

**Figure 6.** *Heat Map Representation of Curriculum Coding for Compound Competencies*

Following this preparation, the rating scale, developed based on a low-inference approach, was applied. A total of 289 learning objectives from the 5th-8th Grade Turkish Curriculum (MoNE, 2019), 215 learning objectives from the 5th-8th Grade Mathematics Curriculum (MoNE, 2018), 223 learning objectives from the 5th-8th Grade Science Curriculum (MoNE, 2018), and 98 learning objectives from the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) were coded according to the categories defined in the rating scale for all six competencies, ensuring a systematic evaluation of their integration into the curriculum. As illustrated in Figure 6, the coding was presented as a heat map to visually present the distribution and intensity of how each compound competency is addressed within the learning objectives. The heat map allowed the researcher a clearer understanding of patterns and gaps in the integration of competencies across different subject areas and grade levels.

### 3.5.1.2. Data Collection Procedure for Descriptive Survey

The data collection process for this study was designed to systematically gather information on the extent to which teachers integrate compound competencies into their teaching practices, which represents the implemented curriculum. To facilitate the implementation of this study within the relevant private schools' network, approval was obtained from the headquarters of these schools. The approval process involved submitting the ethical approval of the research, the survey content, the survey items, and all required documents for review by the headquarters. Following this, the necessary permission was granted by the headquarters to proceed with the data collection phase.

The survey was administered to 479 participants working in a private school setting, which was purposefully selected as the research context. It was distributed through the online platform called K12Net provided by the private school's network and remained open for one week to allow participants sufficient time to respond. The teachers were informed about the purpose of the study and provided their consent via an online consent form before proceeding to complete the survey. Those who chose not to participate in the study could exit the online survey platform without completing it. Although all participants were initially identified as teachers of Turkish, mathematics, science, or social studies, responses from 29 individuals who were currently serving as assessment specialists, school administrators, or in other non-teaching roles were considered irrelevant to the study's purpose and subsequently excluded from the analysis in order to ensure that the final dataset accurately represented responses from actively working teachers in the specified subject areas in the schools.

### 3.5.2. Data Collection Procedures in the Qualitative Study

#### 3.5.2.1. Interview Procedure

The interview data collection process aimed to gather in-depth insights into the factors that promote or hinder the development of compound competencies in practice. Semi-structured interviews were conducted to gather detailed exploration of participants' experiences, and practices. Based on the results of the survey administered in the quantitative phase of the research, a representative school was selected from each of the three categories: most likely, moderately likely, and least likely to promote competency development in practice. In these selected schools, either the heads of departments or the most experienced teachers from the four subject areas were chosen to be interviewed to ensure a comprehensive understanding of the study's purpose. In this context, data collection was planned to include interviews with 12 teachers, representing four different subject areas from three selected schools in three different cities. Teachers were invited to participate voluntarily in the study, and an online consent form, which provided a detailed explanation of the study's purpose, scope, confidentiality measures, and participants' rights, was shared with them via email. In accordance with ethical considerations, they were asked to print the form, sign it with a wet signature, scan the document, and submit it to the researcher. Those who completed this process were subsequently included in the study.

Interview schedules were arranged based on the teachers' available lesson hours, and the interviews were conducted via Zoom, a widely used video conferencing platform that enables virtual meetings, interviews, and real-time communication. To ensure an uninterrupted interview process online, school administrations were requested to provide a designated room equipped with a computer and a stable internet connection, where teachers could join the online Zoom meetings without disturbances or connectivity issues. Thereby, the necessary arrangements were made in the schools, and teachers participated in the interviews at the scheduled times. As a result, all interviews were successfully completed within one week in April 2024.

As suggested by Yıldırım and Şimşek (2016), the interviews began with a brief explanation of the purpose of the study, followed by an introduction in which participants were asked to introduce themselves. Subsequently, questions were asked according to the interview schedule. Each question was followed by a sufficient pause to allow participants to articulate their answers without interruption. When necessary, the researcher provided clarification to ensure that participants fully understood the questions. Throughout the interviews, the researcher actively listened to participants' responses and avoided unnecessary repetition by not asking questions that had already been addressed. Whilst generally following the structured interview schedule, the researcher also asked additional follow-up questions when considered necessary to gain a deeper insight into the participants' perspectives. During the interviews, the researcher also took notes, which served as supplementary data to capture contextual details and key points that might not be fully reflected in the recorded transcripts. These notes were particularly useful in enhancing the interpretation of the data, supporting the analysis and identifying recurring themes within the responses.

The interviews were recorded via Zoom and transcribed using the paid transcription software “Transkriptor” to prepare the data for analysis. Interviewed with 12 teachers and the duration of the interviews per teacher changed between 55 to 85 minutes. Each interview transcript was carefully reviewed by the researcher, who repeatedly listened to the audio recordings to ensure accuracy. Necessary corrections were made by the researcher in cases where errors were identified in the automated transcription. Once finalized, the transcripts were sent to the participant teachers via e-mail for their review and approval. Regarding that, no modifications were requested by the teachers. Following their confirmation, the transcripts were imported into MAXQDA 24, a qualitative data analysis software designed for systematically organizing, coding, and analyzing textual data.

## 3.6. Data Analysis

This section explains the steps involved in quantitative and qualitative data analyses. Furthermore, it demonstrates mixed-methods data analysis by combining and complementing both quantitative and qualitative findings, providing a comprehensive approach to answering the research questions.

### 3.6.1. Quantitative Data Analyses

The quantitative data analysis of this research is derived from both the analysis of the middle school written curricula and the responses collected through a descriptive survey.

#### 3.6.1.1. Written Curricula Analysis

To identify the extent to which the intended middle school curricula promote compound competencies among students, the written curriculum documents for the following were explored via content analysis: the 5th-8th Grade Turkish Curriculum, the 5th-8th Grade Mathematics Curriculum, the 5th-8th Grade Science Curriculum, and the 5th–7th Grade Social Studies Curriculum.

Quantitative content analysis is a methodical process for examining the content and themes of written or transcribed text to make valid inferences (Insch, Moore, & Murphy, 1997; Krippendorff, 2018). Berelson (1952) defined content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication.”. This method transforms categorized observations into quantitative statistical data which allows for systematic examination across diverse contexts. As Krippendorff (2018) highlighted that quantitative content analysis has proven to be valuable across various social sciences, including education, psychology, and communication studies, where it quantifies the occurrence of certain words, phrases, subjects, or concepts uncovering patterns, relationships, and insights within textual data. In accordance with that, Rourke and Anderson (2004) emphasize pilot testing, expert reviews, and iterative refinement as crucial steps to enhance reliability and validity in the development of coding protocols.

In this respect, the written curricula analysis focused particularly on the learning objectives of each curriculum, as they serve as a direct reflection of the overall goals of the subject-specific curricula. Unlike general aims and goals of curricula, which provide broad educational intentions, learning objectives provide explicit and measurable statements about the specific knowledge, skills, and competencies that students are expected to acquire. Therefore, examining these objectives provided a precise understanding of how compound competencies are embedded in the intended curriculum. In this regard, the researcher conducted a preliminary review of the learning objectives and their explanations across the middle school curricula for four subject areas.

Considering the theoretical background and all dimensions of compound competencies in the literature, the researcher followed coding each learning objective according to whether it explicitly targets, sub-targets, or does not target the compound competencies, in line with the criteria stated in the coding framework. While coding the learning objectives, a low-inference approach was utilized. With this approach, the researcher sought to avoid the integration and flexibility inherent in teaching, where learning objectives are often connected to various concepts to enrich lesson contexts. To prevent this from influencing the coding process, the analysis strictly examined whether each learning objective explicitly addressed any dimension or sub-dimension of the compound competencies. Thus, the researcher coded only what the data explicitly presented, rather than making subjective interpretations (Sandelowski, 2000). This ensured that the data "spoke for themselves," as Kaplan (1964) suggests. With this approach minimal interpretation was prioritized and focused on coding in alignment with the categories as they were explicitly presented. After completing the coding process for all subjects, the researcher conducted member checking to ensure the accuracy and reliability of the coding.

In the analysis of the written curricula, representative sampling for inter-rater reliability was employed to ensure the reliability and validity of the coding process (Lincoln and Guba, 1985). This approach was appropriate due to the extensive size of the data set, which made it impractical to analyzed the entire material for inter-rater reliability (Krippendorff, 2018). It allowed the researcher to select a subset of the data that was diverse and structurally reflective of the entire data set. Creswell (2014) asserts that findings can still be considered reliable, even when the complete data set is not analyzed. In this respect, to reflect the entire data set, 82 out of 289 learning objectives from the 5th–8th Grade Turkish Curriculum, 73 out of 215 learning objectives from the 5th–8th Grade Mathematics Curriculum, 76 out of 223 learning objectives from the 5th–8th Grade Science Curriculum, and 52 out of 98 learning objectives from the 5th–7th Grade Social Studies Curriculum were selected as a representative sample of the curricula.

According to Miles and Huberman (1994), representative sampling reduces the burden of coding large volumes of data and ensures that all major dimensions and variations within the data are included. The researcher selected a representative sample based on a strategy to achieve this. Therefore, learning objectives that are iteratively stated across different grade levels and critical for each grade level were included in the sample. To determine which objectives were critical, the researcher sought the opinions of teachers chosen for the inter-rater coding. At least 25% of the total learning objectives of each grade level were included in the sample to ensure sufficient representation across different curricula (Miles & Huberman, 1994; Neuendorf, 2002). In the representative inter-rater coding process, four teachers were determined to have more than 11 years of experience in Turkish, mathematics, science, or social studies. They were tasked with coding a representative sample of the learning objectives in their respective curricula. Before starting the inter-rater coding process, the researcher conducted an online meeting to inform the teachers about the dimensions and sub-dimensions of the compound competencies and coding framework. They coded each learning objective as either explicitly targeting, sub-targeting, or not targeting the compound competencies via a rating scale developed by the researcher.

Subsequently, the teachers completed the inter-rater coding on an Excel document within one week and delivered it to the researcher. Following that, the researcher compared these Excel sheets with her own. After the coding, the percent agreement method was used to check inter-coder reliability, in which a minimum level of 80% is acceptable for reliability (Neuendorf, 2002). The percent agreement was calculated using the following formula: *Percent Agreement= (Number of Agreements / Total Number of Items) x 100.* The coding comparison revealed a high level of agreement between the researcher and the teachers across four subject curricula. Thus, an inter-rater reliability of 88% was achieved for the Turkish curriculum, 85% for the mathematics curriculum, 83% for the science curriculum, and 88% for the social studies curriculum. Minor discrepancies between the researcher and the inter-rater teachers were identified and addressed in collaborative discussions. For this, the researcher met online with each inter-coder to make minor adjustments to the coding and reach a consensus. Creswell (2014) underlines that addressing such discrepancies between coders is essential for improving the reliability of the coding process. After the refinements with inter-rater teachers in coding, the new inter-rater reliability for the Turkish curriculum increased to 91%, for mathematics to 88%, for science to 89%, and for social studies to 93%.

#### 3.6.1.2. Descriptive Survey Analysis

To identify the extent to which teachers promote the development of compound competencies among middle school students, a descriptive survey was employed by the researcher. The survey utilized a 5-point Likert scale ranging from "Never" to "Always" for teachers' responses regarding how frequently they incorporated compound competencies into their lessons. The survey was administered to a total of 479 teachers, and data from 450 respondents were included in the final analysis. The participants represented four subject areas: Mathematics ($n$ = 139, 30.88%), Turkish ($n$ = 116, 25.77%), Science ($n$ = 125, 27.77%), and Social Studies ($n$ = 70, 15.55%). According to Karasar (2005), descriptive analysis in quantitative research involves summarizing data using statistical measures such as frequencies, percentages, and means. In line with Creswell's (2014) emphasis on descriptive analysis techniques, the data were tabulated to provide a clear and systematic representation of the findings. Descriptive analysis was conducted to summarize the survey data, using frequency tables and percentages to systematically present how frequently teachers incorporated compound competencies into their lessons. These methods, as outlined by Creswell (2014) and Field (2018), facilitated the clear interpretation of patterns and trends within the data, ensuring reliability for interpretation and discussion.

The initial step of the analysis involved conducting a reliability analysis to ensure the internal consistency of the survey instrument. In this respect, Statistical Package for the Social Sciences (SPSS) was utilized to analyses the Cronbach's alpha values for each of the six compound competency subsets: global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking skills, and entrepreneurship skills, as well as for the overall survey. Once the reliability of the instrument was confirmed, descriptive statistics, including means, standard deviations, and frequency distributions for each item, were obtained to provide a structured summary of teachers’ responses to the specific questions and to examine the extent to which teachers integrate compound competencies into their classrooms. However, to make the data more interpretable and aligned with the research objective, the data were further processed by collapsing the 5-point Likert scale into a 3-point scale. It has been suggested by researchers that simplifying Likert scales by collapsing response categories could potentially facilitate data analysis while maintaining the validity and reliability of the study. (Matell & Jacoby, 1971; Jeong & Lee, 2016; Chakrabartty & Gupta, 2016; Chakrabartty, 2023). To achieve this, responses categorized as "Never" and "Rarely" were merged into one group to represent low frequency, while "Frequently" and "Always" were combined to indicate high frequency. The "Sometimes" responses were retained as a middle category. Thereby, this transformation simplified the interpretation by emphasizing the frequency of teachers' practices in their lessons. Percentages for each of the three categories were calculated to facilitate easier interpretation of the data.

During the interpretation of the analysis, particularly focused on the "frequently or always" responses to highlight the extent to which teachers consistently promoted compound competencies in their lessons. As in the nature of teaching, teachers employ a wide range of instructional activities in their practice. However, the activities that teachers report engaging in "frequently or always" reflect the areas they deliberately prioritize and dedicate attention to fostering. Therefore, these responses are emphasized in the findings chapter of this study to provide a clearer indication of the competencies that receive attention in practice. This strategy is in line with suggestions made by Creswell (2014) and Field (2018), who stress the significance of data transformation for improved interpretation and communication in descriptive studies. Thereby, a practical viewpoint could be ensured that how these competencies are incorporated into instructional strategies by concentrating on responses that indicate teachers frequently or always implement these competencies in their practice.

### 3.6.2. Qualitative Data Analysis

To identify the factors that promote or hinder the development of compound competencies among middle school students, interviews were conducted with teachers, and qualitative data were obtained. As emphasized by Emerson, Fretz, and Shaw (2011), the first step in qualitative analysis involves thoroughly reading and familiarizing oneself with the interview transcripts. In this regard, the researcher initially immersed themselves in the data to gain a deeper understanding of the participants' perspectives before proceeding with content analysis. Yıldırım and Şimşek (2016) emphasize that the primary goal of qualitative research is to derive concepts and relationships that can explain the collected data. Through content analysis, the data undergo a more in-depth process, allowing for the identification of concepts and themes that may not be initially apparent through a purely descriptive approach.

For the analysis of the interview data in this study, content analysis was used. Content analysis aims to describe the data, uncover hidden realities within it, and systematically organize similar data into specific concepts and themes, making it comprehensible for the reader (Yıldırım & Şimşek, 2016). In this regard, the analysis of this qualitative research followed the four stages described by Yıldırım and Şimşek (2016): 1) coding the data, 2) identifying themes, 3) organizing codes and themes, 4) defining and interpreting the findings. In this respect, the qualitative data analysis process began with the coding of interview transcripts using the MAXQDA24 software. The researcher repeatedly read and reviewed the dataset, continuously refining and reworking the emerging codes. Through this iterative process, meaningful parts identified within the data were systematically coded. As asserted by Strauss and Corbin (1990), the data were analyzed inductively, deriving meanings from the dataset and identifying key dimensions relevant to the purpose of the study. In accordance with that, in this study, the researcher created codes directly from the data and ensure that the analysis was based upon the participants' responses (Strauss & Corbin, 1990). Strauss (1987) stated that the purpose of coding in qualitative research is not to determine the number of elements but rather to break down the data. Accordingly, the codes were organized into categories based on their relatedness which facilitate comparisons among similar elements and contribute to the formation of concepts (Maxwell, 2013).

As Bogdan and Biklen (2013) highlight that categories serve as a classification tool for organizing the collected descriptive data which provides a structured analysis process. In this respect, the codes were examined collectively and grouped under specific categories based on their commonalities, which is referred to as thematic coding (Yıldırım & Şimşek, 2016). During thematic coding, thematic integrity was carefully maintained to ensure that the data under each emerging theme demonstrated conceptual coherence. Additionally, dependability was also taken into consideration to ensure that all themes identified in the study meaningfully explained the collected data. Thus, while the emerged themes are distinct from one another, they also procedure a coherent and comprehensive structure within the research (Yıldırım & Şimşek, 2016). The qualitative data were analyzed using thematic coding, following the systematic stages outlined by Yıldırım and Şimşek (2016). To ensure reliability, intra-coder reliability was applied by re-coding a subset of the data after a certain period and assessing consistency (Miles & Huberman, 1994).

First, considered a rich and representative transcript of one teacher was initially coded by the researcher, and after three weeks, the same transcript was re-coded before proceeding with the coding of the entire dataset. The consistency between the first and second coding was then assessed. According to the literature, an agreement rate of 85% or higher is considered an acceptable level of intra-coder reliability (Miles & Huberman, 1994). In this study, the agreement rate was calculated as follows: *Agreement Rate = (Number of Matching Codes / Total Number of Coded Segments) x 100*. Based on this formula, the analysis demonstrated an 87% agreement rate, indicating that 87% of the coded segments were assigned the same codes in both coding sessions and it confirms that the coding process met the recommended reliability threshold. After establishing this agreement, the remaining data were systematically coded.

For organizing codes and themes, the researcher systematically structured the data through detailed and thematic coding. In this way, the data were defined and interpreted based on specific phenomena based on the teachers' responses. At this stage, the researcher presented the processed information without including personal opinions or interpretations. Additionally, peer debriefing was conducted with a PhD-level instructor in the field of educational sciences, who actively give lectures in the department. The expert reviewed a subset of the coded data and provided feedback on the clarity and consistency of the coding framework and thematic structure. Based on this discussion, necessary refinements were made to ensure the rigor and validity of the analysis (Lincoln & Guba, 1985).

Through the data analysis, the codes, categories, and themes were continuously refined and reorganized to enhance the interpretation of the data. Additionally, overlapping categories were reviewed and discussed with field experts and the research supervisor until the final versions of the categories and themes were established. The data analysis process of this study spanned from April 2024 to July 2024, covering transcription, coding, and thematic categorization. At the final step, for defining and interpreting the findings, the researcher analyzed the relationships between the findings and presented the categories under each theme using a detailed qualitative approach to ensure contextualized interpretation. Selected direct quotations were used to illustrate each category in order to provide a deeper understanding of participants' perspectives and experiences. Since the interviews were conducted in Turkish, the researcher translated the selected quotations into English. To ensure confidentiality and anonymity, teachers were labelled using codes such as T1: Turkish (language) teacher 1, M2: Mathematics teacher 2, F3: Science teacher, and S1: Social studies teacher 1. Accordingly, the interpreted findings of the study are presented in the subsequent chapters.

### 3.6.3. Mixed Methods Comparative Data Analysis and Integration

In this study, an explanatory sequential mixed methods design was employed to ensure a comprehensive understanding of the research problem by integrating quantitative and qualitative data (Creswell & Plano Clark, 2018). This design involved a two-phase approach: first, the quantitative phase, which included intended (written) curriculum analysis and descriptive survey analysis, was conducted to identify what the curriculum offers and to what extent teachers implement it in practice. Then, the qualitative phase, consisting of thematic coding of interview data, was carried out to provide deeper insights and explanations for the quantitative findings (Ivankova, Creswell, & Stick, 2006). To achieve this, a triangulation strategy was applied, where the findings from both research strands were systematically compared (Denzin, 2012).

The quantitative data derived from curriculum analysis and survey responses provided measurable patterns, while the qualitative data from interviews allowed for a more in-depth exploration of teachers' perceptions, experiences, and teaching practices about the development of compound competencies (Greene, 2007). The integration of these datasets helped to validate the findings and enhance the validity and reliability of the study (Bryman, 2006).

During the integration phase, key themes and categories emerging from the qualitative analysis, which explored the factors that promote or hinder the development of compound competencies through teachers' experiences, were juxtaposed with the quantitative findings. This comparison examined how these experiences aligned with or deviated from the intended (written) curriculum and survey-based results (Creswell & Creswell, 2017). This comparative analysis allowed for a nuanced interpretation, ensuring that both quantitative and qualitative data sources complemented each other in addressing the research questions holistically (Tashakkori & Teddlie, 2010). By employing an explanatory sequential mixed methods approach, this study expected to provide a multi-dimensional analysis and contributing to a deeper understanding of the educational landscape under investigation (Plano Clark & Ivankova, 2016).

### 3.7. Validity, Reliability, and Trustworthiness of the Study

This section outlines the measures taken to ensure the validity, reliability, and trustworthiness of both the quantitative and qualitative components of the study, as presented below.

#### 3.7.1. Validity and Reliability of the Quantitative Study

##### 3.7.1.1. Validity of the Rating Scale

To ensure the validity of the rating scale, a multi-step process was followed. First, the content validity of the rating scale was established through expert review (Fraenkel et al., 2012). The rating scale was initially developed based on a low-inference approach and refined iteratively (Sandelowski, 2000). The first draft was evaluated by the thesis committee, and necessary modifications were made based on their feedback. Further content validation was conducted by a PhD-level expert in educational sciences, who reviewed the rating scale and conducted a small-scale pilot coding on a sample of learning objectives. The expert reviewed the rating scale to determine whether the categories and criteria effectively captured the targeted competencies. Feedback was provided by identifying any aspects that were not adequately addressed by the rating scale and marking elements that required refinement. Additionally, content validity was strengthened by structuring the rating scale around explicitly defined categories and providing illustrative examples to guide the coding process. This iterative and collaborative approach contributed to enhancing the clarity, coherence, and practical usability of the scale for consistent application during the coding process. Thereby, it provided that the coding framework accurately measured what it was intended to assess and minimized subjective interpretation (Creswell, 2014).

#### 3.7.1.2. Reliability of the Rating Scale.

In a quantitative study, reliability pertains to the consistency of the scores obtained, ensuring that the results remain stable for an individual across different administrations of the same instrument and across various sets of items within the instrument (Fraenkel et al., 2012). To establish the reliability of the rating scale, an inter-rater reliability process was conducted with four experienced teachers (each having 11+ years of experience in Turkish, mathematics, science, or social studies). These teachers independently coded a representative sample of learning objectives using the rating scale. Before coding, an online training session was held to familiarize them with the coding framework, competency dimensions, and sub-dimensions.

After completing the inter-rater coding, the researcher compared their coded Excel sheets with her own coding. To measure inter-rater reliability, the percent agreement method was used, following the threshold of 80% agreement for reliability (Neuendorf, 2002). Initial coding comparisons revealed the following agreement levels: Turkish curriculum: 88%, Mathematics curriculum: 85%, Science curriculum: 83% Social studies curriculum: 88%. To address minor discrepancies, the researcher conducted online discussions with each inter-coder to resolve differences and refine the coding (Creswell, 2014). After these refinements, the final inter-rater reliability increased to: Turkish curriculum: 91%, Mathematics curriculum: 88%, Science curriculum: 89% Social studies curriculum: 93%, Thus, high coding consistency across raters was provided and these refinements enhanced the reliability of the rating scale.

#### 3.7.1.3. Validity of the Descriptive Survey.

To ensure the validity of the survey instrument, a multi-phase validation process was conducted, involving expert evaluations, a pre-pilot study, and a pilot study (Fraenkel et al., 2012; Creswell, 2014). This systematic approach was designed to enhance the clarity, structure, and relevance of the survey items. The first phase of validation involved a pre-pilot study with four middle school teachers from each subject area. These teachers were asked to evaluate the clarity, structure, and wording of the survey items to identify any potential ambiguities or difficulties in comprehension. The feedback collected from this phase led to refinements in wording and the consolidation of four items to avoid redundancy. Following the pre-pilot study, the second phase of validation included an expert review process. The revised survey was evaluated by two PhD-level experts in educational sciences, who assessed whether the items accurately reflected the intended competencies and aligned with the study's purpose.

The experts provided suggestions for further refinements, particularly concerning item wording and content alignment, which were incorporated into the survey before finalization. In order to ensure that the survey instrument effectively captured teachers' practices, perceptions, and implementation of compound competencies, the third phase involved a pilot study with 12 middle school teachers, representing four subject areas: mathematics (n = 3), Turkish language (n = 3), science (n = 3), and social studies (n = 3). The pilot study aimed to evaluate the overall functionality of the survey, ensure ease of completion, and identify any remaining ambiguities. The feedback gathered from this phase contributed to final refinements that improved the clarity and reliability of the survey instrument.

#### 3.7.1.4. Reliability of the Descriptive Survey

In this study, Cronbach's alpha was used to determine the internal consistency of the survey (Cronbach, 1951). A high Cronbach's alpha value indicates strong reliability, confirming that the items within each subset measure the same construct (DeVellis, 2017). The final version of the survey included 68 items categorized into six subsets, each designed to measure a specific compound competency: global competency ($n$ = 11), media literacy ($n$ = 9), literacy for sustainable development ($n$ = 12), financial literacy ($n$ = 14), computational thinking skills ($n$ = 12), and entrepreneurship skills ($n$ = 10). The internal consistency of the survey was evaluated using SPSS by calculating Cronbach's alpha for each subset as well as for the overall survey.

The overall Cronbach's alpha value was found to be 0.970, indicating excellent internal consistency (Nunnally & Bernstein, 1994). The reliability coefficients for each subset were as follows: global competency ($\alpha$ = .863), media literacy ($\alpha$ = .899), literacy for sustainable development ($\alpha$ = .943), financial literacy ($\alpha$ = .954), computational thinking skills ($\alpha$ = .899), and entrepreneurship skills ($\alpha$ = .917). The overall Cronbach's alpha was .970. According to Nunnally and Bernstein (1994), a Cronbach's alpha value above .70 is considered acceptable, while values above .80 indicate good reliability, and those exceeding .90 suggest excellent internal consistency. Based on these benchmarks, the survey instrument and its subsets demonstrated high reliability which confirms that the items consistently assess teachers' integration of compound competencies into their instructional practices.

### 3.7.2. Trustworthiness of the Qualitative Study

In mixed-method research, the qualitative data is evaluated based on the reliability and rigor of its methodological approach (Lincoln & Guba, 1985; Patton, 2002). Trustworthiness refers to the extent to which a researcher can assure that the study's findings are meaningful and credible. To establish trustworthiness in social science research, four key criteria are considered: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985).

#### 3.7.2.1. Credibility of the Qualitative Study

It is one of the most important aspects in establishing trustworthiness of research findings (Lincoln & Guba, 1985; Marshall & Rossman, 2011). In this regard, the researcher is responsible for taking the necessary actions to enhance the credibility of the results (Yıldırım & Şimşek, 2016). To ensure credibility, six key techniques have been identified: (1) strategies that improve the likelihood of producing reliable findings, such as triangulation, prolonged engagement, and persistent observation; (2) peer debriefing; (3) negative case analysis; (4) referential adequacy; (5) member checking; and (6) confirmatory analysis (Lincoln & Guba, 1985; Marshall & Rossman, 2011; Patton, 2002). In this study, several strategies were implemented to enhance the credibility of the qualitative phase. Firstly, triangulation was employed by gathering data from wide range of teachers across different subject areas and obtained data from curriculum analysis, descriptive survey and in-depth interviews in order to ensure a more comprehensive understanding of the research. To ensure the honesty of informants in contributing data, as described in consent forms, specific measures were taken throughout the data collection process. In particular, each teacher involved in the study was given the opportunity to decline participation, ensuring that only those who were genuinely willing and prepared to share their insights took part. This approach helped maintain the integrity and reliability of the data gathered through written curriculum analysis, descriptive survey, and in-depth interviews (Shenton,2004). Additionally, peer debriefing was conducted with a PhD-level instructor in educational sciences, who provided feedback on the clarity and consistency of the coding framework and thematic structure. The researcher also applied confirmatory analysis by repeatedly reviewing and refining codes, categories, and themes through an iterative process while analyzing the interview data. To further enhance the trustworthiness and accuracy of the findings, member checking was conducted. After the interviews, transcripts were sent back to the participating teachers, giving them the opportunity to review their statements and confirm that their words accurately reflected their intended meaning. By incorporating this process, the study aimed to minimize misinterpretations and enhance the credibility of the findings (Lincoln & Guba, 1985; Shenton,2004). Moreover, to assess intra-coder reliability, the researcher revisited the coded segments three weeks after the initial coding was completed. This process involved reassessing and comparing the previously coded data, resulting in an 87% agreement rate, which aligns with the reliability threshold recommended by Miles & Huberman (1994). These measures collectively enhanced the trustworthiness and rigor of the qualitative findings in this study.

#### 3.7.2.2. Transferability of the Qualitative Study

In qualitative research, it similarly refers to the concept of external validity in quantitative studies. While naturalistic researchers cannot directly establish external validity, Lincoln and Guba (1985) emphasized the importance of providing "thick descriptions" that allow others to determine whether the findings can be applied to different contexts (p. 316). In this study, transferability was strengthened through several measures. In this regard, thick descriptions were ensured by incorporating detailed qualitative data, including direct quotations from teachers, which added depth and contextual richness to the findings (Lincoln & Guba, 1985). To further enhance transparency, the researcher clearly outlined the boundaries and limitations of the study, that framed the scope of the research (Shenton, 2004). In this respect, the number of schools participating and the criteria for their selection were outlined, emphasizing that the study focused on teachers from four different subject areas to capture a diverse range of perspectives. The participants were selected based on their teaching experience, allowing for the collection of rich data from experienced teachers and heads of departments. Furthermore, the number and duration of data collection sessions were described, offering insights into the depth of engagement with participants. Lastly, the time period over which the data was gathered was explicitly stated, reinforcing the reliability and consistency of the study. By incorporating these elements, the researcher provided a comprehensive framework, enabling readers to fully grasp the context, scope, and limitations of the research.

Unlike in quantitative research, where generalizability is the researcher’s responsibility, in qualitative research, the focus is on demonstrating transferability to similar settings (Erlandson et al., 1993). To achieve this, Erlandson et al. (1993) also highlight purposeful sampling as a key strategy, ensuring diverse and meaningful participant selection. In this regard, a detailed explanation of data collection tools, procedures, and data analysis was provided, along with a comprehensive description of the explanatory sequential design. Finally, purposeful sampling was employed to select information-rich cases, enhancing the study's contextual relevance and applicability.

#### 3.7.2.3. Dependability of the Qualitative Study

In qualitative research corresponds to reliability in quantitative studies, where consistency and replicability of findings are emphasized. However, qualitative research acknowledges that "the social world is constantly being constructed, making the concept of replication inherently problematic" (Marshall & Rossman, 2011). To enhance the dependability of this study, several methodological strategies were implemented to ensure the consistency, transparency, and systematic nature of the qualitative analysis process. First, dependability maintained by thoroughly documenting each stage of the research, including data collection, transcription, coding, and thematic categorization, allowing for a clear research process. Additionally, intra-coder reliability was assessed by re-coding a subset of the data after a three-week interval to evaluate the consistency of the coding process. Furthermore, the coding process was systematically structured following the four-stage content analysis framework proposed by Yıldırım and Şimşek (2016), ensuring that data were analyzed in a rigorous and methodical manner. To reinforce consistency, peer debriefing was also conducted with a PhD-level expert in educational sciences, who reviewed a portion of the coded data and provided feedback, leading to necessary refinements in the coding framework. These concerns strengthened the dependability of this study by ensuring a systematic, transparent, and reproducible research process.

#### 3.7.2.4. Confirmability of the Qualitative Study

Confirmability in qualitative research ensures objectivity and that the findings can be verified by other studies (Lincoln & Guba, 1985; Marshall & Rossman, 2011).

Erlandson et al. (1993) suggest using a confirmability audit to assess whether the researcher's conclusions align with the raw data. This process functions as a verification mechanism, comparing findings with original data to ensure accuracy and trustworthiness. To support confirmability, the researcher systematically preserved interview instruments, raw data from interviews, coding processes, field notes, analytical memos, and final interpretations. Additionally, triangulation was applied by gathering data from teachers across four subject areas through semi-structured interviews, curriculum analysis, and descriptive surveys. Confirmatory analysis was conducted by re-examining coded data, ensuring that themes accurately reflected participants' perspectives. To further minimize researcher bias, peer debriefing with a PhD-level expert in educational sciences was conducted, refining the coding framework based on feedback. By integrating these strategies, the study was conducted with rigor, transparency, and objectivity, allowing future researchers to verify its findings.

### 3.8. The Role of the Researcher in the Study

As a researcher, I position myself within a constructivist paradigm and acknowledge that my personal and professional background inevitably influences the research process. Throughout this mixed-method study, my perspectives and professional experiences played an influential role in shaping the design, data collection, and interpretation stages. I worked for eight years as a classroom teacher in primary schools, both in Türkiye and abroad, where I gained firsthand experience in supporting children's holistic development. Working closely with learners aged 6 to 12 allowed me to observe the evolving needs of students in the 21st century and deepened my interest in their cognitive, emotional, and social growth.

Motivated by these experiences, I pursued a master's degree in Educational Psychology, during which I explored the cognitive, emotional, and psycho-social dimensions of learning and conducted research on skills such as cognitive flexibility and problem-solving. During this time, I became especially interested in how different skills and competencies can be supported in school settings through both curricular and extracurricular activities. This interest guided my doctoral studies in Curriculum and Instruction, where I explored how curricula support the development of essential skills and competencies, and how they can be redesigned to better fulfill this aim. Building on this perspective, my research focused on ways to integrate these competencies into curriculum design and instructional practices, with a particular emphasis on the requirements of 21st-century education.

Following my teaching experience, I transitioned into a role as an educational specialist at the central office of a nationwide private school network, which also served as the setting for this study where I collected the data. In this respect, I have been responsible for leading continuous school development initiatives. These responsibilities have included conducting regular school visits and holding interviews with school principals, vice principals, teachers, and other educational staff to examine the school from multiple perspectives and provide tailored support. As part of my responsibilities, I also conducted detailed current state analyses to identify each school's areas of strength and improvement, and led the design and implementation of strategic development plans aimed at fostering continuous school improvement. These experiences deepened my understanding of school climate, institutional needs, and the interactions among key stakeholders in educational settings. By working with many different schools across the country, I have gained a better understanding of how things like school leadership, teamwork among teachers, student participation, and support from parents all work together to affect students' academic success and social-emotional development. These observations across various school levels and contexts have helped me develop a more comprehensive and connected view of school development. This evolving perspective played a role in shaping my interpretation of the data collected during the study as well.

In this mixed-method study, I conducted research in a setting with which I was already professionally familiar. The setting of the research is a nationwide private school network in Türkiye, established by a non-governmental organization that defines itself as a "project for the future." Through my professional role within this organization, I had prior knowledge of its vision, pedagogical philosophy, and strategic emphasis on future-oriented skills and competencies. My familiarity with the setting and professional experience helped me understand the context and interpret the findings with greater depth. Nevertheless, in order to ensure ethical integrity and minimize potential bias, I took several precautions throughout the research process, including using structured data collection procedures, ensuring voluntary participation and confidentiality, and documenting each step transparently to support the trustworthiness of the study.

### 3.9. Limitations of the Study

It is important to acknowledge several limitations of this study when considering its findings. Firstly, the study focused on four subjects: Turkish, mathematics, social studies, and science, to examine the extent to which these subject areas promote the development of compound competencies. Therefore, the findings are limited to these four subjects, and the conclusions cannot be generalized beyond this scope. Furthermore, as the study was conducted at the middle school level, the applicability of the results to other educational levels, such as high school or primary school, may be limited.

Regarding the development of compound competencies, this study focused on both the intended (written) and implemented curricula. For the intended (written) curriculum, the research was limited to the learning objectives outlined in the curriculum documents and did not take into account other national policy documents that may also influence the intended curriculum. Regarding the review of the written curriculum documents, the identified limitations include the background knowledge, learning experiences, and identities of both the researcher and the teachers selected as the representative sample for the inter-rater coding process.

In terms of the implemented curriculum, the data were collected through descriptive surveys and interviews with teachers across the four subjects, classroom observations were not conducted. As a result, the reliance on self-reported data from teachers limits the ability to fully interpret how the curriculum is being implemented in practice.

Patton (2002) highlighted that participants' perspectives or interpretations may be influenced by factors such as personal biases, limited knowledge, and the psychological state of the interviewees, which can affect the accuracy and reliability of the self-reported data provided during the interviews. Additionally, the interviews were conducted online via Zoom rather than face-to-face. Although online interviews allowed for flexibility, face-to-face interactions could have provided a more personal connection and allowed for richer responses.

Lastly, the study was confined to private school settings, which limits the generalizability of the findings regarding the promotion of competency development to public schools, as the context of private schools may differ notably from that of public institutions. Given these limitations, the findings of this study should be interpreted in light of its specific design and contextual boundaries. Nevertheless, all necessary precautions were taken to ensure the trustworthiness of the results, including methodological rigor and ethical sensitivity maintained throughout the research process.

# CHAPTER 4

# RESULTS

In line with the purpose of the study to determine the alignment and challenges between the intended and implemented subject-specific middle school curricula (2018) concerning the teaching of compound competencies, this chapter presents the findings from both the quantitative and qualitative analyses conducted within this mixed-methods research.

As is the nature of sequential exploratory research design, the findings in this chapter are organized according to a step-by-step research process. Aligned with the research questions, the first step involved analyzing the written curriculum documents of Turkish (language), mathematics, science, and social studies, which serve as the intended curriculum, to determine the extent to which compound competencies are embedded. In the following step, a descriptive survey was conducted to determine the degree to which teachers incorporate activities promoting the development of students' compound competencies into their practice. This descriptive survey focused on exploring how school practices of teachers reflect the implemented curriculum, highlighting how teachers enact and interpret the intended (written) curriculum. Following that, the results of the descriptive survey were supported with semi-structured interviews in order to have an in-depth analysis of the findings. In this regard, in-depth semi-structured interviews were conducted with middle school teachers from the four subjects' areas such as mathematics, Turkish, social studies, and science, in order to gather rich qualitative data about the factors that support or hinder the development of these competencies in practice. The following sections will present the detailed findings from each step, providing an overview of compound competency development in middle school education**.**

## 4.1. Integration of Compound Competencies into Middle School Intended Curricula

To address the first research question, which examines the extent to which middle school intended curricula promote the development of compound competencies among middle school students, the researcher developed and employed a rating scale based on a low-inference approach to systematically analyzed the learning objectives of the middle school intended (written) curriculum documents. The data collected from these documents were analyzed using quantitative content analysis. In this respect, the findings of the four subject-specific curricula, including 5th-8th Grade Mathematics Curriculum (MoNE, 2018) ($n$ = 215), the 5th-8th Grade Turkish Curriculum (MoNE, 2019) ($n$ = 90), the 5th-8th Grade Science Curriculum (MoNE, 2018) ($n$ = 223), and the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) ($n$ = 98) (as Social Studies is not included in 8th-grade lessons), are outlined below in this section.

### 4.1.1. Analysis of Compound Competencies in Middle School Intended Curricula

Following the analysis of each learning objective using a low-inference approach, the data revealed that some learning objectives did not target the development of the competencies at all, while others partially targeted it, and some explicitly targeted the development of the competencies. The frequencies and percentages for each category, obtained as a result of the analysis, are presented below in Table 6.

**Table 6**. *Frequency Distribution of Each Competency Across Four Subject-Specific Curricula*

| Subject Specific Curriculum | Competencies | Not targeted | | Partially targeted | | Explicitly Targeted | |
|---|---|---|---|---|---|---|---|
| | | *f* | % | *f* | % | *f* | % |
| Mathematics | | | | | | | |
| | Global Competency | 214 | 99,5% | 1 | 0,5% | 0 | 0% |
| | Media Literacy | 213 | 99% | 2 | 1% | 0 | 0% |
| | Literacy for Sustainable Development | 215 | 100% | 0 | 0% | 0 | 0% |
| | Financial Literacy | 211 | 98% | 4 | 2% | 0 | 0% |
| | Computational Thinking | 33 | 15% | 182 | 85% | 0 | 0% |
| | Entrepreneurship | 215 | 100% | 0 | 0% | 0 | 0% |

**Table 6** *(continued)*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Turkish | | | | | | | |
| | Global Competency | 289 | 100% | 0 | 0% | 0 | 0% |
| | Media Literacy | 125 | 43% | 135 | 47% | 29 | 10% |
| | Literacy for Sustainable Development | 289 | 100% | 0 | 0% | 0 | 0% |
| | Financial Literacy | 289 | 100% | 0 | 0% | 0 | 0% |
| | Computational Thinking | 230 | 80% | 49 | 17% | 8 | 3% |
| | Entrepreneurship | 265 | 92% | 24 | 8% | 0 | 0% |
| Science | | | | | | | |
| | Global Competency | 215 | 96% | 8 | 4% | 0 | 0% |
| | Media Literacy | 210 | 94% | 13 | 6% | 0 | 0% |
| | Literacy for Sustainable Development | 193 | 87% | 28 | 13% | 1 | 0% |
| | Financial Literacy | 214 | 96% | 5 | 2% | 3 | 1% |
| | Computational Thinking | 134 | 60% | 99 | 44% | 0 | 0% |
| | Entrepreneurship | 188 | 84% | 45 | 20% | 0 | 0% |
| Social Studies | | | | | | | |
| | Global Competency | 19 | 19% | 70 | 71% | 9 | 9% |
| | Media Literacy | 83 | 85% | 9 | 9% | 6 | 6% |
| | Literacy for Sustainable Development | 57 | 58% | 37 | 38% | 4 | 4% |
| | Financial Literacy | 81 | 83% | 10 | 10% | 7 | 7% |
| | Computational Thinking | 72 | 73% | 26 | 27% | 0 | 0% |
| | Entrepreneurship | 87 | 89% | 8 | 8% | 3 | 3% |

*Note. Not target* refers to number of learning objectives that do not explicitly target the development of compound competency. *Partially targeted* refers to number of learning objectives that target the competency indirectly, without explicitly stating the competency (e.g., sub-dimensions of the competency are included in the statements or descriptions of learning objectives). *Explicitly targeted* refers to number of learning objectives that explicitly target the development of compound competency.

***The 5th-8th Grade Mathematics Curriculum (MoNE, 2018)***: According to the Table 6, in the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) none of the 215 learning objectives or their descriptions explicitly targeted or partially targeted the development of literacy for sustainable development or entrepreneurship skills. Meanwhile, global competency was partially targeted in only one out of the 215 learning objectives; media literacy was partially targeted in only two (1%), while financial literacy was partially targeted in only four (2%). Even though computational thinking skill was not explicitly targeted in 33 learning objectives, it was embedded into 182 (85%) out of 215 learning objectives. The data revealed that while the intended 5th-8th Grade Mathematics Curriculum (MoNE, 2018) offers limited opportunities to develop compound competencies such as global competency, media literacy, literacy for sustainable development, financial literacy, and entrepreneurship, it does promote computational thinking skills based on the high frequency (*n* = 182, 85 %) of the partially targeted category.

***The 5th-8th Grade Turkish Curriculum (MoNE, 2019):*** As it is seen in Table 6, the 5th-8th Grade Turkish Curriculum (MoNE, 2019) encompasses a total of 289 learning objectives and the results of the analysis revealed that none of these 289 learning objectives nor their descriptions explicitly targeted or partially targeted the development of the global competency, literacy for sustainable development or financial literacy. However, entrepreneurship was partially targeted in only 24 (8%) out of 289 learning objectives while it was not embedded in the rest of the 265 (92%). Regarding computational thinking skills, 49 (17%) out of 289 learning objectives were partially targeted and eight (3%) of them were explicitly targeted. For media literacy, the data revealed that the 135 (47%) out of 289 learning objectives were partially targeted and 29 (10%) of them explicitly targeted. In total, the majority of the learning objectives (*n* = 164, 57 %) were either explicitly targeted or partially targeted for media literacy. Overall, global competency, literacy for sustainable development, and financial literacy were not targeted at all in the 5th–8th Grade Turkish Curriculum. However, entrepreneurship (*n* = 24, 8%) and computational thinking skills (*n* = 57, 20%) were explicitly or partially targeted to a limited extent, while media literacy (*n* = 164, 57%) received a high level of focus within the learning objectives of the 5th–8th Grade Turkish Curriculum.

***The 5th-8th Grade Science Curriculum (MoNE, 2018):*** According to the results of the analysis in Table 6; for global competency, 8 (4%) out of 223 learning objectives; for media literacy, 13 (6%) out of 223 learning objectives; for computational thinking skills 99 (44%) out of 223, for entrepreneurship 45 (20%) out of the 223 learning objectives were partially targeted. For literacy for sustainable development 28 (13%) out of 223 learning objectives were partially targeted, and one was explicitly targeted, for financial literacy five (2%) out of 223 learning objectives were partially targeted and three (1%) out of 223 were explicitly targeted. Overall, in the 5th–8th Grade

Science Curriculum, global competency (*n* = 8, 4%), media literacy (*n* = 13, 6%), and financial literacy (*n* = 8, 3%) were either explicitly targeted or partially targeted to a minimal extent. Literacy for sustainable development (*n* = 29, 13%) received a limited focus, while entrepreneurship (*n* = 45, 20%) was addressed to a considerable extent. Computational thinking skills (*n* = 99, 44%) emerged as the most emphasized competency, receiving a high level of focus in the learning objectives.

***The 5th-7th Grade Social Studies Curriculum:*** According to the results of analysis, Table 6 demonstrates that in the 5th-7th Grade Social Studies Curriculum; for global competency, 70 (71%) out of 98 learning objectives were partially targeted and nine (9%) were explicitly targeted; for media literacy 9 (9%) out of 98 learning objectives were partially targeted and six (6%) were explicitly targeted; for literacy for sustainable development 37 (38%) out of 98 learning objectives were partially targeted and four (4%) were explicitly targeted; for financial literacy, 10 (10%) out of 98 learning objectives were partially targeted and seven (7%) were explicitly targeted; for computational thinking skills, 26 (27%) out of 98 learning objectives were partially targeted; for entrepreneurship, eight (8%) out of 98 learning objectives were partially targeted and three (3%) were explicitly targeted. The overall data show that within the 5th–7th Grade Social Studies Curriculum, global competency (*n* = 79, 80%) was the most frequently targeted or partially targeted competency, with a higher level of focus. It was followed by literacy for sustainable development (*n* = 42, 42%), media literacy (*n* = 15, 15%), financial literacy (*n* = 17, 17%), computational thinking skills (*n* = 26, 27%), and entrepreneurship (*n* = 11, 11%), which received a minimal level of focus.

***The Overall Integration of Compound Competencies into the Middle School Curricula:*** To address the first research question, the analysis of the four subject-specific middle school curricula in terms of the integration of the compound competencies reveals substantial differences. In this regard, the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) demonstrates a weak focus on global competency, media literacy, literacy for sustainable development, financial literacy, and entrepreneurship; however, the computational thinking skills were highly integrated into the learning objectives. The 5th-8th Grade Turkish Curriculum (MoNE,

2019) reveals a high integration of media literacy, with over half of its learning objectives targeting or partially targeting this competency; however, it demonstrates minimal integration of the global competency, literacy for sustainable development, or financial literacy. The 5th-8th Grade Science Curriculum (MoNE, 2018) provided an emphasis on computational thinking skills and entrepreneurship at higher frequencies, while also addressing literacy for sustainable development, media literacy, global competency, and financial literacy to a lesser extent. Finally, the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) was found to be most comprehensive in developing compound competencies, excelling in global competency and literacy for sustainable development; it also contained, at certain extents, financial literacy, media literacy, and computational thinking. The distribution of competencies across the four subject-specific curricula demonstrates that each curriculum prioritizes different compound competencies. Global competency is most prominently integrated into the social studies curriculum, while media literacy is primarily emphasized in the Turkish curriculum. Computational thinking skills are heavily embedded in the mathematics and science curricula, whereas entrepreneurship and literacy for sustainable development are more evident in the science and social studies curricula. Even though financial literacy is less frequently targeted overall, is most noticeable in the social studies curriculum. This reflects a diverse emphasis within each curriculum, rather than a holistic approach to developing compound competencies in middle school students. This variation highlights how different subject areas contribute uniquely to the broader framework of compound competencies.

### 4.2. Extent of Compound Competencies’ Development in Implementation

In alignment with the second research question, a descriptive survey was conducted to examine the extent to which teachers' enacted activities foster the compound competencies. To deepen this inquiry, its sub-question aimed to explore the extent to which teachers from different subject areas support the development of these competencies among middle school students. In this respect, the researcher developed and employed a survey consisting of 68 items organized under six subsets, each representing a specific compound competency, utilizing a five-point Likert scale with response options ranging from never to always (e.g. never, rarely, sometimes, frequently, always).

### 4.2.1. Teachers' Responses on the Extent of Developing Compound Competencies in Implementation

In order to facilitate and enhance the interpretability of the survey results, the responses, which were originally recorded on a 5-point Likert scale, were converted to three categories while presenting the findings. As the purpose of the study was to determine the frequency of activities implemented by teachers to foster compound competencies, "never" and "rarely" were combined into one group, "sometimes" was maintained as a distinct category, and "frequent" and "always" were grouped into another. Researchers claim that collapsing Likert scales still maintain the validity and reliability of the study while simplifying data analysis (Jeong & Lee, 2016; Matell & Jacoby, 1971; Chakrabartty, 2023; Chakrabartty & Gupta, 2016). In this respect, 5-point scale was converted into 3-point scale as “never&rarely”, “sometimes” and “frequently&always”. Through this method, the study aims to identify the activities that teachers enact with a greater extent and those they enact less frequently. Creswell (2014) emphasizes the importance of systematically categorizing data during descriptive analysis to identify patterns and relationships. He asserts that this approach clarifies complex data sets and aligns the interpretation of results with the purpose of the study (Creswell, 2014). In this study, this perspective was taken into account, as the nature of education inherently allows teachers, facilitators, tutors, or others to expand instruction by varying the focus across subjects. Therefore, teachers have the flexibility to expand learning objectives and deliver content beyond what they imply. Acknowledging this nature of education, the survey results were interpreted with particular emphasis on responses that indicated the frequent implementation of competency development. With this approach, aimed at ensuring the findings of the study highlight areas where competencies are frequently and always promoted. This perspective supports a more nuanced interpretation of how often compound competencies are actively encouraged in daily teaching practices. In this context, the researcher determined the thresholds for interpretation based on the patterns observed in the data set to enhance the clarity of the analysis. Accordingly, when more than 60% of teachers responded in the 'frequently & always' category, it was defined as *a high level of implementation* or integration of such activities. Similarly, when 30%–59% of teachers responded in the 'frequently & always' category, it was defined as *a moderate level of implementation* or integration of such activities. Lastly, when less than 30% of teachers responded in the 'frequently & always' category, it was defined as *a low level of implementation* or integration of such activities. This structure allows for a clearer comparison across subject areas and competency types, while preserving the integrity of each subset. In accordance with that, the survey results of the four subject teachers within the subsets of global competency, media literacy, literacy for sustainable development, financial literacy, computational thinking skills, and entrepreneurship, as well as the overall findings, are presented in the following sections of this chapter. The frequencies and percentages of the teachers' responses to the survey converted to a 3-point scale are outlined for each subset below. The descriptive statistics of teachers' responses to the survey, including frequency, mean, and standard deviation based on the 5-point Likert scale, are presented in Appendix D. Examining the items within the subsets of compound competencies reveals that teachers demonstrate differences in how frequently they incorporate activities to develop competencies into their practice. Therefore, the teacher’s responses vary across items as 'never & rarely', 'sometimes,' or 'frequently & always'. It reveals that certain aspects of these competencies are integrated into lessons more frequently or rarely than other aspects. In the following sections, to elaborate on this variation, mostly the percentage of teacher responses in the 'frequently & always' category was interpreted for each item, below.

#### 4.2.1.1. Teachers' Responses on the Extent of Global Competency Subset in Implementation

The results from the global competency subset are presented in Table 7, which demonstrate the teachers' self-reported frequency of incorporating global competency skills into their teaching practices across subject areas.

**Table 7**. *Teachers' Responses to the Survey's Global Competency Subset*

| No. | Items for global competency | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 1 | I integrate culturally relevant values, beliefs, perspectives, and practices into the subject area | Math | 33 (24%) | 55 (39%) | 51 (37%) |
| | | Sci | 27 (21%) | 37 (26%) | 61 (53%) |
| | | So | 0 (0%) | 5 (8%) | 65 (92%) |
| | | Tr | 7 (6%) | 36 (34%) | 73 (60%) |
| 2 | I facilitate discourse among students regarding local, global, and/or intercultural issues. | Math | 29 (21%) | 65 (47%) | 45 (32%) |
| | | Sci | 19 (15%) | 40 (32%) | 66 (53%) |
| | | So | 1 (1%) | 14 (20%) | 55 (79%) |
| | | Tr | 4 (3%) | 37 (32%) | 75 (65%) |
| 3 | I implement activities that draw attention to intercultural differences. | Math | 48 (35%) | 65 (47%) | 26 (19%) |
| | | Sci | 30 (24%) | 51 (41%) | 44 (35%) |
| | | So | 4 (6%) | 14 (20%) | 52 (74%) |
| | | Tr | 10 (9%) | 50 (43%) | 56 (48%) |
| 4 | I encourage my students to respect different worldviews. | Math | 4 (3%) | 20 (14%) | 115 (83%) |
| | | Sci | 4 (3%) | 6 (5%) | 115 (92%) |
| | | So | 0 (0%) | 3 (4%) | 67 (96%) |
| | | Tr | 0 (0%) | 11 (9%) | 105 (91%) |
| 5 | I ask students to critically analyze information about local, global, and/or intercultural issues. | Math | 24 (17%) | 41 (29%) | 74 (53%) |
| | | Sci | 8 (6%) | 27 (22%) | 90 (72%) |
| | | So | 2 (3%) | 6 (9%) | 62 (89%) |
| | | Tr | 4 (3%) | 18 (16%) | 94 (81%) |
| 6 | I include activities that enable students to use their foreign language skills in relation to the topics, units, and/or concepts covered. | Math | 43 (31%) | 58 (42%) | 38 (27%) |
| | | Sci | 21 (17%) | 43 (34%) | 61 (49%) |
| | | So | 21 (30%) | 26 (37%) | 23 (33%) |
| | | Tr | 39 (34%) | 28 (24%) | 49 (42%) |
| 7 | I encourage students to join international, multicultural projects and competitions addressing global challenges. | Math | 13 (9%) | 42 (30%) | 84 (60%) |
| | | Sci | 7 (6%) | 26 (21%) | 92 (74%) |
| | | So | 6 (9%) | 11 (16%) | 53 (76%) |
| | | Tr | 6 (5%) | 31 (27%) | 79 (68%) |
| 8 | To foster global interaction, I facilitate student’s participation in congresses, conferences, forums centered on global issues. | Math | 32 (23%) | 54 (39%) | 53 (38%) |
| | | Sci | 15 (12%) | 36 (29%) | 74 (59%) |
| | | So | 10 (14%) | 18 (26%) | 42 (60%) |
| | | Tr | 18 (16%) | 34 (29%) | 64 (55%) |
| 9 | To foster global citizenship, I incorporate activities that raise awareness for a sustainable world. | Math | 17 (12%) | 44 (32%) | 78 (56%) |
| | | Sci | 4 (3%) | 23 (18%) | 98 (78%) |
| | | So | 0 (0%) | 6 (9%) | 64 (91%) |
| | | Tr | 2 (2%) | 14 (12%) | 100 (86%) |
| 10 | I encourage students to contribute to global well-being and sustainable development. | Math | 11 (8%) | 44 (32%) | 84 (60%) |
| | | Sci | 4 (3%) | 19 (15%) | 102 (82%) |
| | | So | 0 (0%) | 8 (11%) | 62 (89%) |
| | | Tr | 1 (1%) | 22 (19%) | 93 (80%) |
| 11 | I encourage students to engage in NGOs and community service to contribute to their local communities. | Math | 13 (9%) | 40 (29%) | 86 (62%) |
| | | Sci | 6 (5%) | 25 (20%) | 94 (75%) |
| | | So | 0 (0%) | 9 (13%) | 61 (87%) |
| | | Tr | 3 (3%) | 23 (20%) | 90 (78%) |

*Note*. The Global Competency subset includes 11 items ($n$ = 11). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics ($n$ = 139), Science ($n$ = 125), Turkish ($n$ = 116), and Social Studies ($n$ = 70). The total number of participants across all subject areas is $N$ = 450.

As it is presented in Table 7, teachers from different subject areas demonstrate noticeable differences in the extent to which they implement activities to cultivate the students' global competency. A majority of social studies teachers (*n* = 65, 92%) and Turkish teachers (*n* = 73, 60%) demonstrated a high level of implementation by frequently carrying out activities *addressing cultural values* (*Item 1*). In comparison, science teachers (*n* = 61, 53%) and less than half of mathematics teachers (*n* = 51, 37%) reported a moderate level of incorporating such activities into their teaching. The implementation of *facilitating discourse regarding local, global, and intercultural issues (Item 2)* varied across subject areas. A majority of social studies teachers (*n* = 55, 79%) and Turkish teachers (*n* = 75, 65%) reported a high level of implementation by frequently incorporate such discussions during their lessons. In comparison, science teachers (*n* = 65, 53%) and less than half of mathematics teachers (*n* = 45, 32%) reported that they frequently incorporated these activities into their lessons, which demonstrates a moderate level of implementation.

In *highlighting intercultural differences* (*Item 3*), a majority of social studies teachers (*n* = 52) demonstrated a high level of implementation, with 74% of them reporting that they frequently or always integrate such activities into their teaching. Less than half of Turkish teachers (*n* = 56, 48%) and science teachers (*n* = 66, 35%) reported a moderate level of integration. In contrast, mathematics teachers (*n* = 26) reported the lowest level of integration, with only 19% frequently including these activities in their lessons. Additionally, a moderate proportion of mathematics teachers (*n* = 48, 35 %) also revealed that they rarely include such activities in their implementation.

*Promoting respect for different worldviews (Item 4)* was the most implemented item across all subject areas. Most social studies teachers (*n* = 67, 96%), Turkish teachers (*n* = 105, 91%), science teachers (*n* = 115, 92%) and mathematics teachers (*n* = 115, 83%) reported a high level of implementation in encouraging respect for diverse perspectives.

In *encouraging students to critically analyze local, global, and intercultural issues (Item 5)*, a majority of social studies teachers (*n* = 62, 89%), Turkish teachers (*n* = 94, 81%), and science teachers (*n* = 90, 72%) demonstrated a high level of implementation, while a slightly more than half of the mathematics teachers (*n* = 54, 53%). reported that they frequently include such activities in their practice. With respect to *the incorporating activities that enable students to use their foreign language skills in relation to topics covered (Item 6)*, less than half of the science teachers (*n* = 61, 49%), Turkish teachers (*n* = 49, 42%), and social studies teachers (*n* = 23, 33%) indicated that they frequently or always integrate such activities in their teaching, which refers to a moderate level of implementation. Conversely, a small proportion of the mathematics teachers (*n* = 38, 27%) exhibited a frequent engagement with such activities, which shows a low level of implementation for this item. On the other hand, a considerable proportion of Turkish teachers (*n* = 39, 34%), mathematics teachers (*n* = 43, 31%) and social studies teachers (*n* = 21, 30%) also indicated that they rarely foster the foreign language skills of students in relation to topic covered.

The *promotion of student participation in international projects, competitions, and events (Item 7)* was a common practice among teachers across all four-subject area. In this respect, a majority of social studies teachers (*n* = 53, 76%), science teachers (*n* = 92, 74%), Turkish teachers (*n* = 79, 68%) and mathematics teachers (*n* =80, 60%) reported that they frequently or always implementing such activities.

In *fostering global interaction through events such as congresses, forums, and conferences (Item 8)*, most of the social studies teachers (*n* = 42, 60%) reported a high level of implementation, while more than half of the science teachers (*n* = 74, 59%), and Turkish teachers (*n* = 64, 55%), and a considerable proportion of mathematics teachers (*n* = 53, 38%) reported that they frequently or always encourage students for global interactions during their practice which demonstrates a moderate level of implementation. In *incorporating activities aimed at developing students as world citizens and raising awareness about sustainability (Item 9)*, a majority of social studies teachers (*n* = 64, 91%), Turkish teachers (*n* = 100, 86%), and science teachers (*n* = 98, 78%) reported a high level of implementation, while mathematics teachers (*n* = 78, 56%) reported that they frequently integrate such activities into their lessons which indicates a moderate level of implementation. For *encouraging students to* *contribute to sustainable development and global well-being (Item 10)*, a high level of implementation was reported across all four subject areas, with social studies teachers (*n* =62, 89%) leading, followed by science teachers (*n* = 102, 82%), Turkish teachers (*n* = 93, 80%), and mathematics teachers (*n* = 84, 60%). The integration of *promoting participation in community service activities, including NGOs and social responsibility projects (Item 11)*, was reported as frequently or always integrated into practice by majority of social studies teachers (*n* = 61, 87%), followed by Turkish teachers (*n* = 90, 78%), science teachers (*n* = 94, 75%), and mathematics teachers (*n* = 86, 62%).

In this respect, to provide a comprehensive understanding of the findings, Figure 7 illustrates comparable data on the distribution of teachers' responses in the *Global Competency Subset* with respect to the 'Frequent and Always' category across four subject areas.

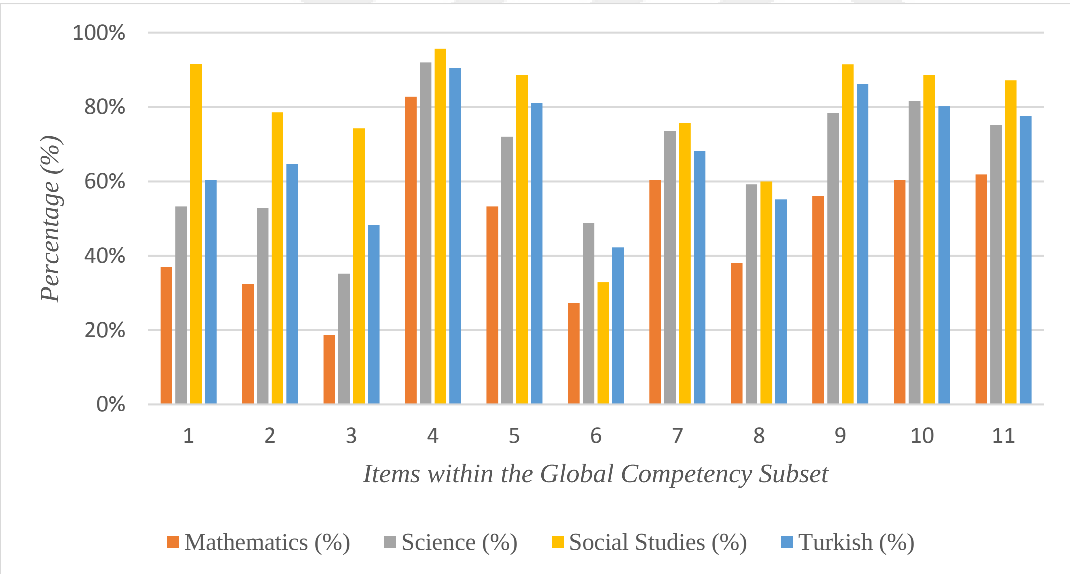



**Figure 7.** *Distribution of Teachers' Responses in the Global Competency Subset ('Frequent and Always') Across Subjects*

The responses of the teachers in the global competency subset were examined to determine the extent of implementation in fostering this compound competency. In

Figure 7 the results demonstrated that social studies teachers in 10 out of 11 items exhibited a high level of implementation by reporting frequently or always promoting the development of global competency in their lessons. It emphasizes a high-level focus of social studies teachers to the development of this competency. This high level of integration was followed by Turkish teachers by achieving high implementation in nine out of 11 items. Likewise, a majority of science teachers demonstrated a high level of implementation in six out of 11 items. However, compared to their counterparts, the mathematics teachers reported frequent incorporation in only three out of 11 items, indicating a notably lower level of implementation.

Figure 7 illustrates the variations across subject areas. The data indicated that all subject teachers frequently demonstrate support for certain aspects of global competency. These aspects include *respecting different worldviews, encouraging students to contribute to sustainable development and global well-being, and promoting participation in community service activities and social responsibility projects.* On the other hand, a notable distinction emerges in aspects such as *drawing attention to intercultural differences,* and *fostering global interaction,* where social studies teachers exhibit a distinguished high level of implementation compared to their counterparts in other subjects. However, the aspect of *using foreign language skills in related subjects* appears to receive less focus among a considerable proportion of mathematics, social studies, and Turkish teachers.

**4.2.1.1.1. Combined findings from written curriculum analysis and integration of global competency in practice:**

For global competency, the analysis of the implemented curriculum data extracted from the teachers' responses, combined with the findings from the analysis of the intended (written) curriculum, has revealed both alignment and differences between the two curriculum levels.  The data analysis of the 5th–7th Grade Social Studies written curriculum document revealed that, compared to other subjects, it most prominently targeted the development of global competency across its learning objectives. The survey findings further indicate that the frequency level of implementation by social studies teachers, aimed at fostering the global competencies of students, is closely aligned with its intended curriculum. It highlights a strong alignment between the 5th–7th Grade Social Studies curriculum and teachers' practices.

On the other hand, although the 5th–8th Grade Turkish Curriculum and the 5th–8th Grade Science Curriculum do not explicitly demonstrate a targeted focus on the development of global competency within their learning objectives, the survey findings reveal that Turkish and science teachers report a high frequency of supporting the development of global competency in their lessons. The findings of the survey highlighted that Turkish and science teachers address this gap by incorporating relevant activities into their instruction, despite the lack of emphasis on global competency in their written curriculum. The analysis of the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) has also revealed a minimal focus on the development of global competency, which is further complemented by the results of the survey. The survey findings show that teachers support the development of this competency in a limited way in their mathematics lessons. In this regard, although there is an alignment between the intended and implemented curriculum in mathematics, the findings revealed an absence of support for the development of global competency both in the mathematics curriculum and in practice. A review of middle school curricula across all four subjects reveals that, while certain lessons foster the development of global competency, either intended or implemented, the holistic integration of this competency across all subject areas is lacking. To explore the underlying factors contributing to these findings, in-depth interviews were conducted and the findings are elaborated in the following sections of the study.

#### 4.2.1.2. Teachers' Responses on the Extent of Media Literacy Subset in Implementation

The findings from the media literacy subset are exhibited in Table 8, which illustrates the teachers' self-reported frequency of integrating media literacy skills into their teaching practices across subject areas.

**Table 8**. *Teachers' Responses to the Survey's Media Literacy Subset*

| No. | Items for media literacy | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 12 | I draw attention to what media literacy is in my lessons. | Math | 27 (19%) | 55 (40%) | 57 (41%) |
| | | Sci | 12 (10%) | 36 (29%) | 77 (62%) |
| | | So | 1 (1%) | 8 (11%) | 61 (87%) |
| | | Tr | 3 (3%) | 30 (26%) | 83 (72%) |
| 13 | I ask students to question the ideas, information, and news presented in written, visual or audio media content (e.g. newspapers, posters, magazines, blogs, social media, podcasts) to develop a critical perspective. | Math | 12 (9%) | 58 (42%) | 69 (50%) |
| | | Sci | 9 (7%) | 32 (26%) | 84 (67%) |
| | | So | 0 (0%) | 7 (10%) | 63 (90%) |
| | | Tr | 2 (2%) | 13 (11%) | 101 (87%) |
| 14 | In my lessons; I create discussion groups for students to evaluate written, visual and/or audio media content. | Math | 50 (36%) | 58 (42%) | 31 (22%) |
| | | Sci | 26 (21%) | 36 (29%) | 63 (50%) |
| | | So | 4 (6%) | 27 (39%) | 39 (56%) |
| | | Tr | 6 (5%) | 41 (35%) | 69 (59%) |
| 15 | I point out the intended and/or unintended effects of the techniques employed for creating emotional impact in written, visual and/or audio media. | Math | 35 (25%) | 59 (42%) | 45 (32%) |
| | | Sci | 13 (10%) | 36 (29%) | 76 (61%) |
| | | So | 0 (0%) | 13 (19%) | 57 (81%) |
| | | Tr | 4 (3%) | 29 (25%) | 83 (72%) |
| 16 | I request students to carry out studies such as confirmation, proof, provision, etc. to verify the information contained in written, visual and/or audio media content. | Math | 34 (24%) | 47 (34%) | 58 (42%) |
| | | Sci | 12 (10%) | 38 (30%) | 75 (60%) |
| | | So | 3 (4%) | 17 (24%) | 50 (71%) |
| | | Tr | 7 (6%) | 33 (28%) | 76 (66%) |
| 17 | I encourage students to explore reliable sources in various formats, including books, articles, and blogs. | Math | 19 (14%) | 50 (36%) | 70 (50%) |
| | | Sci | 5 (4%) | 22 (18%) | 98 (78%) |
| | | So | 0 (0%) | 11 (16%) | 59 (84%) |
| | | Tr | 3 (3%) | 22 (19%) | 91 (78%) |
| 18 | I ask students to produce their own written, visual or audio media content (newspaper, poster, magazine, blog, social media, podcast, etc.). | Math | 40 (29%) | 69 (50%) | 30 (22%) |
| | | Sci | 13 (10%) | 48 (38%) | 64 (51%) |
| | | So | 2 (3%) | 30 (43%) | 38 (54%) |
| | | Tr | 6 (5%) | 44 (38%) | 66 (57%) |
| 19 | By presenting students with misleading, fabricated, fake visual and/or audio-visual media content, I ask students to recognize false information in the content. | Math | 41 (29%) | 53 (38%) | 45 (32%) |
| | | Sci | 27 (22%) | 36 (29%) | 62 (50%) |
| | | So | 3 (4%) | 20 (29%) | 47 (67%) |
| | | Tr | 12 (10%) | 32 (28%) | 72 (62%) |
| 20 | I emphasize the importance of demonstrating sensitivity to ethical and legal issues in accessing and using information. | Math | 13 (9%) | 41 (29%) | 85 (61%) |
| | | Sci | 4 (3%) | 20 (16%) | 101 (81%) |
| | | So | 0 (0%) | 4 (6%) | 66 (94%) |
| | | Tr | 3 (3%) | 11 (9%) | 102 (88%) |

*Note*. The Media Literacy subset includes 9 items (*n* = 9). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics (*n* = 139), Science (*n* = 125), Turkish (*n* = 116), and Social Studies (*n* = 70). The total number of participants across all subject areas is *N* = 450.

As illustrated in Table 8, teachers from different subject areas demonstrate noticeable differences in the extent to which they implement activities to foster the students' media literacy. In *addressing the concept of media literacy in their lessons (Item 12),* a majority of social studies teachers (*n* = 61, 87%), Turkish teachers (*n* = 83, 72%), and science teachers (*n* = 77, 62%) stated that they frequently or always integrate these activities into their lessons. In contrast, only a considerable proportion of mathematics teachers (*n* = 57, 41%) reported frequently integrating such activities into their lessons which refers to a moderate level of implementation. In *engaging students in critically questioning media content in their lessons (Item 13),* a majority of social studies teachers (*n* = 63, 90%), Turkish teachers (*n* = 101, 87%), demonstrating a significantly higher level of integration compared to their counterparts. Similarly, science teachers (*n* = 84, 67%) also stated that they frequently or always incorporated these activities into their practice which also reflects a high level of implementation. In contrast, only half of the mathematics teachers (*n* = 69, 50%) reported frequently integrating such activities into their lessons which refers to a moderate level of integration.

In *creating discussion groups for students to evaluate written, visual, and audio media content (Item 14),* slightly more than half of social studies teachers (*n* = 39, 56%), Turkish teachers (*n* = 69, 59%), and half of the science teachers (*n* = 63, 50%) stated that they frequently or always implemented these activities in their lessons, which refers to a moderate level of implementation compared to the total group of teachers. In contrast, only a small proportion of the mathematics teachers (*n* = 31, 22%) stated that they frequently or always incorporated such activities into their teaching, reflecting a low level of implementation. It is complemented by the considerable proportion of mathematics teachers (*n* = 50, 36%) who indicated that they never or rarely integrate activities about evaluating any media content. In *highlighting the intended and unintended effects of emotional impact techniques in media content (Item 15),* a majority of social studies teachers (*n* = 57, 81%), Turkish teachers (*n* = 83, 72%), and science teachers (*n* = 76, 61%) stated that they frequently or always incorporated these activities into their lessons which reflects a higher level of incorporation compared to the total group of teachers. In contrast, a noticeable proportion of mathematics teachers (*n* = 45, 32%) stated that they integrated such techniques into their teaching, which reflects a moderate level of implementation. In *requesting students to verify information (Item 16),* a majority of social studies teachers (*n* = 50, 71%), Turkish teachers (*n* = 76, 66%), and science teachers (*n* = 75, 60%) stated that they frequently or always incorporated verification activities into their lessons which refers to a higher level of incorporation than the total overall of teachers. In contrast, a considerable proportion of mathematics teachers (*n* = 58, 42%) stated that they included verification such of activities in their teaching, reflecting a moderate level of implementation. In *encouraging students to research using reliable sources of information (Item 17),* a majority of social studies teachers (*n* = 59, 84%), Turkish teachers (*n* = 91, 78%), and science teachers (*n* = 98, 78%) stated that they frequently or always integrated these reliable source activities into their lessons, which refers to a higher level of incorporation compared to the overall group of teachers. However, fewer mathematics teachers (*n* = 70, 50%) stated that they incorporated such activities into their teaching, reflecting a moderate level of implementation.

In *asking students to create their own media content, such as newspapers, posters, blogs, or podcasts (Item 18),* slightly more than half of the Turkish teachers (*n* = 66, 57%), social studies teachers (*n* = 38, 54%), and science teachers (*n* = 64, 51%) stated that they frequently and always integrate such creating content activities in their practice, which refers to a moderate level of implementation compared to the overall group of teachers. However, fewer mathematics teachers (n = 30, 22%) stated that they frequently engaged students in producing media content, indicating a low level of implementation among mathematics teachers.

In *presenting students with misleading or fabricated media content to help them recognize false information (Item 19),* a majority of social studies teachers (*n* = 47, 67%) and Turkish teachers (*n* = 72, 62%) stated that they frequently or always incorporated such activities into their lessons, demonstrating a high level of implementation. In contrast, a considerable proportion of science teachers (*n* = 62, 50%) and mathematics teachers (*n* = 45, 32%) reported that they frequently or always include these activities in their teaching, reflecting a low level of engagement among the subject areas. In *emphasizing the importance of demonstrating sensitivity to ethical* *and legal issues in accessing and using information (Item 20)*, a majority of social studies teachers (*n* = 66, 94%), Turkish teachers (*n* = 102, 88%), science teachers (*n* = 101, 81%), and mathematics teachers (*n* = 85, 61%) stated that they frequently or always incorporated these activities into their lessons, indicating that this practice is commonly implemented across all four subject areas. To provide a clearer visual representation of these differences, Figure 8 illustrates the distribution of teachers' responses in the Media Literacy Subset under the 'Frequent and Always' category, highlighting variations in implementation across the four subject areas.

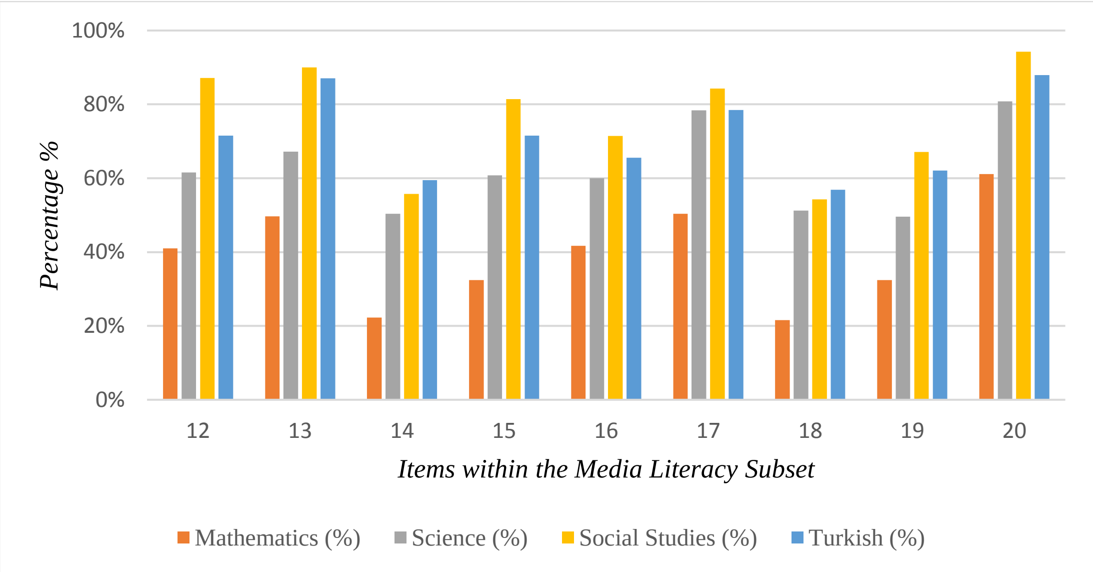



**Figure 8.** *Distribution of Teachers' Responses in the Media Literacy Subset ('Frequent and Always') Across Subjects*

As demonstrated in Figure 8, the data illustrates variations in the level of media literacy implementation across different subject areas. Social studies teachers in seven out of nine items exhibited a high level of implementation by reporting frequently or always promoting the development of media literacy in their lessons. Similarly, Turkish teachers also reached high implementation in seven out of nine items. It demonstrates that there is a high-level focus of social studies teachers and Turkish teachers to develop this competency. Science teachers demonstrated a closely comparable level of implementation, achieving high implementation in six out of nine items. However, compared to their counterparts, mathematics teachers showed notably lower levels of implementation, achieving frequent implementation in only one out of nine items. Despite the presence of variations, the data indicated that the majority of all subject teachers frequently exhibit support for one aspect of media literacy, which indicates a *sensitivity to ethical and legal issues in accessing and using information.*

Furthermore, a notable distinction emerges in aspects such as *drawing attention to media literacy, critically questioning media content, and ethical issues in accessing and using information,* where social studies and Turkish teachers exhibited a distinguished high level of implementation compared to their counterparts in other subjects. On the other hand, a notable proportion of mathematics teachers reported that they never or rarely integrate some aspects of media literacy, which are *evaluating any media content, creating their own media content,* and recognizing false information in any content. Complimented that the aspects of *evaluating any media content and creating their own media content* appear to receive a moderate-level of focus among a considerable proportion of all subject areas.

#### 4.2.1.2.1. Combined findings from written curriculum analysis and integration of media literacy in practice:

Through a combination of the implemented curriculum data derived from teachers' responses and the results of the written curriculum analysis across four subject areas, both alignment and differences between the two curriculum levels have been identified for media literacy. Notably, analysis of the 5th–8th Grade Turkish Curriculum revealed a high-level focus on targeting the development of media literacy within its learning objectives. In alignment with this, the data collected from Turkish teachers indicate that they frequently include activities aimed at fostering media literacy in their lessons which closely reflects the intentions of the curriculum as well.

It can be interpreted that while the Turkish curriculum provides a solid foundation for media literacy, teachers' practices also complement its context and further deepen students' understanding.

To a lesser extent, the 5th–7th Grade Social Studies Curriculum also included learning objectives to cultivate media literacy. However, there is a divergence when comparing the findings of the written curriculum analysis with the survey responses of teachers. As the curriculum offers a minimal focus on the development of media literacy, the majority of teachers indicated that they enrich and expand on this by incorporating related activities more frequently in their lessons. The data indicates that teachers expand the scope of the intended curriculum by giving frequent emphasis on media literacy in their lessons. A similar finding can be seen in the 5th–8th Grade Science Curriculum. Although the written curriculum provides a minimal focus on media literacy development, survey responses indicate that the majority of science teachers frequently include activities targeting media literacy in their lessons. This demonstrates how teachers have taken the initiative to overcome the limitations of the intended curriculum and ensure that media literacy is more comprehensively covered in their classroom practices. In contrast, an analysis of the 5th–8$^{th}$ Grade Mathematics Curriculum reveals that it lacks a specific focus or explicitly stated targets for the development of media literacy. Complementing that, the survey responses received from mathematics teachers also indicate that they less frequently include activities to foster the development of media literacy in their lessons. The data combined data reveal that media literacy, which is not intended as a competency in the written curriculum, is also not prioritized as a key focus in classroom practices within the subject of mathematics. To provide a broader understanding of the factors underlying these findings, in-depth interviews with teachers were conducted. These patterns offer preliminary insights into how curricular intentions are interpreted and enacted by teachers across subjects. The insights derived from these interviews are presented in the following sections of this chapter.

#### 4.2.1.3. Teachers' Responses on the Extent of Literacy for Sustainable Development Subset in Implementation

The results from the literacy for sustainable development are presented in Table 9, which demonstrate the teachers' self-reported frequency of incorporating sustainable development skills into their teaching practices across subject areas.

**Table 9**. *Teachers' Responses to the Survey's Literacy for Sustainable Development Subset*

| No. | Items of literacy for sustainable development subset | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 21 | I explain the concept of sustainability to my students in my classroom. | Math | 14 (10%) | 57 (41%) | 68 (49%) |
| | | Sci | 8 (6%) | 15 (12%) | 102 (82%) |
| | | So | 0 (0%) | 13 (19%) | 57 (81%) |
| | | Tr | 7 (6%) | 30 (26%) | 79 (68%) |
| 22 | I use educational materials related to the concept of sustainability in my teaching. | Math | 34 (24%) | 62 (45%) | 43 (31%) |
| | | Sci | 14 (11%) | 26 (21%) | 85 (68%) |
| | | So | 4 (6%) | 20 (29%) | 46 (66%) |
| | | Tr | 16 (14%) | 39 (34%) | 61 (53%) |
| 23 | I include the United Nations Global Goals for Sustainable Development in my lessons. | Math | 62 (45%) | 54 (39%) | 23 (17%) |
| | | Sci | 21 (17%) | 37 (30%) | 67 (54%) |
| | | So | 9 (13%) | 24 (34%) | 37 (53%) |
| | | Tr | 32 (28%) | 44 (38%) | 40 (34%) |
| 24 | In my teaching, I draw attention to the relationship between the 17 goals of the Global Goals for Sustainable Development. | Math | 67 (48%) | 48 (35%) | 24 (17%) |
| | | Sci | 23 (18%) | 37 (30%) | 65 (52%) |
| | | So | 8 (11%) | 35 (50%) | 27 (39%) |
| | | Tr | 37 (32%) | 42 (36%) | 37 (32%) |
| 25 | I include content, texts, examples, questions, etc. related to the Global Goals in my lessons. | Math | 65 (47%) | 49 (35%) | 25 (18%) |
| | | Sci | 25 (20%) | 37 (30%) | 63 (50%) |
| | | So | 7 (10%) | 36 (51%) | 27 (39%) |
| | | Tr | 32 (28%) | 42 (36%) | 42 (36%) |
| 26 | I include interactive activities such as in-class discussion, group work, role-playing, etc. related to the Global Goals for Sustainable Development in my lessons. | Math | 70 (50%) | 52 (37%) | 17 (12%) |
| | | Sci | 28 (22%) | 42 (34%) | 55 (44%) |
| | | So | 12 (17%) | 28 (40%) | 30 (43%) |
| | | Tr | 38 (33%) | 38 (33%) | 40 (34%) |
| 27 | I ensure that students engage with global and/or international studies on sustainable development. | Math | 63 (45%) | 53 (38%) | 23 (17%) |
| | | Sci | 22 (18%) | 50 (40%) | 53 (42%) |
| | | So | 10 (14%) | 34 (49%) | 26 (37%) |
| | | Tr | 33 (28%) | 42 (36%) | 41 (35%) |
| 28 | In my courses, I want students to engage in interdisciplinary studies/projects in which they can develop solutions to problem areas identified in the Global Goals for Sustainable Development. | Math | 69 (50%) | 44 (32%) | 26 (19%) |
| | | Sci | 28 (22%) | 42 (34%) | 55 (44%) |
| | | So | 12 (17%) | 28 (40%) | 30 (43%) |
| | | Tr | 35 (30%) | 43 (37%) | 38 (33%) |
| 29 | I ensure that students become aware of the changes they can make in their own lives in the context of sustainability. | Math | 25 (18%) | 66 (47%) | 48 (35%) |
| | | Sci | 13 (10%) | 22 (18%) | 90 (72%) |
| | | So | 2 (3%) | 18 (26%) | 50 (71%) |
| | | Tr | 11 (9%) | 37 (32%) | 68 (59%) |
| 30 | I include in my lessons examples of unsustainable attitudes and behaviors encountered in everyday life. | Math | 22 (16%) | 54 (39%) | 63 (45%) |
| | | Sci | 11 (9%) | 26 (21%) | 88 (70%) |
| | | So | 1 (1%) | 17 (24%) | 52 (74%) |
| | | Tr | 9 (8%) | 38 (33%) | 69 (59%) |
| 31 | I recognize students' positive actions toward sustainability. | Math | 7 (5%) | 31 (22%) | 101 (73%) |
| | | Sci | 8 (6%) | 12 (10%) | 105 (84%) |
| | | So | 1 (1%) | 5 (7%) | 64 (91%) |
| | | Tr | 5 (4%) | 19 (16%) | 92 (79%) |

**Table 9** *(continued)*

| | | | | | |
|---|---|---|---|---|---|
| 32 | I encourage students to take initiative in areas of sustainable development and to participate in social responsibility projects. | Math | 30 (22%) | 51 (37%) | 58 (42%) |
| | | Sci | 12 (10%) | 29 (23%) | 84 (67%) |
| | | So | 3 (4%) | 18 (26%) | 49 (70%) |
| | | Tr | 10 (9%) | 43 (37%) | 63 (54%) |

*Note.* The Literacy for Sustainable Development subset includes 12 items (*n* = 12). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics (*n* = 139), Science (*n* = 125), Turkish (*n* = 116), and Social Studies (*n* = 70). The total number of participants across all subject areas is *N* = 450.

Table 9 indicates that teachers from different subject areas demonstrate noticeable differences in the extent to which they support students' literacy for sustainable development when analyzing their responses to the literacy for sustainable development subset.

In *addressing the concept of sustainability in their lessons (Items 21),* a majority of science teachers (*n* = 102, 82%) and social studies teachers (*n* = 57, 81%) reported that they frequently or always explain the concept of sustainability to their students, which reflects a high level of integration. Turkish teachers (*n* = 79, 68%) also demonstrated high integration of sustainability into their lessons. However, only about half of mathematics teachers (*n* = 68, 49%) reported frequently or always explaining sustainability, which indicates a moderate level of implementation compared to the overall group of teachers. The majority of science teachers (*n* = 85, 68%) and social studies teachers (*n* = 46, 66%) stated that they frequently or always incorporate *educational materials related to sustainability into their lessons (Item 22),* which reflects a high level of integration in practice. A slightly more than half of Turkish teachers (*n* = 61, 53%) showed a moderate level of usage, while mathematics teachers (*n* = 43, 31%) reported the lowest frequency of using such materials for cultivating sustainability.

*The United Nations (UN) 17 Global Goals for Sustainable Development (Item 23)* are frequently or always included in the lessons given by the considerable proportion of science teachers (*n* = 67, 54%), social studies teachers (*n* = 37, 53%), and Turkish teachers (*n* = 40, 34%) who reported that they frequently or always integrate such activities into their teaching. However, a small proportion of mathematics teachers (*n* = 23, 17%) reported they frequently integrate these goals into their practice, which reflects a rare level of implementation.

In *drawing attention to the relationship between the UN 17 Global Goals for Sustainable Development in their lessons (Item 24)*, a considerable proportion of science teachers (*n* = 65, 52%), social studies teachers (*n* = 27, 39%), and Turkish teachers (*n* = 37, 32%) reported that they frequently or always incorporate such activities into their teaching, which reflects a moderate level of implementation. However, a small proportion of mathematics teachers (*n* = 24, 17%) reported that they frequently implement such activities, which indicates rare level of integration. In terms of *including content related to the UN Global Goals (Item 25)*, half of the science teachers (*n* = 63, 50%), followed by a lower portion of social studies teachers (*n* = 27, 39%), and Turkish teachers (*n* = 42, 36%) reported frequently or always using such materials in their lessons, which indicates a moderate level of integration into practice. While a small proportion of mathematics teachers (*n* = 25, 18%) demonstrated rare frequent incorporation of such content.

For *interactive activities, such as discussions and role-playing related to the Global Goals (Item 26)*, science teachers (*n* = 55, 44%), social studies teachers (*n* = 30, 43%), and Turkish teachers (*n* = 40, 34%) reported frequently and always integrating such activities in their practice, which refers to a moderate level of implementation. In contrast, only a small percentage of mathematics teachers (*n* = 17, 12%) reported a high-level integration of using such methods, which highlights a rare level of implementation of these activities in mathematics compared to the overall group of teachers.

A moderate proportion of science teachers (*n* = 53, 42%), social studies teachers (*n* = 26, 37%), and Turkish teachers (*n* = 41, 35%) reported that they frequently or always *encourage students to engage with global or international studies on sustainable development (Item 27)*. However, a small proportion of mathematics teachers (*n* = 23, 17%) demonstrated a high-level of integration, which refers to a rare level of implementation of such studies in their practice. A considerable proportion of science teachers (*n* = 55, 44%), social studies teachers (*n* = 30, 43%), and Turkish teachers (*n* = 38, 33%) reported that they frequently or always *encouraged interdisciplinary studies to address problems identified in the Global Goals (Item 28),* which indicates a moderate level of implementation. However, a small percentage of mathematics teachers (*n* = 26, 19%) reported less frequent integration of interdisciplinary approaches, which reflects a rare level of implementation in this subject area. A majority of science teachers (*n* = 90, 72%), and social studies teachers (*n* = 50, 71%) reported that they frequently or always *raised awareness among students to promote sustainability in their lives (Item 29).* More than half of Turkish teachers (*n* = 68, 59%) also demonstrated a strong engagement, followed by a lower proportion of mathematics teachers (*n* = 48, 35%) who reported a moderate level of implementation in awareness-building activities.

Most social studies teachers (*n* = 52, 74%) and science teachers (*n* = 88, 70%) reported that they frequently or always *included examples of unsustainable attitudes and behaviors in their lessons (Item 30), which highlights a high level of implementation compared to the total group of the teachers.* A moderate proportion of Turkish teachers (*n* = 69, 59%) and mathematics teachers (*n* = 63, 45%) reported that they frequently incorporate such activities into their practice, which reflects a moderate level of implementation.

A majority of social studies teachers (*n* = 64, 91%), science teachers (*n* = 105, 84%), Turkish teachers (*n* = 92, 79%), and mathematics teachers (*n* = 101, 73%) indicated that they frequently or always *recognized positive actions of students toward sustainability (Item 31)*, which highlights a high level of implementation in this area. Finally, a majority of science teachers (*n* = 84, 67%) and social studies teachers (*n* = 49, 70%) demonstrated a high level of implementation in *encouraging students to take initiative in sustainable development (Item 32)* whereas a considerable proportion of Turkish teachers (*n* = 63, 54%) and mathematics teachers (*n* = 58, 42%) reported less frequent engagement in such activities, which reflects a moderate level of implementation compared to the overall group of teachers.

Figure 9 offers a visual depiction of the disparities in teachers' responses within the literacy for sustainable development subset which focuses on the 'Frequent and Always' category. It emphasizes the differences in implementation levels across the four subject areas.

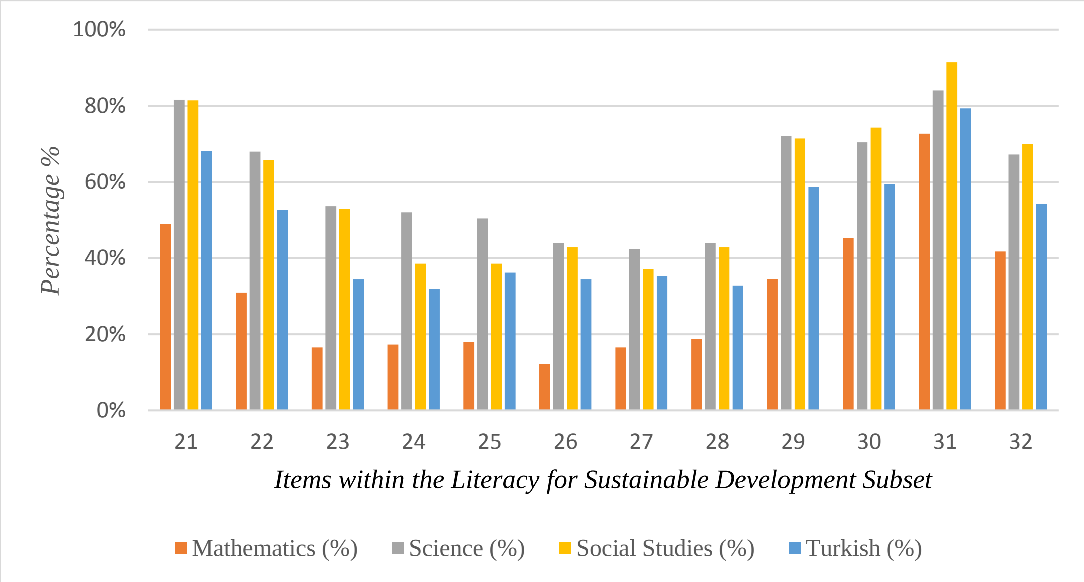



**Figure 9.** *Distribution of Teachers' Responses in the Literacy for Sustainable Development Subset ('Frequent and Always') Across Subjects*

As illustrated in Figure 9, the literacy for sustainable development subset demonstrates distinct variations in implementation across the four subject areas. Social studies and science teachers reported frequently or always promoting the development of literacy for sustainable development in six out of 12 items, indicating a moderate level of focus on fostering this competency. In contrast, Turkish teachers have a high level of implementation in only two out of 12 items, which reflects a low level of focus in their lessons. Likewise, the mathematics teachers also reported frequent integration in only one out of 12 items, which indicated a notably lower level of implementation as well. Subsequently, the data reveals that social studies and science teachers demonstrate a moderate level of implementation. In contrast, Turkish and mathematics teachers exhibit a lower level of implementation to foster the development of such skills in their practice.

Figure 9 also illustrates the variations across the aspects of literacy for sustainable development. In this respect, the aspect of *recognizing positive actions of students toward sustainability gathered* high attention across all subject areas. Additionally, *the concept of sustainability* and *promoting sustainable behaviors* also received high level focus from all subjects as well. While Turkish, social studies, and science teachers generally demonstrated a moderate level of implementation for various aspects of the *Sustainable Development Goals (SDGs)*, a noticeably lower level of integration was observed in the practices of mathematics teachers.

**4.2.1.3.1. Combined findings from written curriculum analysis and integration of literacy for sustainable development in practice:**

Through a combination of the implemented curriculum data derived from teachers' responses and the results of the written curriculum analysis across four subject areas, both alignment and differences between the two curriculum levels have been identified in literacy for sustainable development. In this regard, analysis of the 5th–7th Grade Social Studies Curriculum stands out a reasonable focus on targeting the development literacy for sustainable development within its learning objectives. This alignment is further supported by survey responses, where social studies teachers reported frequently incorporating activities that also promote the literacy for sustainable development into their lessons. These findings reflect the intentions of the curriculum as well.

In contrast, the 5th–8th Grade Science Curriculum demonstrated a lower emphasis, with only 13% of its objectives targeting literacy for sustainable development. Despite this limitation, Figure 9 indicates that self-reported survey responses reveal that science teachers frequently include sustainability-related activities in their lessons which suggests that they take the initiative and demonstrate flexibility in promoting literacy for sustainable development in practice. This illustrates how teacher agency can play a role in expanding the intended curriculum. For Turkish and mathematics, the written curriculum analysis revealed no explicit intention to promote the literacy for sustainable development. This lack of emphasis is also reflected in the survey responses, where Turkish teachers demonstrated moderate engagement with sustainability-related activities, and mathematics teachers reported the lowest level of integration. Despite the absence of explicit targets on literacy for sustainable development in the 5th-8th Grade Turkish Curriculum (MoNE, 2019), Turkish teachers appear to engage in such activities more frequently than mathematics teachers. Such patterns may reflect varying interpretations of curriculum flexibility among subject teachers**.** In this regard, although there is an *alignment* between the intended and implemented curriculum in mathematics, the results revealed a lack of support for the development of literacy for sustainable development both in the mathematics curriculum and in practice. A review of middle school curricula across all four subjects demonstrates variations to develop the literacy for sustainable development. In this context, the data revealed a strong alignment in social studies, where teachers demonstrated a high level of implementation in fostering this competency. This alignment is further supported by the written curriculum analysis, which reflects a deliberate focus on incorporating literacy for sustainable development within its learning objectives. For Science, there is an alignment between the curriculum and teacher practices in promoting this competency, despite the minimal focus in the written curriculum and a moderate level of focus in implementation. On the other hand, there are no explicit targets for fostering this competency in Turkish and mathematics. This is also reflected in teachers' practices, where they take initiative with only minimal focus. Notably, mathematics teachers demonstrated particularly limited engagement in this regard. Even though this demonstrates an alignment between the intended curriculum and their practices, it also highlights the need to strengthen connections across all subject areas to foster literacy for sustainable development.

#### 4.2.1.4. Teachers' Responses on the Extent of Financial Literacy in Implementation

The results from the subset of financial literacy are presented in Table 10, which outlines the variations in teachers' self-reported frequency of incorporating financial literacy skills into their teaching practices across different subject areas.

**Table 10**. *Teachers' Responses to the Survey's Financial Literacy Subset*

| No. | Items for financial literacy | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 33 | I include basic financial literacy terms (money, value of money, money management, money transactions, saving, spending, credit, loan, debt, payment, risk, etc.) in my lessons to raise students' awareness. | Math | 23 (17%) | 40 (29%) | 76 (55%) |
| | | Sci | 44 (35%) | 40 (32%) | 41 (33%) |
| | | So | 9 (13%) | 18 (26%) | 43 (61%) |
| | | Tr | 42 (36%) | 41 (35%) | 33 (28%) |
| 34 | I include examples of different forms of money (paper money, digital money, gold/silver, etc.) in my lessons. | Math | 23 (17%) | 46 (33%) | 70 (50%) |
| | | Sci | 60 (48%) | 31 (25%) | 34 (27%) |
| | | So | 5 (7%) | 17 (24%) | 48 (69%) |
| | | Tr | 54 (47%) | 43 (37%) | 19 (16%) |
| 35 | I use materials (examples, questions, educational/digital games, visuals, etc.) related to financial issues in my lessons. | Math | 33 (24%) | 45 (32%) | 61 (44%) |
| | | Sci | 64 (51%) | 22 (18%) | 39 (31%) |
| | | So | 8 (11%) | 21 (30%) | 41 (59%) |
| | | Tr | 54 (47%) | 33 (28%) | 29 (25%) |
| 36 | In my lessons, I ask students to examine financial graphs and/or diagrams prepared for the topics covered. | Math | 30 (22%) | 44 (32%) | 65 (47%) |
| | | Sci | 57 (46%) | 29 (23%) | 39 (31%) |
| | | So | 15 (21%) | 23 (33%) | 32 (46%) |
| | | Tr | 53 (46%) | 35 (30%) | 28 (24%) |
| 37 | I carry out studies related to daily life in which students plan their expenditure. | Math | 24 (17%) | 46 (33%) | 69 (50%) |
| | | Sci | 60 (48%) | 23 (18%) | 42 (34%) |
| | | So | 9 (13%) | 20 (29%) | 41 (59%) |
| | | Tr | 52 (45%) | 34 (29%) | 30 (26%) |
| 38 | I include studies in which students can plan their current and future savings. | Math | 31 (22%) | 48 (35%) | 60 (43%) |
| | | Sci | 51 (41%) | 30 (24%) | 44 (35%) |
| | | So | 12 (17%) | 18 (26%) | 40 (57%) |
| | | Tr | 51 (44%) | 39 (34%) | 26 (22%) |
| 39 | I draw attention to the concept of investment in my lessons. | Math | 44 (32%) | 48 (35%) | 47 (34%) |
| | | Sci | 65 (52%) | 26 (21%) | 34 (27%) |
| | | So | 10 (14%) | 24 (34%) | 36 (51%) |
| | | Tr | 66 (57%) | 35 (30%) | 15 (13%) |
| 40 | I include in my lessons case studies on the use of banking services as a financial instrument. | Math | 47 (34%) | 48 (35%) | 44 (32%) |
| | | Sci | 83 (66%) | 20 (16%) | 22 (18%) |
| | | So | 22 (31%) | 26 (37%) | 22 (31%) |
| | | Tr | 76 (66%) | 29 (25%) | 11 (9%) |
| 41 | I draw attention to the similarities and differences between the concepts of debt and credit in my lessons. | Math | 38 (27%) | 46 (33%) | 55 (40%) |
| | | Sci | 89 (71%) | 14 (11%) | 22 (18%) |
| | | So | 28 (40%) | 25 (36%) | 17 (24%) |
| | | Tr | 81 (70%) | 24 (21%) | 11 (9%) |
| 42 | I include examples of rational and planned use of credit cards in my lessons. | Math | 51 (37%) | 48 (35%) | 40 (29%) |
| | | Sci | 94 (75%) | 9 (7%) | 22 (18%) |
| | | So | 18 (26%) | 26 (37%) | 26 (37%) |
| | | Tr | 75 (65%) | 25 (22%) | 16 (14%) |
| 43 | I include in my lessons calculation studies on the concept of interest and/or interest rates. | Math | 31 (22%) | 52 (37%) | 56 (40%) |
| | | Sci | 96 (77%) | 12 (10%) | 17 (14%) |
| | | So | 35 (50%) | 20 (29%) | 15 (21%) |
| | | Tr | 88 (76%) | 19 (16%) | 9 (8%) |

**Table 10** *(continued)*

| | | | | | |
|---|---|---|---|---|---|
| 44 | I ask students to prepare a budget for their assignments and/or projects. | Math | 48 (35%) | 56 (40%) | 35 (25%) |
| | | Sci | 65 (52%) | 27 (22%) | 33 (26%) |
| | | So | 22 (31%) | 23 (33%) | 25 (36%) |
| | | Tr | 80 (69%) | 21 (18%) | 15 (13%) |
| 45 | I include studies about being a conscious consumer in my lessons. | Math | 35 (25%) | 52 (37%) | 52 (37%) |
| | | Sci | 38 (30%) | 35 (28%) | 52 (42%) |
| | | So | 3 (4%) | 9 (13%) | 58 (83%) |
| | | Tr | 37 (32%) | 38 (33%) | 41 (35%) |
| 46 | I emphasize consumer rights and responsibilities in my lessons. | Math | 28 (20%) | 50 (36%) | 61 (44%) |
| | | Sci | 31 (25%) | 37 (30%) | 57 (46%) |
| | | So | 1 (1%) | 3 (4%) | 66 (94%) |
| | | Tr | 30 (26%) | 32 (28%) | 54 (47%) |

*Note*. The financial literacy subset includes 14 items (*n* = 14). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics (*n* = 139), Science (*n* = 125), Turkish (*n* = 116), and Social Studies (*n* = 70). The total number of participants across all subject areas is *N* = 450.

In Table 10, an analysis of the financial literacy subset reveals that teachers demonstrate differences in the frequency with which they incorporate activities to develop financial literacy into their practice. *Incorporating basic financial literacy terms such as money, value of money, and money management into lessons (Item 33)*, a majority of social studies teachers (*n* = 43, 61%) reported frequently or always including these terms to relevant topics, which reflects a high level of integration. This was followed by mathematics teachers (*n* = 76, 55%) and science teachers (*n* = 41, 33%) who reported frequently or always including these terms into their practice which indicates a moderate level of integration. In contrast, a considerable proportion of Turkish teachers (*n* = 42, 36%) and science teachers (*n* = 44, 35%) also reported that they never or rarely integrate financial terms into their practice which also refers to a rare level of integration.

A majority of social studies teachers (*n* = 48, 69%) reported frequently or always *incorporating examples of different forms of money (Item 34)* into their lessons which reflects a high level of implementation. Half of the mathematics teachers (*n* = 70, 50%) demonstrated a moderate level of integration, while a small proportion of science teachers (*n* = 34, 27%) and Turkish teachers (*n* = 19, 16%) reported that they frequently or always incorporate such activities into their teaching which reflects as a rare level of implementation compared to the overall group of the teachers.

More than half of social studies teachers (*n* = 41, 59%), mathematics teachers (*n* = 61, 44%) and science teachers (*n* = 39, 31%) reported frequently or always *using materials related to financial literacy (Item 35)* in their practice, which highlights a moderate level of integration. In contrast, a considerable proportion of Turkish teachers (*n* = 54, 47%) and science teachers (*n* = 64, 51%) reported that they never or rarely integrate such materials in their teaching which reflects a rare level of implementation.

*Asking students to examine financial graphs and diagrams (Item 36)* was reported at a moderate level of implementation by social studies teachers (*n* = 32, 46%), mathematics teachers (*n* = 65, 47%), and science teachers (*n* = 39, 31%), who frequently or always integrated such activities into their teaching. In contrast, a considerable proportion of Turkish teachers (*n* = 53, 46%) and science teachers (*n* = 57, 46%) reported that they never or rarely use such graphs or diagrams in their lessons. *Asking students to plan expenditures as part of their projects or studies (Item 37)* was reported at a moderate level of implementation by more than half of social studies teachers (*n* = 41, 59%), mathematics teachers (*n* = 69, 50%), and science teachers (*n* = 42, 34%), who frequently or always incorporated such planning into their projects. In contrast, almost half of Turkish teachers (*n* = 52, 45%) and science teachers (*n* = 60, 48%) demonstrated a rare level of implementation for these activities.

*For including studies to plan current and future savings (Item 38),* more than half of social studies teachers (*n* = 40, 57%), mathematics teachers (*n* = 60, 43%), and science teachers (*n* = 44, 35%) reported frequently or always integrating such activities to enhance students' understanding which reflects a moderate level of implementation. However, a considerable proportion of Turkish teachers (*n* = 51, 44%) and science teachers (*n* = 51, 41%) demonstrated a rare level of implementation compared to the total group of the teachers. For *the concept of investment (Item 39)*, a considerable proportion of social studies teachers (*n* = 36, 51%), and mathematics teachers (*n* = 47, 34%) reported frequently or always integrating such concepts into their lessons which reflects a moderate level of integration. In contrast, more than half of Turkish teachers (*n* = 66, 57%), science teachers (*n* = 65, 52%), and a considerable proportion of mathematics teachers (*n* = 44, 32%) demonstrated a rare level of implementation, which reflects as a notable finding to be considered. For *the inclusion of banking services (Item 40),* teachers from all subject areas reported a low frequency of integrating such activities into their lessons. A majority of science teachers (*n* = 83, 66%), Turkish teachers (*n* = 76, 66%), a considerable proportion of mathematics teachers (*n* = 47, 34%), and social studies teachers (*n* = 22, 31%) reported that they never or rarely implement activities about banking services, which reflects a rare level of implementation compared to the overall group of teachers.

*The integration of explaining the differences between debt and credit into lessons (Item 41)* was also reported as a rare level of implementation by a majority of science teachers (*n* = 89, 71%), Turkish teachers (*n* = 81, 70%), a considerable proportion of social studies teachers (*n* = 28, 40%), and mathematics teachers (*n* = 38, 27%) compared to the total group of teachers. The *integration of credit card usage into lessons (Item 42)* was reported as frequently or always by a small proportion of social studies teachers (*n* = 26, 37%), which reflects a moderate level of implementation. Additionally, a considerable proportion of mathematics teachers (*n* = 40, 29%), a few science teachers (*n* = 22, 18%), and Turkish teachers (*n* = 16, 14%) reported that they frequently or always credit card-related activities into their teaching which also reflects a rare level of implementation, compared to the overall group of teachers.

For *including calculation studies on interest and interest rates (Item 43),* mathematics teachers (*n* = 56, 40%) reported frequently or always integrating such activities into their lessons which reflects a moderate level of implementation. In contrast, a small proportion of social studies teachers (*n* = 15, 21%), science teachers (*n* = 17, 14%), and Turkish teachers (*n* = 9, 8%) demonstrated a rare level of implementation for this type of activity. *Preparing budgets for assignments and projects (Item 44)* was also reported at a rare level of implementation by a majority of Turkish teachers (*n* = 80, 69%), science teachers (*n* = 52, 65%), mathematics teachers (*n* = 48, 35%) and social studies teachers (*n* = 22, 31%). A majority of social studies teachers (*n* = 58, 83%) reported frequently or always *incorporating examples to encourage students to be conscious consumers (Item 45),* which reflects a high level of implementation. In contrast, a considerable proportion of science teachers (*n* = 52, 42%), mathematics teachers ($n$ = 52, 37%), and Turkish teachers ($n$ = 41, 35%) reported that they frequently or always incorporate such activities in to their practice, which reflects a moderate level of implementation. Finally, a very high majority of social studies teachers ($n$ = 66, 94%) reported frequently or always *emphasizing consumer rights and responsibilities (Item 46)*, reflecting a high level of implementation. In contrast, a considerable proportion of mathematics teachers ($n$ = 61, 44%), Turkish teachers ($n$ = 54, 47%), and science teachers ($n$ = 57, 46%) reported that they frequently or always integrate such activities in their instruction, which reflects a moderate level of implementation compared to the overall group of teachers. Figure 10 provides a visual representation of the differences in teachers' responses within the financial literacy subset, which specifically highlights the 'Frequent and Always' category. It shed lights on the varying levels of implementation across the four subject areas.

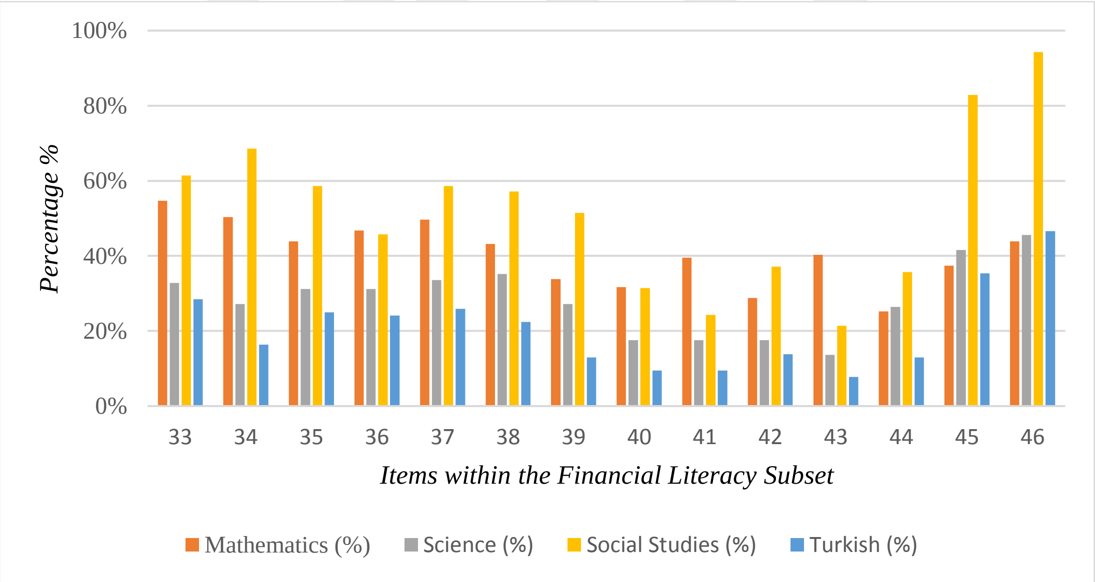



**Figure 10.** *Distribution of Teachers' Responses in the Financial Literacy Subset ('Frequent and Always') Across Subjects*

As illustrated in Figure 10, when the responses of the teachers in the *financial literacy subset* were examined to determine the extent of implementation in fostering this compound competency, the social studies teachers exhibited the highest level of engagement about achieving high implementation in four out of 14 items. Moderate implementation was reported in eight items, and two items were categorized as low implementation. These findings indicate a notable focus on financial literacy activities in social studies lessons whereas mathematics teachers achieved no high implementation in 14 items and demonstrated a moderate implementation in 12 out of 14 items, and low implementation in two items. These findings indicate an overall moderate level of implementation with a balanced integration of financial literacy activities into mathematics lessons. However, Turkish teachers, similar to mathematics teachers, demonstrated no high implementation across 14 items. Unlike mathematics teachers, they demonstrated moderate implementation in only two items and low implementation in 12 items. The majority of their responses fall into the never or rarely category, which highlights the lowest overall implementation of financial literacy among the four subject areas. Similarly, to mathematics teachers, science teachers also did not achieve high implementation in any items. They reported moderate implementation in seven items out of 14 items, while low implementation dominated with seven items. This indicates a low to moderate implementation of such activities to foster the development of financial literacy.

Figure 10 also illustrates the variations across the aspects of financial literacy. In this respect, *promoting conscious consumer behavior* and *teaching consumer rights and responsibilities* were demonstrated as the highest focus particularly in social studies lessons, where teachers exhibited a strong commitment to fostering these skills. For *introducing basic financial literacy terms* and *using financial materials in lessons* were moderately implemented by social studies, science, and Turkish teachers into their lessons. However, mathematics teachers consistently showed a moderate level of integration across all aspects of financial literacy, which points to a missed opportunity in order to connect financial literacy with mathematical concepts. Aspects such as *calculating interest and interest rates* and *budget preparation for assignments* were particularly underemphasized in the responses of mathematics teachers, which further highlights this gap. This may suggest subtle differences in how financial literacy naturally aligns with subject content. While social studies teachers emerged as a higher implementer in promoting financial literacy, it was followed by mathematics, science and Turkish teachers.

#### 4.2.1.4.1. Combined findings from written curriculum analysis and integration of financial literacy in practice:

For financial literacy, the analysis of the implemented curriculum data extracted from the teachers' responses, combined with the findings from the analysis of the written curriculum, has revealed both alignment and differences between the two curriculum levels. The analysis of the 5th–7th Grade Social Studies written curriculum document revealed that the financial literacy was a low-level targeted competency in comparison to the total number of its learning objectives. However, the survey findings indicated a notable focus in the implementation of the teachers. This highlights how social studies teachers extend their instruction beyond the curriculum to foster this competency. In the analysis of the 5th–8th Grade Science Curriculum, a few partially targeted and explicitly targeted learning objectives were identified to cultivate the financial literacy skills of students. This finding was also reflected in teachers' practices, which revealed a low to moderate level of implementation in cultivating this competency. This implies that the 5th–8th Grade Science Curriculum, as the intended curriculum, implies a minimal focus on incorporating financial literacy, which can be interpreted as an alignment with the low to moderate level of implementation reported in the practices of science teachers.

The analysis of the 5th–8th Grade Mathematics Curriculum revealed a marginal focus on the development of financial literacy within its learning objectives. Despite this limited emphasis in the written curriculum, mathematics teachers demonstrated a moderate to slightly higher level of implementation in their practice. This indicates a partial alignment between the intended curriculum and teacher practices. These findings reveal that financial literacy has not been sufficiently prioritized in middle schools, as it is neither obviously addressed in the written curriculum nor strongly reflected in teachers' practice. The analysis of the 5th-8th Grade Turkish Curriculum (MoNE, 2019) revealed no focus at all for developing the financial literacy skills of middle school students, which is further complemented by the results of the survey responses. It exhibited that teachers support the development of this competency in a limited way in their lessons. From the perspective of financial literacy, while there is some alignment between the intended and implemented curriculum, the findings indicate insufficient support for fostering financial literacy within both the Turkish curriculum and teachers' instructional practices. A review of middle school curricula across all four subjects shows varying levels of effort to foster financial literacy skills. Social studies teachers demonstrate a notable level of implementation that goes beyond the limited focus of the written curriculum, indicating their initiative in enhancing this competency. Science teachers, on the other hand, show alignment between the curriculum and their practices, with both reflecting a low to moderate level of focus. Similarly, the mathematics curriculum exhibits a marginal emphasis on financial literacy, yet teachers demonstrate a slightly higher, moderate level of implementation, which suggests a partial alignment. Lastly, the Turkish curriculum lacks any focus on financial literacy, which aligns with the limited level of support observed in teachers' instructional practices. To explore the factors contributing to these variations, in-depth interviews were conducted, and the findings are detailed in the subsequent sections of the study.

#### 4.2.1.5. Teachers' Responses on the Extent of Computational Thinking Skills in Implementation

The results from the computational thinking skills subset are presented in Table 11, which demonstrate the teachers' self-reported frequency of incorporating computational thinking skills into their teaching practices across subject areas.

**Table 11**. *Teachers' Responses to the Survey's Computational Thinking Skills Subset*

| No. | Items for computational thinking skills | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 47 | I include activities that encourage algorithmic thinking in my lessons. | Math | 12 (9%) | 38 (27%) | 89 (64%) |
| | | Sci | 21 (17%) | 33 (26%) | 71 (57%) |
| | | So | 5 (7%) | 31 (44%) | 34 (49%) |
| | | Tr | 34 (29%) | 35 (30%) | 47 (41%) |
| 48 | I ask students to order the steps to solve this problem in a logical and effective way. | Math | 4 (3%) | 19 (14%) | 116 (83%) |
| | | Sci | 7 (6%) | 21 (17%) | 97 (78%) |
| | | So | 2 (3%) | 17 (24%) | 51 (73%) |
| | | Tr | 12 (10%) | 19 (16%) | 85 (73%) |

**Table 11** *(continued)*

| | | | | | |
|---|---|---|---|---|---|
| 49 | I do activities to distinguish between necessary and unnecessary information to solve problem situations. | Math | 3 (2%) | 19 (14%) | 117 (84%) |
| | | Sci | 10 (8%) | 16 (13%) | 99 (79%) |
| | | So | 2 (3%) | 20 (29%) | 48 (69%) |
| | | Tr | 13 (11%) | 21 (18%) | 82 (71%) |
| 50 | In my lessons I encourage students to develop alternative solutions to problem situations. | Math | 1 (1%) | 16 (12%) | 122 (88%) |
| | | Sci | 5 (4%) | 12 (10%) | 108 (86%) |
| | | So | 2 (3%) | 15 (21%) | 53 (76%) |
| | | Tr | 7 (6%) | 22 (19%) | 87 (75%) |
| 51 | I want students to carry out studies in which they can adapt the solutions they produce for problem situations to different problems. | Math | 5 (4%) | 18 (13%) | 116 (83%) |
| | | Sci | 6 (5%) | 22 (18%) | 97 (78%) |
| | | So | 4 (6%) | 15 (21%) | 51 (73%) |
| | | Tr | 15 (13%) | 31 (27%) | 70 (60%) |
| 52 | I draw attention to the difference between data and information according to the subject area covered in my lessons. | Math | 4 (3%) | 27 (19%) | 108 (78%) |
| | | Sci | 11 (9%) | 20 (16%) | 94 (75%) |
| | | So | 4 (6%) | 21 (30%) | 45 (64%) |
| | | Tr | 20 (17%) | 34 (29%) | 62 (53%) |
| 53 | I include activities where students can present the data they have obtained in different forms, such as tables, graphs, and diagrams. | Math | 10 (7%) | 39 (28%) | 90 (65%) |
| | | Sci | 12 (10%) | 29 (23%) | 84 (67%) |
| | | So | 6 (9%) | 26 (37%) | 38 (54%) |
| | | Tr | 20 (17%) | 39 (34%) | 57 (49%) |
| 54 | I use examples where subject-specific problems are broken down into smaller parts, and the main solution is reached through sub-solutions. | Math | 5 (4%) | 24 (17%) | 110 (79%) |
| | | Sci | 11 (9%) | 34 (27%) | 80 (64%) |
| | | So | 9 (13%) | 17 (24%) | 44 (63%) |
| | | Tr | 17 (15%) | 42 (36%) | 57 (49%) |
| 55 | I include activities in which students can follow instructions. | Math | 7 (5%) | 42 (30%) | 90 (65%) |
| | | Sci | 14 (11%) | 26 (21%) | 85 (68%) |
| | | So | 3 (4%) | 22 (31%) | 45 (64%) |
| | | Tr | 13 (11%) | 38 (33%) | 65 (56%) |
| 56 | In my lessons I carry out interdisciplinary studies in partnership with computer science lessons. | Math | 41 (29%) | 43 (31%) | 55 (40%) |
| | | Sci | 21 (17%) | 40 (32%) | 64 (51%) |
| | | So | 13 (19%) | 23 (33%) | 34 (49%) |
| | | Tr | 37 (32%) | 38 (33%) | 41 (35%) |
| 57 | I include simulation and/or computer-assisted gamification activities in my teaching according to the subject matter. | Math | 32 (23%) | 51 (37%) | 56 (40%) |
| | | Sci | 13 (10%) | 25 (20%) | 87 (70%) |
| | | So | 6 (9%) | 28 (40%) | 36 (51%) |
| | | Tr | 33 (28%) | 33 (28%) | 50 (43%) |
| 58 | I use computer-assisted and/or unassisted programming tools such as LEGO Mindstorms NXT, SCRATCH, App Inventor, etc. according to the subject matter of my lessons. | Math | 65 (47%) | 53 (38%) | 21 (15%) |
| | | Sci | 56 (45%) | 30 (24%) | 39 (31%) |
| | | So | 32 (46%) | 21 (30%) | 17 (24%) |
| | | Tr | 76 (66%) | 23 (20%) | 17 (15%) |

*Note.* The computational thinking skills subset includes 12 items ($n$ = 12). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics ($n$ = 139), Science ($n$ = 125), Turkish ($n$ = 116), and Social Studies ($n$ = 70). The total number of participants across all subject areas is $N$ = 450.

Table 11 illustrates that teachers from four subject areas exhibit notable differences in the extent to which they implement activities to cultivate the students' computational thinking skills. A majority of mathematics teachers (*n* = 89, 64%) demonstrated a high level of implementation by reporting that they frequently or always include *activities encouraging algorithmic thinking in their lessons (Item 47).* A considerable proportion of science teachers (*n* = 71, 57%), social studies teachers (*n* = 34, 49%), and Turkish teachers (*n* = 47, 41%) reported frequent integration of these activities, which refers to a moderate level of implementation compared to the total group of teachers. However, a considerable proportion of Turkish teachers (*n* = 34, 29%) also indicated that they never or rarely included such activities in their instruction. This contradictory finding implies a potential lack of the priority Turkish teachers place on integrating these activities into teaching. A large majority of mathematics teachers (*n* = 116, 83%), science teachers (*n* = 97, 78%), social studies teachers (*n* = 51, 73%), and Turkish teachers (*n* = 85, 73%) reported that they frequently or always *encourage students to order the steps to solve problems logically (Item 48) which* demonstrates a high level of implementation in the overall group of teachers.

A majority of mathematics teachers (*n* = 117, 84%) reported that they frequently or always engaged students in activities that *distinguish between necessary and unnecessary information to solve problems (Item 49),* followed by a close proportion of science teachers (*n* = 99, 79%), Turkish teachers (*n* = 82, 71%), and social studies teachers (*n* = 48, 69%), reflecting high level of implementation among four subject teachers. A majority of mathematics teachers (*n* = 122, 88%), science teachers (*n* = 108, 86%), social studies teachers (*n* = 53, 76%), and Turkish teachers (*n* = 87, 75%) demonstrated a high level of implementation by frequently or always *encouraging students to develop alternative solutions (Item 50).* Similarly, a majority of mathematics teachers (*n* = 116, 83%), science teachers (*n* = 97, 78%), social studies teachers (*n* = 51, 73%), and Turkish teachers (*n* = 70, 60%) reported that they frequently or always encouraged students *to adapt solutions to new problems (Item 51),* reflecting a high level of implementation compared to the overall group of the teachers. A majority of mathematics teachers (*n* = 108, 78%), science teachers (*n* = 94, 75%), and social studies teachers (*n* = 45, 64%) frequently focused *on distinguishing between data and information in their lessons (Item 52),* which refers to a high level of implementation compared to the total group of the teachers. However, slightly more than half of Turkish teachers (*n* = 62, 53%) reported that they frequently or always incorporate these activities, which reflects a moderate level of implementation. In *presenting data using formats such as tables and graphs (Item 53)*, a majority of mathematics teachers (*n* = 90, 65%) and science teachers (*n* = 84, 67%) demonstrated a high level of implementation by frequently or always integrating such activities in their practice. On the other hand, compared to the entire group of teachers, slightly more than half of social studies teachers (*n* = 38, 54%) and Turkish teachers (*n* = 57, 49%) reported frequent integrations of such activities which reflects a moderate level of implementation. A majority of mathematics teachers *(n* = 110, 79%), science teachers (*n* = 80, 64%), and social studies teachers (*n* = 44, 63%) frequently included activities in which *problems are broken into smaller parts to develo*p sub-solutions *(Item 54).* However, a considerable proportion of Turkish teachers (n = 57, 49%) reported that they frequently or always incorporate these activities in their teaching, indicating a moderate level of implementation compared to others. A majority of science teachers (*n* = 85, 68%), mathematics teachers (*n* = 90, 65%), and social studies teachers (*n* = 45, 64%) demonstrated a high level of implementation by frequently or always *engaging students in activities requiring them to follow instructions (Item 55)*. In contrast, slightly more than half of the Turkish teachers (n = 65, 56%) reported that they frequently integrate such activities, reflecting a moderate level of implementation.

A considerable proportion of science teachers (*n* = 64, 51%), social studies teachers (*n* = 34, 49%), mathematics teachers (*n* = 55, 40%), and Turkish teachers (*n* = 41, 35%) demonstrated a moderate level of implementation in *interdisciplinary studies in collaboration with computer science (Item 56).* a small proportion of mathematics teacher also reported that they never or rarely integrate such activities into their practice, which reflects a lack of focus on interdisciplinary studies with computer sciences in mathematics.  A majority of science teachers (*n* = 87, 70%) reported that they frequently or always integrate *simulation and gamification activities (Item 57)* into their lessons, reflecting a high level of implementation compared to the overall group of teachers. However, a considerable proportion of social studies teachers (*n* = 36, 51%), Turkish teachers (*n* = 50, 43%), and mathematics teachers (*n* = 56, 40%) indicated that they frequently incorporate such activities into their practice, which refers a moderate level of implementation compared to the entire group of the teachers. The use of computer-assisted or unassisted programming tools such as LEGO Mindstorms, SCRATCH, or App Inventor was generally low across all subjects. A small proportion of mathematics teachers (*n* = 21, 15%), Turkish teachers (*n* = 17, 15%), social studies teachers (*n* = 17, 24%), and a considerable proportion of science teachers (n = 39, 31%) reported that they frequently or always integrate such activities into their practice. On the other hand, for the same subjects, a high proportion of Turkish teachers (*n* = 76, 66%), a considerable proportion of mathematics teachers (n = 67, 47%), social studies teachers (*n* = 32, 46%), and science teachers (*n* = 56, 45%) reported that they never or rarely integrate these tools into their lessons. The findings showed that across all subjects, there is a minimal focus on integrating programming tools, indicating a lack of emphasis on this aspect of computational thinking skills in classroom practices. In this respect, to provide a comprehensive understanding of the findings, Figure 11 illustrates comparable data on the distribution of teachers' responses in the *Computational Thinking Skills Subset* with respect to the 'Frequent and Always' category across four subject areas.

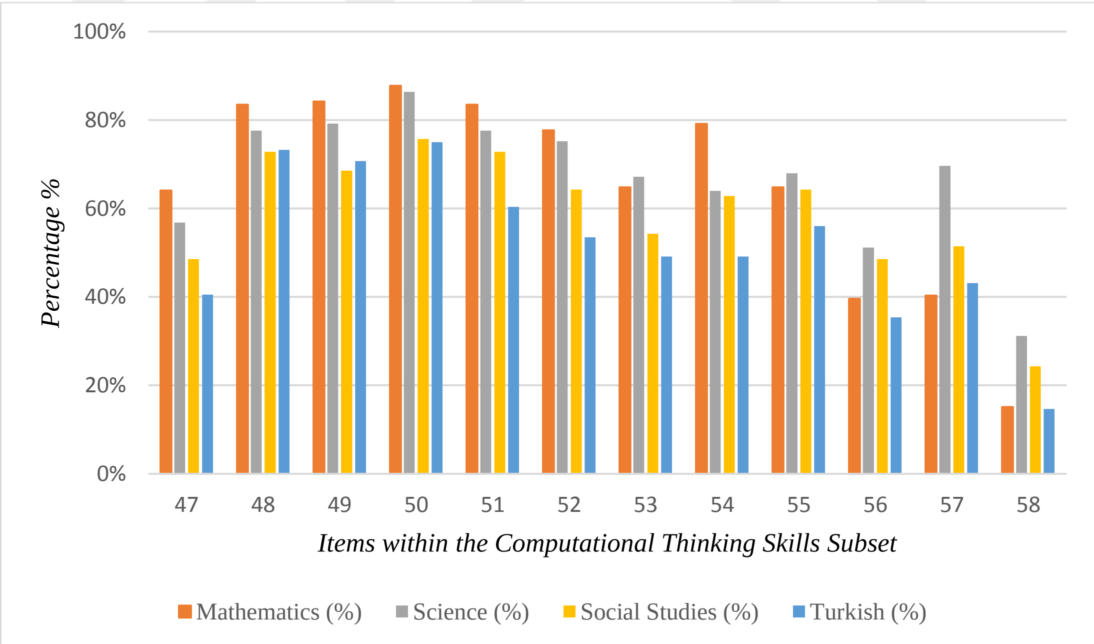



**Figure 11.** *Distribution of Teachers' Responses in the Computational Thinking Skills Subset ('Frequent and Always') Across Subjects*

The responses of the teachers in the *computational thinking skills subset* were examined to determine the extent of implementation in fostering this compound competency. In Figure 11, the results demonstrated that mathematics teachers and science teachers in eight out of 11 items exhibited a high level of implementation by reporting frequently or always promoting the development of *computational thinking skills* in their lessons. It emphasizes a high-level focus of mathematics teachers and science teachers to the development of this competency. Likewise, most social studies teachers demonstrated a high level of implementation in six out of 11 items. However, compared to their counterparts, Turkish teachers reported frequent incorporation in only four out of 11 items, indicating a notably lower level of implementation. The data indicated that the majority of the all-subject teachers frequently exhibit support for certain aspects of *computational thinking skills*, including *ordering steps to solve problems logically, distinguishing necessary information, developing alternative solutions,* and *adapting solutions to new problems*. In the responses from teachers across the four subject areas, it is noteworthy that while they reported engaging in activities with high frequency in sub-dimensions of computational thinking skills, including items related to *pattern recognition (Items 47, 48, 49, 52), problem-solving (Items 48, 50, 51, 54), inference making (Items 49, 52),* and *algorithmic thinking (Items 47, 48, 54, 55).* When considered, the most critical aspect of this competency, such as *computer-related activities* or *programming,* remained at a low level of implementation. This disparity highlights a notable gap in equipping students with hands-on programming experience, which is essential for cultivating this competency in today's digital world.

**4.2.1.5.1. Combined findings from written curriculum analysis and integration of computational thinking skills in practice:**

For computational thinking skills, the analysis of the implemented curriculum data extracted from the teachers' responses, combined with the findings from the analysis of the written curriculum, has revealed both alignment and differences between the two curriculum levels. The analysis of the 5th–8th Grade Mathematics Curriculum revealed the highest focus on the development of computational thinking skills compared to other subject areas, as reflected in its partially targeted learning objectives. This focus aligns with mathematics teachers reporting some of the highest levels of implementation for activities fostering these skills in their practice. However, despite this positive alignment, there remains a noticeable gap in the integration of programming-related activities.

In the analysis of the 5th–8th Grade Science Curriculum, a considerable amount of partially targeted learning objectives was identified to foster the development of students' computational thinking skills. This finding was also reflected in teachers' practices, which revealed a high level of implementation in developing this competency in their lessons. The data provided an alignment between the science curriculum as intended curriculum, and the high level of implementation reported in the practices of science teachers. Compared to their counterparts, science teachers demonstrated the highest level of implementation in simulation and gamification activities, suggesting a more focus computer-related activities. The data analysis of the 5th–7th Grade Social Studies written curriculum document revealed that computational thinking skills were a moderately partially targeted competency compared to other compound competencies. Similarly, the survey findings indicated a moderate level of implementation by social studies teachers in developing students' computational thinking skills. In this respect, the data suggest an alignment between what is intended in the social studies written curriculum and how teachers reflect it in their teaching practices.

The analysis of the 5th-8th Grade Turkish Curriculum has exposed a minimal focus on the development of computational thinking skills, which is further accompanied by the results of the survey. The survey findings demonstrated that teachers support the development of this competency with a moderate level of implementation in their practice. In this regard, although there is an alignment between the intended and implemented curriculum in Turkish, the results highlight a lack of emphasis on computational thinking skills within the written curriculum. However, Turkish teachers go beyond what is implied in the curriculum, enhancing their teaching to address some aspects of this competency; yet, their responses also indicated a noticeable lack of focus on programming or computer-related activities. A review of middle school curricula across all four subjects reveals varying levels of focus and alignment in fostering computational thinking skills. Mathematics teachers show strong alignment between the curriculum's partially targeted objectives and their high level of implementation in fostering computational thinking, though a noticeable gap remains in programming-related activities. Similarly, the science curriculum demonstrates alignment, with a considerable focus on computational thinking skills in its objectives and a high level of implementation by teachers. Social studies teachers exhibit moderate to low implementation, which also aligns with the curriculum's moderately targeted focus on computational thinking skills. In contrast, the Turkish curriculum reveals a minimal focus on computational thinking, aligning with teachers' moderate implementation. While Turkish teachers extend their teaching beyond the curriculum, programming and computer-related activities are still neglected. To explore the underlying factors contributing to these findings, in-depth interviews were conducted and the findings are elaborated in the following sections of the study.

#### 4.2.1.6. Teachers' Responses on the Extent of Entrepreneurship Skills in Implementation

The results gathered from the subset of entrepreneurship are presented in Table 12 which demonstrate the teachers' self-reported frequency of integrating global competency skills into their teaching across subject areas.

**Table 12.** *Teachers' Responses to the Survey's Entrepreneurship Subset*

| No. | Items for entrepreneurship skills | Subject area | Never & rarely | Sometimes | Frequent & always |
|---|---|---|---|---|---|
| | | | *n (%)* | *n (%)* | *n (%)* |
| 59 | I carry out activities in line with the problem-based learning method by using examples similar to real life problems. | Math | 7 (5%) | 25 (18%) | 107 (77%) |
| | | Sci | 6 (5%) | 22 (18%) | 97 (78%) |
| | | So | 3 (4%) | 12 (17%) | 55 (79%) |
| | | Tr | 13 (11%) | 31 (27%) | 72 (62%) |
| 60 | In my lessons, I include project-based activities in which students can develop innovative ideas about existing problems. | Math | 19 (14%) | 52 (37%) | 68 (49%) |
| | | Sci | 12 (10%) | 27 (22%) | 86 (69%) |
| | | So | 3 (4%) | 23 (33%) | 44 (63%) |
| | | Tr | 22 (19%) | 39 (34%) | 55 (47%) |

**Table 12** *(continued)*

| | | | | | |
|---|---|---|---|---|---|
| 61 | In projects and/or assignments, I ask students to prepare a business plan for an idea and implement this plan. | Math | 18 (13%) | 51 (37%) | 70 (50%) |
| | | Sci | 12 (10%) | 29 (23%) | 84 (67%) |
| | | So | 6 (9%) | 21 (30%) | 43 (61%) |
| | | Tr | 19 (16%) | 41 (35%) | 56 (48%) |
| 62 | I create opportunities for students to receive mentor support from field experts for the innovative projects they develop. | Math | 29 (21%) | 51 (37%) | 59 (42%) |
| | | Sci | 17 (14%) | 40 (32%) | 68 (54%) |
| | | So | 12 (17%) | 24 (34%) | 34 (49%) |
| | | Tr | 35 (30%) | 34 (29%) | 47 (41%) |
| 63 | I ask students to design products for the ideas they put forward. | Math | 27 (19%) | 55 (40%) | 57 (41%) |
| | | Sci | 6 (5%) | 28 (22%) | 91 (73%) |
| | | So | 7 (10%) | 23 (33%) | 40 (57%) |
| | | Tr | 22 (19%) | 36 (31%) | 58 (50%) |
| 64 | I ask students to prepare short presentations in which they can introduce the products they have designed to solve a problem. | Math | 29 (21%) | 61 (44%) | 49 (35%) |
| | | Sci | 8 (6%) | 43 (34%) | 74 (59%) |
| | | So | 6 (9%) | 22 (31%) | 42 (60%) |
| | | Tr | 14 (12%) | 48 (41%) | 54 (47%) |
| 65 | I draw attention to different types of entrepreneurships (social entrepreneurship, commercial entrepreneurship, etc.) in terms of scope and content. | Math | 37 (27%) | 58 (42%) | 44 (32%) |
| | | Sci | 35 (28%) | 37 (30%) | 53 (42%) |
| | | So | 4 (6%) | 23 (33%) | 43 (61%) |
| | | Tr | 41 (35%) | 37 (32%) | 38 (33%) |
| 66 | In my courses, I ensure that students analyze the life and/or success stories of different entrepreneurs. | Math | 38 (27%) | 55 (40%) | 46 (33%) |
| | | Sci | 28 (22%) | 40 (32%) | 57 (46%) |
| | | So | 3 (4%) | 19 (27%) | 48 (69%) |
| | | Tr | 18 (16%) | 34 (29%) | 64 (55%) |
| 67 | According to the topics covered, I carry out studies that enable students to communicate with people in the sector. | Math | 46 (33%) | 59 (42%) | 34 (24%) |
| | | Sci | 42 (34%) | 36 (29%) | 47 (38%) |
| | | So | 12 (17%) | 22 (31%) | 36 (51%) |
| | | Tr | 36 (31%) | 40 (34%) | 40 (34%) |
| 68 | I encourage students to attend events such as fairs /conferences /seminars /panels where they can get to know the entrepreneurship ecosystem. | Math | 48 (35%) | 48 (35%) | 43 (31%) |
| | | Sci | 19 (15%) | 38 (30%) | 68 (54%) |
| | | So | 8 (11%) | 18 (26%) | 44 (63%) |
| | | Tr | 27 (23%) | 41 (35%) | 48 (41%) |

*Note*. The entrepreneurship subset includes 12 items (*n* = 12). The items in the table are presented based on the responses of four subject teachers, with frequencies and percentages reported for each category. Math = Mathematics; Sci = Science; So = Social Studies; Tr = Turkish. For each subject area, the total number of participants is as follows: Mathematics (*n* = 139), Science (*n* = 125), Turkish (*n* = 116), and Social Studies (*n* = 70). The total number of participants across all subject areas is *N* = 450.

Table 12 indicates that teachers from different subject areas demonstrate noticeable differences in the extent to which they implement activities to foster students' entrepreneurship skills. A majority of social studies teachers (*n* = 55, 79%), science teachers (*n* = 97, 78%), mathematics teachers (*n* = 107, 77%), and Turkish teachers (*n* = 72, 62%) reported that they frequently or always implement activities including *the problem-based learning method using real-life examples (Item 59)*, which reflects a high level of implementation in such activities. A majority of science teachers (*n* = 86, 69%) and social studies teachers (*n* = 44, 63%) reported high implementation of *project-based activities that foster innovative thinking* (Item 60). However, a considerable proportion of mathematics teachers (*n* = 68, 49%) and Turkish teachers (*n* = 55, 47%) reported that they frequently or always integrate these activities into their practice, which reflects a moderate level of implementation compared to the overall group of teachers.

A majority of science teachers (*n* = 84, 67%) and social studies teachers (*n* = 43, 61%) reported high implementation of activities *involving the preparation and execution of business plans (Items 61).* In contrast, half of the mathematics teachers (*n* = 70, 50%) and slightly less than Turkish teachers (*n* = 56, 48%) reported that they frequently integrate such activities into their teaching, which demonstrates a moderate level of implementation compared to the total group of the teachers. Across four subjects, a considerable proportions of science teachers (*n* = 68, 54%), mathematics teachers (*n* = 59, 42%), social studies teachers (*n* = 34, 49%), and Turkish teachers (*n* = 47, 41%) indicated that they frequently incorporate activities including *creating opportunities for students to receive mentor support for their innovative projects (Item 62),* which reflects a moderate level of implementation compared to the overall group of the teachers. Notably, a considerable proportion of Turkish teachers (*n* = 35, 30%) also indicated that they never or rarely providing mentor support, which refers to a rare level of implementation.

A majority of science teachers (*n* = 91, 73%) reported high implementation of activities where students *design products for their innovative ideas (Item 63).* In contrast, a considerable proportion of social studies teachers (*n* = 40, 57%), Turkish teachers (*n* = 58, 50%), and mathematics teachers (*n* = 57, 41%) reported that they frequently integrate these activities in their instruction, which refers to a moderate level of implementations compared to the overall group of the teachers. A notable proportion of science teachers (*n* = 74, 59%) and social studies teachers (*n* = 42, 60%), Turkish teachers (*n* = 54, 47%), and mathematics teachers (*n* = 49, 35%) reported that they reported frequently or always activities *where students presented their designed products (Item64),* indicating a moderate level of implementation. A majority of social studies teachers (*n* = 43, 61%) reported high implementation of activities focusing on different types of entrepreneurship, such as *social or commercial entrepreneurship (Item 65).* In contrast, a notable proportion of science teachers (*n* = 53, 42%), Turkish teachers (*n* = 38, 33%), and mathematics teachers (*n* = 44, 32%) reported that they frequently integrate such activities into their practice. This finding is also complemented by a moderate proportion of Turkish teachers (*n* = 41, 35%) and mathematics teachers (*n* = 37, 27%) indicating that they rarely or never include such activities in their instruction. Most social studies teachers (*n* = 48, 69%) demonstrated high implementation in activities *analyzing entrepreneurs' success stories (Item 66)*. In contrast, a considerable proportion of Turkish teachers (*n* = 64, 55%), science teachers (*n* = 57, 46%), and mathematics teachers (*n* = 46, 33%) reported that they frequently include such stories into their practice, which reflects a moderate level of implementation compared to the overall group of the teachers. Notably, a small proportion of mathematics teachers (*n* = 38, 27%) also noted that this activity was rarely implemented.

A considerable proportion of social studies teachers (*n* = 36, 51%), science teachers (*n* = 47, 38%), Turkish teachers (*n* = 40, 34%), and mathematics teachers (*n* = 34, 24%) reported that they frequently or always include activities *enabling communication with industry professionals (Item 67),* which reflect a moderate level of implementation compared to the total group of teachers. Notably, mathematics teachers (*n* = 46, 33%) also reported that they rarely implemented this activity. Most social studies teachers (*n* = 44, 63%) demonstrated high implementation of activities encouraging participation in entrepreneurship events, such as fairs, conferences, and panels (Item 68). However, a considerable proportion of science teachers (*n* = 68, 54%), Turkish teachers (*n* = 48, 41%), and mathematics teachers (*n* = 43, 31%) reported that they frequently or always implement such activities, which refers to a moderate level of implementation compared to the total group of the teachers. In contrast, a notable proportion of mathematics teachers (*n* = 48, 35%) reported a rare level of implementation for these participations. In this respect, to provide a comprehensive understanding of the findings, Figure 12. illustrates comparable data on the distribution of teachers' responses in the *Entrepreneurship Subset* with respect to the 'Frequent and Always' category across four subject areas.

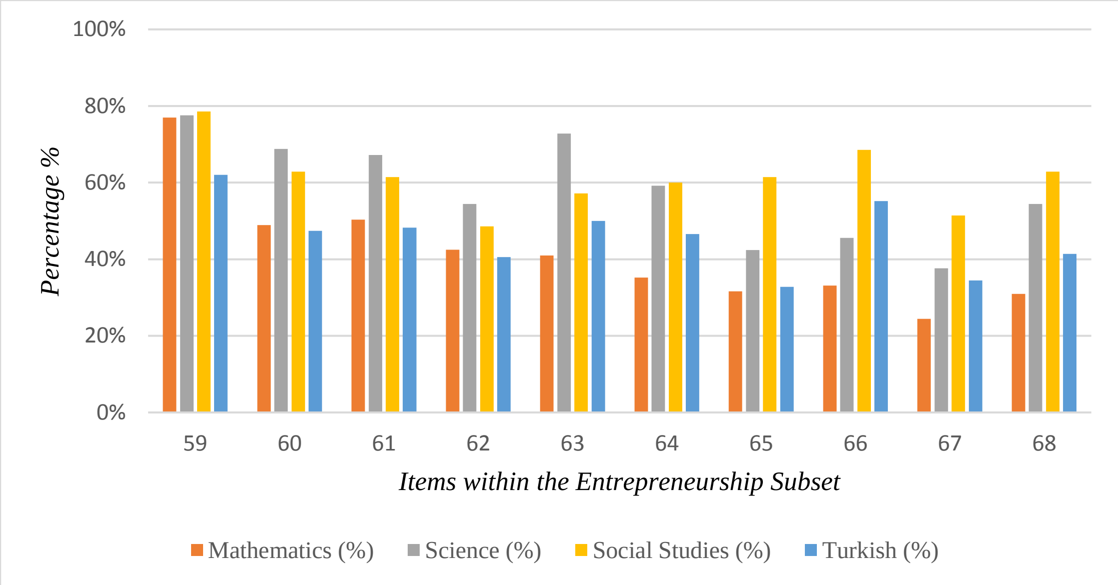



**Figure 12.** *Distribution of Teachers' Responses in the Entrepreneurship Subset ('Frequent and Always') Across Subjects*

As can be seen in Figure 12, the data show that there is a balanced and yet diverse level of implementation in the different subject areas of entrepreneurship. Social studies teachers, in seven out of ten items, exhibited a high level of implementation by reporting frequently or always promoting the development of entrepreneurship in their lessons. On the contrary, science teachers reached high implementation in four out of ten items. It demonstrates that there is a moderate-level focus of science teachers to develop this competency. Compared to their counterparts, mathematics teachers and Turkish teachers demonstrated notably lower levels of implementation, achieving high implementation in only one out of ten items. It demonstrates a minimal focus on fostering the development of entrepreneurship in their lessons. The data reveals that while social studies facilitate fostering this competency, other subject areas need more focus on incorporating entrepreneurial skills into their teaching practices.

Figure 12 also illustrates the variations across the aspects of the entrepreneurship. In this respect, the aspect of *problem-based learning with real-life examples* gathered high attention across all subject areas. On the other hand, *providing mentor support* and *support of industry professionals* gathered a moderate level of implementation across all subject areas. It is notable that, in the aspect of *designing products for innovative ideas,* science teachers distinguished themselves with high level of implementation of such activities. Even though, mathematics teachers, science teachers, and Turkish teachers demonstrated a moderate level of implementation in aspects including *presentations of designed products, different types of entrepreneurships, analyzing entrepreneurs' success stories,* and *participation in entrepreneurship events*, compared to their counterparts, social studies teachers distinguished themselves with higher support to develop these skills.

**4.2.1.6.1. Combined findings from written curriculum analysis and integration of Entrepreneurship skills in practice:**

For entrepreneurship, the analysis of the implemented curriculum data extracted from the teachers' responses, combined with the findings from the analysis of the written curriculum, has revealed both alignment and differences between the two curriculum levels. The data analysis of the 5th–7th Grade Social Studies written curriculum document revealed that, the entrepreneurship was the least frequently targeted or partially targeted competency, compared to other compound competencies. However, the survey findings indicated a high level of implementation of social studies teachers in developing the entrepreneurship skills of students. This inconsistency highlights that social studies teachers go beyond what is intended in their written curriculum and enrich their teaching practices to promote the development of this competency.

In the analysis of the 5th–8th Grade Science Curriculum, a considerable amount of *partially targeted* learning objectives was identified to foster the development of students' entrepreneurship skills. This finding was also reflected in teachers' practices, which revealed a moderate level of implementation in promoting this competency. This implies that the 5th–8th Grade Science Curriculum, as the intended curriculum, provides a *foundational* emphasis on integrating entrepreneurship skills, which appears to be in alignment with the moderate level of implementation reported in the practices of science teachers. The analysis of the 5th–8th Grade Mathematic Curriculum revealed no explicitly targeted focus on the development of entrepreneurship skills within their learning objectives, in alignment with that mathematics teachers demonstrated a least level high implementation of such activities into their practice. The findings highlight that fostering the entrepreneurship skills of middle school students is not a prioritized concern, either in the written curriculum or in the instructional practices of teachers.

The analysis of the 5th-8th Grade Turkish Curriculum (MoNE, 2019) has also revealed a minimal focus on the development of entrepreneurship skills, which is further complemented by the results of the survey. The survey findings demonstrated that teachers support the development of this competency in a limited way in their Turkish lessons. In this regard, although there is an *alignment* between the intended and implemented curriculum in Turkish, the results revealed a lack of support for the development of entrepreneurship skills both in the Turkish curriculum and in practice.

A review of middle school curricula across all four subjects shows varying efforts to foster entrepreneurship skills. In this respect, social studies teachers demonstrate a high level of implementation that goes beyond the focus of its written curriculum. On the other hand, science teachers show alignment between the curriculum and their practices, though both reflect a moderate level of focus. Similarly, the mathematics curriculum lacks any targeting of entrepreneurship skills, which aligns with the minimal focus on implementation as well. Lastly, the Turkish curriculum exhibits a limited focus, which aligns with the instructional practices of teachers. To explore the underlying factors contributing to these findings, in-depth interviews were conducted and the findings are elaborated in the following sections of the study.

### 4.3. The Factors that Promote or Hinder the Development of Compound Competencies

In response to the third research question: “what factors promote or hinder the development of compound competencies in practice?” the interview data revealed the factors that either promote or hinder the development of compound competencies in practice. These factors are presented in five key themes: 1) the role of targeting, 2) the role of individual and social dynamics, 3) the role of the educational system, 4) the role of teachers' capacity, and 5) the role of instructional strategies. The categories under the role of targeting theme include: *targeted directly or indirectly* and *not targeted*; the categories under the role of individual and social dynamics theme include: *parents* and *student profile*; the categories under the role of the educational system theme include: *national education policies, curriculum, exam-oriented education, teachers' workload*; the categories under the role teachers' capacity theme include: *teachers' competency, accessing information sources*, and *supportive mechanisms*; and the categories under the role of instructional strategies include: *integration & association, learner-centered education, instructional materials, extra-curricular activities*. Table 13 demonstrates the summary of themes, categories, and codes that emerged for the factors that promote or hinder the development of compound competencies. Since the data were collected from teachers of four subjects as mathematics, Turkish language, social studies, and science, while presenting the findings at least one response from each subject will be included in the following sections of findings where applicable.

**Table 13**. *Summary of Themes, Categories, and Codes on Factors Influencing the Development of Compound Competencies*

| Themes | Categories | Codes |
|---|---|---|
| The Role of Targeting the Development of Compound Competencies | Not Targeted | - Lack of clear objectives at the middle school level<br>- Lack of intentional activities<br>- Lack of departmental targeting<br>- Insufficient interdisciplinary collaboration |
| | Targeted Directly or Indirectly | - Directly developed<br>- Indirectly developed |
| The Role of Individual and Social Dynamics in Promoting or Hindering Compound Competencies | Parents | - Parents' expectations and priorities |
| | Student Profile | - Student's attitudes and behaviors.<br>- Alignment with student interests<br>- Appropriateness for students' developmental levels. |

**Table 13** *(continued)*

| | | |
|---|---|---|
| The Role of the Educational System in Promoting or Hindering Compound Competencies | National Education Policies Curriculum | - Systemic challenges caused by the MoNE-<br>- Frequent and sudden policy changes<br>- The structure and design of the curriculum<br>- Integration of compound competencies into curriculum components.<br>- Curriculum overload<br>- Insufficient instructional and preparation time |
| | Exam-oriented Education | - Differing needs of exam-oriented groups (e.g., Grade 8)<br>- Test-driven classrooms<br>- The impact of various exam types (such as mock exams, assessments, quizzes, etc.). |
| | Teacher's Workload | - Lack of teachers<br>- Other required in-school tasks and responsibilities<br>- Demanding teaching hours |
| The Role of Teachers' Capacity in Promoting or Hindering Compound Competencies | Teacher's Competency | - Awareness of compound competencies<br>- Classroom management skills of teachers |
| | Accessing Information Sources | - National/international online in-service training and webinars<br>- Use of social media for professional development<br>- Engagement with scientific research/articles<br>- Pursuing graduate programs |
| | Supportive Mechanisms | - School characteristics (e.g., private school, NGO school)<br>- Learning communities (in or outside the school)<br>- Implementation of tailored school programs |
| The Role of Instructional Strategies | Integration & Association | - Integration through texts and problem-based sentences |
| | Student-centered education | - Success stories<br>- Activity-based learning<br>- Model building<br>- Station technique<br>- Group work<br>- Simulation-based teaching<br>- Debates and discussions<br>- Collaborative learning |

**Table 13** *(continued)*

| | | |
|---|---|---|
| The Role of Instructional Strategies *(continued)* | Student-centered education *(continued)* | - Experiential learning<br>- Active learning environments<br>- Real-world examples<br>- Problem-based learning<br>- Inquiry-based methods<br>- Project-based activities<br>- Differentiated instruction<br>- Alternative assessment and evaluation methods |
| | Instructional Materials | - Insufficiency of MoNE-provided textbooks<br>- Utilization of supplementary resources<br>- Integration of Web 2.0 tools |
| | Extra-Curricular Activities | - Co-curricular activities<br>- Outside-school activities<br>- Student club activities |

### 4.3.1. The Role of Targeting the Development of Compound Competencies

The theme of targeting the development of compound competencies emerged, with categories indicating whether fostering these competencies is *not targeted* at all and *targeted directly or indirectly*. The content analysis of the interview responses suggests that the ultimate goal for middle school education may not have been collaboratively re-defined with all subject teachers in the school setting, despite its mention in official educational regulation documents. Additionally, there appeared to be a lack of a comprehensive and forward-looking approach in teaching practices to systematically identify the specific skills and competencies that students are expected to develop before transitioning to high school. The responses of the teachers indicated that compound competencies were often developed indirectly as a consequence of various activities rather than being explicitly targeted in planned instruction. In addition, it was found that the goals or objectives for the development of compound competencies at the middle school level remained vague, which resulted in a lack of intentional activities and their absence from both lesson plans and departmental planning meetings. Moreover, the statements about the lack of sufficient interdisciplinary collaboration revealed that it is difficult to integrate these competencies systematically and holistically into different subjects or disciplines.

#### 4.3.1.1. Not Targeting the Development of Competencies

The *not targeted* category emerged from teachers' insights regarding the extent to which compound competencies are integrated into teaching practices. Teachers highlighted that these competencies vary in their implementation, with some not being actively targeted due to several factors, including a *lack of clear objectives at the middle school level, absence of intentional activities, limited departmental focus,* and *insufficient interdisciplinary collaboration.* Additionally, curriculum constraints, inadequate structured planning, and time limitations often lead to missed opportunities for the systematic and meaningful development of these competencies. In this respect, a science teacher pointed out that while there is potential to develop these competencies, they are not explicitly targeted as a primary goal. This point was made clear in the following statement:

> When I think about it, I think we can do it, I think we can develop these skills. But like I said, maybe we can do it if activities are planned as a goal at the beginning of the semester. You know, maybe because we didn't set it as a goal... This is not a subject that I can say I can't include into my teaching because the curriculum is not up to date. But because it was not intended, it is likely that we did not set it as a goal. I think we do not address these skills. (F1)

There are also teachers from different subjects who share a similar perspective. A mathematics teacher also expressed that lack of intentional planning for the development of compound competencies in practice with the following statement:

> As I mentioned earlier, we do not prioritize this. I hardly ever do it myself. But I believe it's not just about one individual… There should be a group of three to five teachers who are genuinely interested in researching this and setting clear objectives. They should come together and say, ‘We have this goal, these are the key competencies we aim to develop among students.’ We should be thinking along the lines of: ‘How can we integrate these compound competencies into this subject?’ or ‘How can we reinforce these skills a year later with the same student?’ I think such collaborative efforts are necessary. (M1)

The mathematics teacher expresses concern regarding the lack of prioritization in developing compound competencies and emphasizes the potential benefits of collaborative planning among teachers to facilitate the integration and reinforcement of these competencies over time. Similarly, the Turkish teacher highlights the importance of explicitly incorporating these competencies into annual lesson plans to support their systematic development:

> At the end of the day, when preparing annual plans, we need to define these competencies as specific objectives and make the necessary preparations for them at the beginning of the term. For instance, I know that I want to address these skills, but because we do not explicitly plan for them, they often end up being overlooked, rushed, or superficially covered. Perhaps if we set them as clear objectives… For example, which learning outcome can I use to emphasize media literacy in a more impactful way? My main goal is not just to mention media literacy while teaching about animals, for instance, but rather to integrate both in a meaningful way. That's why I believe we need to set these objectives at the beginning of the year and perhaps design a dedicated activity to highlight them more effectively. (T1)

As illustrated in this quotation, teachers argued that intentional planning, as a reflection of targeting, is a crucial aspect of ensuring the effective implementation of these competencies across different subjects. This highlights a shared awareness among teachers regarding the role of planning in shaping classroom practices. In alignment with this view, the science teacher supported this perspective with the following statement:

> When we consider the activities we conduct throughout the year, we realize that we do not dedicate the entire academic year to media literacy or sustainability. In fact, we do not explicitly set it as a goal. In a few activities, let's say four or five, we do emphasize it intensively, but my primary objective in those cases is not specifically media literacy. I just mention it as part of an interdisciplinary approach. And honestly, I think that's a valid concern. Our main goal is not to directly emphasize this competency; rather, it becomes more of a side effect. That's why students might not even realize it. They might just perceive it as an instruction or a minor directive rather than an intentional focus. (F1)

In support of the science teacher's view, the social studies teacher stated that without targeted planning, these competencies emerged as secondary elements within interdisciplinary activities and not addressed directly in lessons. The social studies teacher also stated that the lack of intentional planning leads to missed opportunities for meaningful learning that can contribute to the holistic development of students' compound competencies. This reflects how the presence of such competencies in lessons may often remain implicit without deliberate emphasis:

> I suppose we do not have a subject-area planning framework that I can readily share. For instance, when I think about the project assignments I have given so far, I realize that I have assigned tasks like making models. For example, I asked students to create a model, but I never questioned how much the cardboard they bought cost, how much they spent on it, or what their budget was. I have never encouraged them to reflect on these aspects in relation to financial literacy. Maybe I should. If I integrate this kind of questioning, then of course, I can expect the student to develop in that direction as well. (S2)

As findings suggest, the lack of targeted planning in subject-area instruction limits opportunities for students to develop compound competencies in a structured way, often leaving their growth to emergent learning rather than deliberate educational design.

#### 4.3.1.2. Targeting Directly or Indirectly the Development of Competencies

The targeting of compound competencies varies across different teaching practices, with some teachers intentionally incorporating them into lessons, while others address them *indirectly through interdisciplinary activities* or *emergent learning experiences*. Despite the lack of targeted planning in the aforementioned statements, teachers also note that the other skills outlined in subject-specific curricula or the activities they choose to implement during practice somehow indirectly support the growth of compound competencies.

This suggests that competencies may emerge naturally within classroom activities, even when not explicitly framed. In this line, the following statements of the science teacher are noteworthy:

> In our project-based activities, we do incorporate elements of entrepreneurship, such as developing new ideas, creating products, exploring alternative approaches, or analyzing each idea from different perspectives. However, when it comes to the presentation phase, students do not necessarily approach

> their projects as entrepreneurs. While we provide opportunities for them to engage in persuasion and argumentation when presenting their work, we do not explicitly frame these activities under the concept of entrepreneurship. As a result, students may not even realize that what they are doing aligns with entrepreneurial skills… (F1)

As mentioned here, when teachers' practices move outside targeted instructional activities, this may influence the extent to which students internalize and recognize what they have learned. The same teacher continued as follows:

> …Additionally, as others have mentioned, providing students with the opportunity to directly interact with an entrepreneur is not something I incorporate into my lessons. Although entrepreneurship-related extracurricular activities, such as school entrepreneurship clubs, are frequently available, I cannot say that I systematically implement them within my science classes. In fact, I would say we hardly ever do this. (F1)

As highlighted by the science teacher, project-based activities provide opportunities indirectly for students to develop compound competencies such as entrepreneurship skills as it is mentioned above. However, since these skills are not explicitly targeted for the development of competencies, students may not recognize their efforts as in the example of entrepreneurial learning experience. This finding suggests that while interdisciplinary connections inherently exist within lessons, their absence of structured integration hinders the intentional reinforcement of these skills in practice, primarily due to insufficient interdisciplinary collaboration. Similarly, a mathematics teacher emphasizes the importance of a structured approach to integrating compound competencies. The teacher highlights the need for a more intentional effort, where learning objectives and instructional strategies, including the cultivation of competencies, are clearly mapped out. Unlike the emergent experience in science projects, the mathematics teacher advocates for a more systematic integration for the development of the competencies. The teacher argues that, in the example of literacy development for sustainable development, effective implementation requires in-depth planning and sustained focus over time, as expressed in the following statement:

> There are actually many aspects that could be linked, as I mentioned. It requires careful consideration. Perhaps the curriculum should be laid out in front of us,

> the sustainable developmental goals should be identified, their content should be reviewed, and then they should be systematically embedded into our practice. For example, this might be related to that, or this concept is present in daily life and connected to a specific goal. We should say, 'We can emphasize this in this context' and work on it accordingly. I don't think this can be a short-term effort. I believe it requires extensive and long-term work. (M1)

Building on this, it is also appeared that some teachers highlight not only the lack of explicit targeting but also the fact that when targeting is attempted, it often remains general and ambiguous. They state that although planning is done at the beginning of the academic year for the development of certain competencies, these remain distant goals rather than being systematically integrated into lessons across different grade levels. This may indicate a disconnect between overarching planning and its systematic application. In this respect, a couple of reflections from a science teacher and social studies teachers are presented below:

> At the beginning of each year, as a department, we set our goals. More precisely, what I mean is that we always define a goal related to sustainable development each year. We determine around 8 to 10 objectives that will shape the year, particularly focusing on integrating them into our lessons. Beyond that, we also establish national and international project objectives. In this context, we set goals that may support entrepreneurship and computational thinking skills to some extent. However, what we don't do, but perhaps should, is structuring these competencies based on grade levels. Instead, we present them as general goals rather than incorporating them into a systematic framework at different educational stages (F3)

This reflection suggests that, despite the presence of strategic intentions, there may be limited operational clarity across grade levels. Expanding on this perspective, a social studies teacher described how the lack of a structured framework or a holistic approach result in competencies being addressed in an ad-hoc manner rather than through intentional planning, as follows:

> A distant goal! Yes, that's how I would describe it. There is no structured framework or a holistic perspective guiding this process. Although we engage in these initiatives, we tend to follow the principle of 'figuring things out along the way.' Due to time constraints, we often focus on specific objectives without looking at the bigger picture. Instead of a well-structured plan, we say, 'Alright, here's an objective, here's a goal—let's connect it to this activity and implement it right away.' In doing so, we claim to have incorporated these

> competencies into our practice. Even though these competencies are not explicitly outlined one by one, we consider our school's vision and mission as a distant target that encompasses them all. (S3)

Although some teachers indicated that they intended to target these competencies generally, their implementation remained largely unstructured, and it was set at a broad level rather than addressing particular grade levels or instructional plans. As a result, rather than through deliberate curriculum integration, competency development often occurred emergently, where connections were made opportunistically. Teachers in this situation also pointed out time restrictions as another obstacle to their practice to develop any skills. These constraints, which will be discussed in the following sections of the findings, were noted to limit teachers' teaching strategies to employ diverse activities. Because of this, it is mentioned that such competencies often remain distant goals rather than being systematically integrated into lessons. Moreover, there were teachers who perceived their school's vision and mission as implicitly encompassing these competencies, despite the fact that they explicitly outlined their development in lessons.

### 4.3.2. The Role of Individual and Social Dynamics in Promoting or Hindering Compound Competencies

The interview data revealed two categories under the role of instructional strategies in promoting or hindering compound competencies in *parents* and *student's profile.* These factors are addressed in the subsequent sections, which offer insights into the development of compound competencies.

#### 4.3.2.1. Parental Expectations in the Development of Competencies

The category of *parents* refers to the overall approach of *parents' expectations and their priorities* regarding their children's education from the perspective of teachers. Teachers stated that parents generally focus on traditional and one-dimensional goals such as academic achievement, exam preparation, and high grades; however, they noted that this approach often conflicts with the development of compound competencies, which require different teaching strategies and support the multidimensional growth of students. In particular, the pressure to excel in exams may limit the opportunities for students to engage in more holistic or enriched learning experiences which potentially hinders the cultivation of these competencies. In the teachers' discourse, this mismatch between parents' expectations and competence development emerges as a challenge in promoting competence development. A science teacher mentioned these expectations with this statement:

> Even though we strive to create a hybrid approach to developing students' skills, and despite the existence of a school culture that values social skills alongside academic achievements, at the end of the day, parents inevitably expect us to deliver exam success as well. (F1)

As illustrated, a science teacher states that, as a private school, although there is a positive attitude toward developing different skills within the school, parents ultimately focus on exam results at the end of the day. Similarly, a Turkish teacher mentioned below that while schools may adopt a positive stance toward fostering diverse skills, parental expectations often remain deeply rooted in academic performance and measurable outcomes.

> If I were to design an activity focused on the skill of giving an impromptu speech, which would take up a full lesson hour, parents would likely respond by saying things like, ‘But teacher, how many correct answers does my child have? What are their topic deficiencies? How can we cover these gaps?’ There is a clear tendency toward expecting us to deliver knowledge directly instead of developing skills. This might stem from the fact that today’s parents were themselves products of a traditional education system. As a result, their mindset may still be shaped by that experience. However, the world is evolving, and times are changing. Therefore, I believe it is essential to communicate these shifts to parents as well. (T2)

As mentioned, Turkish teacher highlights the traditional mindset of parents, who prioritize direct knowledge transmission over competency development through skill-based learning approaches. This perspective also emerges that parents may perceive the additional time required for skill development as a waste of time, while favoring intensive academic instruction for achieving high exam scores instead. On the other hand, a social studies teacher states that parents may be suspect teachers’ preferences regarding classroom activities as:

> The influence of parents from an administrative perspective cannot be overlooked. Consequently, certain activities, especially those where not all students can actively participate or where it is evident that some students may be unable to engage, can sometimes receive negative reactions. (S3)

The statements of some the teachers indicate that parental expectations have potential to influence the choice of classroom activities and the instructional methods employed. Teachers highlight that while schools may adopt a positive stance toward competency-based education, the persistence of exam-oriented expectations of parents often influences instructional priorities. Therefore, this highlights the dilemma between competence-based education and knowledge-based education. Based on prompts and the responses of teachers, these findings suggest that for competency-based learning to be more effectively integrated into lessons, fostering parental awareness and engagement in the evolving educational landscape is necessary.

#### 4.3.2.2. Student’s Profile for the Development of Competencies

The category of student’s profile emerged from teachers' insights on student’s attitudes and behaviors, alignment with student interests, and appropriateness for students' developmental levels in either promoting or hindering the development of compound competencies. Teachers stated that students' engagement and motivation, driven by their interests and attitudes, play a role in order to the development of such competencies.

Furthermore, the appropriateness of the content to students' academic and developmental levels was also highlighted as crucial in providing the teaching strategies. In this respect, the analysis of related responses in student profile are presented below. A social studies teacher begins with pointing up the aligning activities with students' interests. The teacher follows with how engagement can vary across different age groups by noting that younger students such as 5th and 6th graders often show more excitement to participate in competency development activities:

> When it comes to skill development, I first and foremost consider the potential of the child and the class, of course. For instance, fifth and sixth-grade students

> are generally more eager about such activities. However, our seventh graders didn’t show much interest, for example. The enthusiasm and excitement of different age groups are key factors. Of course, our role as teachers in guiding students and instilling this excitement and motivation is also crucial. But I believe entrepreneurial tendencies are slightly more prominent in younger age groups. (S1)

As illustrated, the value of guidance and motivation provided by teachers to sustain this enthusiasm and ensure active participation was also stressed. This perspective underlines the interplay between students' tendencies and the role of teachers in fostering the development of compound competencies as in the example of entrepreneurial skill-based activities. A mathematics teacher who is experienced in with the lower grades of the middle school (in 5th and 6th grades) also indicates that:

> The age group we are working with doesn’t really have any awareness about spending money. When I think of financial literacy, what comes to mind are things like the daily expenses students might make, or the expenditures we as adults make, as well as general economic situations. (M1)

The younger age groups show a lack of interest in certain aspects of these competencies, which addresses the need for deliberate and age-appropriate instruction to make learning more meaningful for these students. This highlights the importance of aligning instructional content, context, strategies, and materials with students' developmental levels. Such alignment plays a crucial role in fostering the development of these competencies, as it is integrated into every step of the learning process. A Turkish teacher also took the students' interests and behaviors into consideration with this statement:

> The age of the student group is important and play a significant role. The student profile is constantly changing. The student profile I encountered in my early years is vastly different from the one we see now. There used to be a more motivated group, with the majority being eager to learn. However, now we have a group that requires constant support and close monitoring. This dynamic has changed significantly over time. (T3)

As illustrated, the teacher highlights that students' interests change over time. This emphasizes that different student groups have varying interests, needs, attitudes, and expectations. In relation to this, a science teacher provided an example about empowering students in media literacy, where student attitudes, behaviors, and interests played a crucial role in shaping their learning experience.

> Maybe in our generation, media literacy was more challenging, but students are more experienced in media compared to us… I can especially say this for the 5th and 6th-grade group. In the 7th and 8th grades, things tend to be a bit more uncontrolled most of the time. However, in the younger age group, since instructions are followed much more quickly, I believe media usage is more accurate. That’s why, from this perspective, as I currently teach mostly 5th and 6th graders, I can't say that I have significant difficulties in this regard. We are progressing smoothly with them in terms of media literacy. (F1)

As seen, the age group differences are also reflected in the statements of the science teacher. It emerges that instruction should be designed to be appropriate for students' developmental levels and aligned with their interests to get their attention and keep them motivated. A social studies teacher also highlighted the importance of these competencies by presenting a real-life problem relevant to this age group that students encounter.

> Because we have students who are lack of media literacy and are severely affected by this issue. Some even becoming victims of web abuse. Whether it’s through online games or inappropriate content on social media, all of these elements can be truly harmful to children. It does not only hinder the development of their thinking skills but also lead to behavioral problems. (S3)

A social studies teacher underlined that these competencies are not only essential for students' future lives but also crucial for their current life skills and personal development during adolescence. This perspective was also reflected in another teacher’s statement below, who highlighted the differences in interests between students in grades 5th-6th and 7th-8th by drawing attention to variations in their behavioral patterns.

> As I mentioned before, our students use technology for very different purposes. For instance, when I assign homework to support their media literacy development, some parents tell me, "Teacher, my child won’t leave the internet for an hour." It turns out they are using that time to play games. The assignment I give is not long, maybe 10 minutes, at most half an hour. It’s a very short task

for them. However, parents report that their children end up spending two hours on it, which is concerning. That’s why I prefer using this method with certain groups but not with others. I don’t assign it to 7th and 8th graders because they tend to misuse the internet for other purposes. Moreover, some students have limited internet access. On the other hand, 5th and 6th graders are more willing to complete the task, prepare their presentations, and engage in the activity. In contrast, many 7th and 8th graders are less interested and get bored easily. Some of them even develop an excessive dependency on games and technology, which takes their focus away from the intended purpose. (F2)

As highlighted by the science teacher, students' interests, and the appropriateness of assigned tasks to their developmental levels notably influence the effectiveness of selected learning activities for cultivating these competencies. By the statements of the teachers, it emerges that there is a shifting focus and attitudes of 7th and 8th graders compared to lower graders also toward lessons. A mathematics teacher also acknowledges about these evolving classroom dynamics across grade levels with stating that:

> Each grade level has its own unique dynamics. That’s why I try to adapt to each of them accordingly. Our instructional approach varies significantly across different levels. (M3).

In sum, the development of competencies in middle school education is influenced by students' age-related interests, engagement levels, and developmental needs which mirrors as a student’s profile. These observations underscore the importance of acknowledging developmental differences when designing learning environments. Understanding these developmental patterns helps teachers tailor their instructional approaches to better match the evolving profiles and needs of their students.

Recognizing such variability support more adaptive and responsive teaching practices. Teachers across various subjects emphasize the necessity of aligning instructional strategies with students’ motivations to foster meaningful learning experiences. While younger students demonstrate higher enthusiasm and responsiveness in following instructions, older students exhibit shifting focus and behavioral patterns, such that, it highlights the need for differentiated and personalized teaching approaches to be inclusive in meeting the diverse needs of student profiles.

### 4.3.3. The Role of Educational System in Promoting or Hindering Compound Competencies

The interviewed data revealed four categories under the role of educational system in promoting or hindering compound competencies: *national education policies, the curriculum itself, exam-oriented education, and the teacher's workload.* These factors are featured in the following sections, providing insights into the development of compound competencies.

#### 4.3.3.1. National Education Policies for The Development of Competencies

Based on the analysis of the interview data, The category *of national education policies* arose from teachers' insights into *systemic challenges caused by the MoNE* and *frequent & sudden policy changes.* This reflects how policy inconsistencies hinder competency-based education. A Turkish teacher pointed out the systemic challenges in the development of such competencies, as was supported in the quote:

> We try to integrate such competencies into our lessons. However, I don't think we are able to focus on them enough because we are in a system that is built on covering topics, repeating them, and reinforcing knowledge. (T1)

As can be understood, teachers face challenges when they attempt to step outside the traditional framework and adopt more innovative or competency-based approaches in their instruction. Preparing students for an ever-changing world and equipping them with essential competencies has emerged as a crucial aspect of education. A science teacher asserts the systemic obstacles they encounter in meeting the requirements of the new age which was reflected in the following statement:

> In particular, I believe we need to raise competent children those who can adapt to different environments. By 'competent,' I mean that they should be able to solve problems, develop global competency, and navigate diverse situations. Of course, they will face challenges, but they should be able to adapt and find quick solutions. We should have an education system that fosters lifelong learning, one that does not discourage students from learning but instead keeps their curiosity alive. We need to cultivate children who love to explore and learn. Unfortunately, we are not focusing on this as much as we should. (F3)

By this quote, the teacher articulates that education should not only focus on content delivery but also on nurturing students' ability to navigate diverse challenges and develop adaptability. Additionally, the mention of lifelong learning aligns with the need for an education system that sustains curiosity and motivation; however, the concern that current educational structures do not sufficiently support these goals reflects broader systemic challenges in integrating competency-based approaches into teaching practices. This perspective illustrates the inherent complexity in translating broader educational goals into everyday teaching practices within the constraints of existing curricular and institutional structures. These perceived boundaries within the education system are also reflected in the statements of another social studies teacher.

> Sometimes, the requirements within the Ministry of National Education (MoNE) can become a burden. For instance, there should be an experiential learning space where children can actively participate, and the government should either mandate this or launch it as an official project. In short, without major structural reforms, I don't believe that children will significantly benefit, both in terms of developing these compound competencies and in their overall healthy growth and development in education. (S1)

From this perspective, the teacher highlights the structural limitations within the education system. They emphasize the necessity of system-wide reforms rather than small-scale interventions to ensure the cultivation of competencies within the school system. The teacher further supports this claim by indicating the need for a more comprehensive approach.

> If things continue as they are, nothing will change. Just as we grew up and studied within school buildings, without being able to truly engage with global or world issues… Any improvements in this area must be implemented on a much larger scale. While budget efficiency is important, when it comes to children, education, personal well-being, and psychological health, MoNE should make substantial investments. (S1)

Teachers are concerned that the current education system lacks the structural capacity to foster competencies, particularly in relation to real-world engagement. This suggests that without comprehensive, system-wide reforms, teachers' efforts to develop competencies in practice may remain fragmented and ineffective. It also reinforces the idea that competence-based learning requires not only pedagogical changes but also nationwide institutional commitment. This commitment also demands consistency and determination in policy changes. A Turkish teacher highlighted how sudden policy shifts affect both their planning and implementation.

> For example, there is a factor that the Ministry of National Education (MoNE) expects from us. For instance, when MoNE suddenly announced that it would administer the exams itself, referring to the common exams, as you know. It created difficulties. Normally, the established regulation outlined the achievement tables for the first and second terms separately. However, when this decision was announced just a month before the exam, it became challenging. The scenarios given to us were entirely based on the second term's topics, and when we discussed this with our fellow teachers, they immediately dropped everything and focused solely on delivering content. All projects and alternative hands-on activities were abandoned, and the 7th-grade classes turned into an exact replica of the 8th grade, let me put it that way. (T1)

As illustrated, the teacher refers to the sudden change in assessment regulations in the middle of the academic year and how this affected their planning, instructional choices, and activity selection. This shift highlights how an exam-driven approach can override alternative teaching strategies and push teachers to prioritize content delivery over competency focused learning. Instead of sudden changes, informing all stakeholders in advance, allowing them time to prepare, and incorporating their insights into the process would help teachers adapt more effectively to new regulations and adjust their instructional choices to enrich their practices. The findings indicate that rigid and sudden changes in the education system are misaligned with the principles of competency-based education, which prioritize real-world application, and flexible pacing. A competency-oriented approach requires that teachers be provided with adequate time and support to effectively adapt their instructional strategies, ensuring that students are better prepared for real-world challenges and lifelong learning. In sum, the findings suggest that rigid and sudden policy changes within the national education system create significant challenges for teachers in implementing competency-based learning. The teachers' insights highlight structural limitations that hinder the integration of real-world application, adaptability, and lifelong learning into instructional practices. Based on their experiences, a system wide, structured approach to policy-making is necessary which incorporates stakeholder input, and provides teachers with the time and resources needed to foster competency development in students.

#### 4.3.3.2. The Curriculum Itself for the Development of Competencies

The category of the curriculum itself in promoting or hindering compound competencies emerged from teachers' insights such as the structure and design of the curriculum, integration of compound competencies into curriculum components, curriculum overload and insufficient instructional and preparation time. These factors are featured in the following sections, providing insights into the cultivation of compound competencies. A Turkish teacher expresses concerns regarding curriculum alignment across different subjects and grade levels, particularly in interdisciplinary learning. The findings reveal that the structure and design of the curriculum may create both challenges and opportunities in integrating competencies effectively, as illustrated by the following teacher's statement:

> We say that computational thinking skills could be taught in an interdisciplinary way. It could be integrated with computer science or another subject... but unfortunately, the relevant topic appears in a different grade level. If curriculum planning took this into account and ensured better alignment, it would make things easier for all of us… I'd like to give another example. Take the English curriculum, for instance. It differs significantly from our curriculum. English teachers aim to introduce certain concepts, but students in the fifth grade are not yet familiar with those concepts. As a result, English teachers find it very difficult to teach them, particularly in terms of language development. Similarly, when learning objectives and topics do not align across subjects and grade levels, we face serious challenges. (T3)

As mentioned above, the Turkish teacher highlights the importance of aligning learning objectives across subjects and different grade levels. The analysis of the responses suggests that greater curriculum coherence across disciplines and grade levels may support a smoother transition between subjects. It also enables students to connect prior knowledge gathered from one subject with new learning in another subject area in a more structured and meaningful way. Teacher's perspectives indicate that misalignment between subject areas and grade-level expectations can create challenges in competency development, particularly in interdisciplinary learning. Aligning curricula more effectively could help address these gaps and enhance students' ability to apply and transfer skills across different domains. A science teacher also points out this misalignment with the following statement:

> For instance, mathematics can sometimes be a challenge in our lessons. Because of this, there were times when I first taught math and then moved on to science. For example, I would spend a lesson or two explaining angles before transitioning to the topic in science. This was because, when we discussed with math teachers, we noticed an inconsistency in the current curriculum. In fifth grade, students are expected to apply their prior knowledge from elementary school to understand angles in the light unit of science. However, this foundation is insufficient, making it difficult for them to grasp the concept effectively. (F3)

These examples suggest that shortcomings in the design of subject areas impact the holistic development of compound competencies as well as other areas of learning. A social studies teacher highlights another aspect of the curriculum's structure and design with the following statement:

> Therefore, the fact that the media literacy skill appears in the fourth unit is actually a major shortcoming. Ideally, it should be introduced earlier in the year, as it is a skill that needs to be continuously connected to various topics. In my opinion, even the psychological counselling and guidance department should seriously focus on media literacy. (S3)

The design of curriculum was desired to be more responsive to the learning needs of students, ensuring that key competencies, such as media literacy, are included at appropriate stages to increase their relevance and transferability. The teacher's statement reflects concerns about the structure and design of the curriculum which introduce such skills too late in the curriculum and it limits the opportunities for meaningful integration across subject's areas. A science teacher also points out this misalignment with this statement:

> For example, there are rehearsals and various preparations for May 19th celebrations. During this time, the concern shifts to ensuring that no learning outcomes are left out, leading to a 'just cover the topic and move on' approach.

> Then these topics coincide with such busy periods, it becomes particularly challenging. This is especially problematic for the human & environment units, which are placed in the sixth unit of the curriculum and often fall exactly within this timeframe, making the process even more difficult. (F1)

This statement highlights the challenges posed by external events and scheduling constraints on curriculum implementation, which also reflects the design of the curriculum should consider various aspects holistically. Teachers are confronted with time constraints that require them to prioritize content coverage over deep learning, thereby constraining instructional opportunities for active engagement and competency development. These findings suggest that curriculum design should be reconsidered to prevent these conflicts in order to allow a balanced and effective learning experience. Both curriculum design and development play a crucial role, as embedding compound competencies into curriculum components emerges as a key factor in effectively cultivating these competencies in practice. Since the intended curriculum, as outlined in written curriculum documents, includes the learning objectives of fostering these competencies, there is room for teachers to integrate them into their teaching. Regarding this, a science teacher emphasized how embedding these competencies into the intended curriculum provides a structured opportunity for integration, as reflected in the following statement:

> Because these competencies are not strongly linked to learning outcomes, and at the same time, our process and time are very limited. I can also mention the risk here. As practitioners, we are in the field, and when explaining these topics to students, if these competencies are explicitly incorporated into the learning objectives and assigned a dedicated time frame, their impact would be much greater. It would also allow for a more structured use of time. If I am given a specific timeframe for a learning outcome, I can effectively integrate these competencies into that process and deliver them to students in a meaningful way… (F2)

When these competences are already embedded in the curriculum, they can be directly targeted and developed within the actual teaching context. This integration eliminates the need for additional time or extra resources and enables teachers to incorporate competence development effortlessly into their teaching practice. The same teacher continues his/her explanation as follows:

> … However, some competencies may not always align perfectly. For example, financial literacy. Some competencies fit well, while others do not. Computational thinking skills is suitable for us, and entrepreneurship could also be relevant. Sustainable development is highly related to science, in my opinion, and should definitely be included as explicit learning objective. Global competency, similarly, is essential. (F2)

As mentioned, when considering the six compound competencies examined in this research, some naturally align with the content and nature of science lessons, while others seem less directly connected. However, the teacher emphasizes a purposefully integrating of these competencies into the curriculum while ensuring a balance between these competencies that are inherently linked or not to the subject area as well. Thereby, there could be meaningful incorporation into the curriculum in a way that supports competency development in practice. In fact, a mathematics teacher (M3) stated that 'I'm searching my mind, but I don't think that we have a learning outcome that addresses global competency in mathematics', indicating that the mathematics curriculum does not have a target for global competency. This perspective was also supported by a social studies teacher for another competency, as indicated that:

> I mean, we mostly focus on frugality, rather than financial concepts, which are not explicitly included in the curriculum. It is more indirectly related to financial literacy, primarily emphasizing conscious consumption. (S3)

It is indicated that some aspects of literacies are not included in the curriculum components. This shows that while there are opportunities to integrate competencies like financial literacy, they are often limited. In this regard, a science teacher points out that they can incorporate financial literacy into the projects they carry out in their lessons; however, this integration is limited and not explicitly stated as a learning objective, as reflected in the following statement:

> …If we consider it on topics or units basis of the curriculum, there is a topic of heat insulation. For example, when choosing a heat insulation material, what should we consider economically? Is it long-lasting? etc. However, there aren't many areas where I explicitly use financial literacy. Or, when working on a TÜBİTAK project, we could calculate its cost but that's probably the most we can discuss it! Do we actively incorporate financial literacy within our lessons in a direct way? Very rarely. (F2)

Since compound competencies are not explicitly embedded into curriculum components such as units, learning areas, or learning objectives, the implementation of fostering these competencies remains limited in practice. Another science teacher supported this idea with this statement:

> There is no guiding statement within the curriculum. Therefore... Yes, the science curriculum directs us toward project-based work and applying the steps of the scientific method. However, we do not follow a curriculum that guides us toward areas such as financial literacy, entrepreneurship, or computational thinking. (F3)

Based on the prompts, the analysis revealed that teachers need the guidance of the curriculum for the development of such compound competencies. They highlighted that embedding these competencies into the curriculum components serves as a guiding framework for them. As exemplified in the case of entrepreneurship below, a social studies teacher pointed out their lack of awareness regarding the concept of a business plan, which is a crucial component of this competency.

> In the social studies curriculum, in entrepreneurship, we never really focus on the concept of a business plan. To be honest, it's not something I am very familiar with either. Maybe we take these steps in real life, but we don't systematically present them as, 'Here is your roadmap, this is the program, and these are the steps we will follow. (S3)

This lack of awareness also emerges from the lack of emphasis in the curriculum itself, which does not appear to provide explicit guidance for entrepreneurship-related skills. A science teacher gives another example regarding global competency, in which the curriculum does not explicitly embed this competency.

> I don't feel that the curriculum, particularly in science, provides much opportunity for cross-cultural discussions or global competency. The focus of our curriculum is mostly on standardized concepts such as universal principles that are common across the world. I haven't observed a curriculum that explicitly integrates science education with cultural differences. The only thing we occasionally do is encourage students to consider different perspectives. For example, when discussing a social or environmental issue like water pollution, we ask them to analyze it from different viewpoints such as a factory owner, a farmer, or a local resident who swims in the sea. This helps students

> develop multiple perspectives, and the curriculum partially supports this. However, as I mentioned, we are unable to incorporate deeper cross-cultural or international perspectives into our lessons. (F3)

As illustrated, the teacher points out that cross-cultural perspectives and global awareness are not systematically integrated into the middle school science curriculum, limiting opportunities for students to develop a broader understanding of global challenges and diverse viewpoints. This aligns with concerns that competency development requires not only modifications in practice but also a structured curriculum to ensure that these competencies are intentionally addressed and reinforced across subjects' areas. Otherwise, teachers struggle to integrate these competencies in alignment with educational trends. However, this challenge continues to grow, leading to concerns about keeping up with the curriculum, which reflects the broader issue of perceived curriculum overload. A social studies teacher highlighted it with that: "Our curriculum is very intensive. We particularly face this challenge when it comes to incorporating activities. (S1)". This perspective further reinforces the notion that the curriculum load limits the time available for in-depth engagement with competencies beyond core content areas. Similarly, a Turkish teacher echoes this concern, emphasizing how the pressure to cover extensive learning objectives restricts the ability to allocate sufficient time for competency-based learning: "We cannot dedicate much time to these aspects directly. As I mentioned, there are too many things we need to cover." (T2).

Expanding on this issue, a mathematics teacher acknowledges that the density of learning outcomes within the curriculum makes it difficult to implement such competencies in practice. However, they also suggest that it is not entirely impossible but rather a matter of finding ways to allocate time within the existing structure:

> Due to the intensity of learning outcomes in our programs, we actually cannot implement them. But this doesn't mean it's impossible. Maybe we are also struggling to create time for it. (M1).

As a result, teachers experience a tension between fulfilling curricular requirements and promoting transferable skills, which ultimately shapes how competences are integrated or neglected in classroom practice. A science teacher further elaborates on this issue with the following statement:

> I think time is a key issue here, as well as lots of learning objectives we need to cover in a short period. And most importantly, we are in an exam-focused system. You teach, the student understands perfectly, there are no gaps in learning, yet they may still struggle in the exam, particularly with knowledge-based questions. (F2)

Through this statement, the teacher draws attention to the issue of insufficient instructional and preparation time, emphasizing how the pressure to cover numerous learning objectives within a constrained timeframe limits the effective implementation of competency development. Since the research setting is a private school, teachers have the flexibility to extend lesson hours beyond those recommended by MoNE through their ministry-approved weekly timetables. However, despite this flexibility, teachers still report concerns about curriculum coverage due to time constraints, indicating that the intensity of the curriculum remains a challenge even with additional instructional time. This is reflected in the statement of a social studies teacher, who notes:

> For example, in our school, we can allocate an extra hour for sixth and seventh-grade lessons beyond what MoNE prescribes. For the past two years, we have even been able to provide three-hour lessons. However, the pressure to cover the curriculum remains intense. (S1)

A Turkish teacher shares the same perspective below, indicating that even in a private school setting where additional lesson hours are available, perceived curriculum overload still makes it difficult to cover all required content:

> As you know, lesson hours are predetermined. Since we are a private school, we have slightly more flexibility in scheduling. For instance, we currently have seven hours of Turkish lessons for seventh graders. But honestly, even that is not enough. (T2)

This challenge is further emphasized by a science teacher, who indicated the insufficient time allocated for competency development. Apparently, the curriculum structure forces teachers to deliver complex content into short timeframes, making it difficult to implement competency-based approaches effectively:

> The time allocated for skill development is very limited! Just four hours in the national curriculum. It's impossible! They expect me to complete the sensory organs topic in one week, but I refuse. I extend it to two weeks because it's simply not feasible in one. I also incorporate videos, reinforce the content with presentations, and conduct experiments to enhance understanding. (F2)

As competency-based learning often requires additional instructional time, this concern extends beyond science education. Similarly, a social studies teacher highlights the time constraints that hinder the development of global competency with this statement: "Creating discussion groups for the development of global competency, this also requires an additional time." (S1). This shows that time demands of student-centered activities can be challenging for teachers in different subjects. Likewise, the need for time allocation emerges in other areas, where teachers struggle to incorporate key concepts within the existing curriculum.

A science teacher emphasizes that these competencies develop more effectively within project-based learning, yet such opportunities remain rare due to the insufficient instructional and preparation time, indicating that: "These competencies develop more effectively within a project. But that is very rare. Project-based teaching also requires a process and an additional timeframe." (F2). This shows that integrating competencies often requires flexible teaching methods and enough time. A mathematics teacher further supports this statement as follows:

> The time allocated to us can sometimes be insufficient at this point. While we aim to develop students in all aspects, we can only rarely organize extracurricular activities. We try to bring different projects or case studies into the classroom, but unfortunately, we cannot do this for every lesson. We can only implement them occasionally. This is our main limitation. The time allocated for a specific learning objective, topic, or competency is often restrictive. Since we are expected to deliver the required learning objectives within that timeframe, we have limited preparation time. If the majority of the class has not fully grasped the topic, we cannot move on to the next objective. I believe that the only major constraint in competency development is "time." (M2)

In sum, the teachers explicitly point to “time insufficiencies,” which are crucial for delivering activities that empower competency development with these viewpoints. Since the curriculum already has its learning areas, objectives, and other components set, and unless these do not target the development of competencies, teachers apparently require extra time to include them in their lesson planning, further highlighting the issue of insufficient preparation and instructional time.

#### 4.3.3.3. The Influence of Exam-Oriented Education on Competency Development

The category of exam-oriented education arose from the teacher’s views on differing needs of exam- oriented groups (e.g. Grade 8), test-driven classrooms, and the impact of various exam types (such as mock exams, assessments, quizzes, etc.). These factors are explored in the following sections, offering insights into the development of compound competencies.

The differing needs across exam groups (primarily in Grade 8, with some influence on Grade 7) point to how students are driven mainly by the demands of high-stakes exams such as the LGS, which refers to the High School Entrance Examination in Türkiye. In accordance with, the teachers noted that the LGS only focuses on Grade 8 subjects, preventing a holistic approach to the overall goals and outcomes of middle school education (from Grade 5 to Grade 8). This differentiates the needs of Grade 8 students from those of other grades and interrupts the continuum of K-12 levels (from early childhood to senior high school). Teachers also emphasized that the LGS creates its own structure, techniques and strategies that separates the last year of middle school from other years, with a focus on exam preparation rather than the development of competencies and skills. Findings also revealed test-orientated classrooms that mainly relied on teaching through multiple-choice tests in students' learning experiences, which limits students to practice and demonstrate complex skills and competencies. Teachers also highlighted the time-consuming nature of frequently administering exams in variation, such as preparation exams for LGS also known as mock exams, level assessment exams, and official graded exams. They emerged that applying frequent exams increases their stress level of covering all the learning objectives in time in order to prepare students for the exams. Therefore, as another factor, they noted that they cannot use their instructional time effectively to develop compound competencies, whether or not they are included in the curriculum they implement. This reflects how exam-oriented practices can interfere with broader educational goals. A Turkish teacher indicates their point of view about the exams with this statement

> Both the LGS, monitoring exams, and general assessment exams take up a significant amount of time during this period. This applies not only to media literacy but to all competencies in general. It can somewhat limit us. In reality, we want to do more! We want to focus on different skills but there are situations where we feel restricted. (T3)

This is supported by other teachers, such as a science teacher who stated that exam-oriented expectations from families and institutions further shape instructional priorities:

> We conduct mock exams to prepare students for the LGS. And of course, there is also the university entrance exam after high school. In general, parents tend to be exam-focused, and naturally, we also focus on it. (F2)

The same teacher also highlights how three stakeholders as students, teachers, and parents are exam-focused at learning experiences. This shared exam orientation influences how learning is structured and experienced in everyday classroom settings. It emerges at another teacher's viewpoint with this statement:

> In general, we always have a curriculum concern and an exam concern that inevitably affects our implementation at the end of the day. Even if we try to create a hybrid approach in schools, one that focuses not only on academics but also on social skills, there is still an expectation for exam success. Ultimately, both parents and the school administration expect this from us, whether we like it or not. (T1)

For preparing students for the high school entrance exam, teachers administer various types of mock and monitoring assessments, which take up valuable instructional time and reduce the time available for comprehensive and meaningful teaching aimed at developing compound competencies. This challenge is reflected in the statement of a social studies teacher as follows:

> Yes, the school administer its own mock exams. For example, speaking specifically about our school, we have our school's network… …monitoring exams, Özdemir mock exams... Each of these assessments has a specific learning outcome framework, and we are required to keep up with this content. (S3)

By the specific learning outcome framework, a teacher refers to learning objectives that should be covered already before those mock or monitoring exams in order to assess students' success and determine their order in a group of students who took that particular assessment. This effort to keep up with the learning objectives eventually reflects as a focus on completing topics one by one rather than developing complex skills or competencies. A Turkish teacher further supports this matter with the following statement:

> The exam process, much like time constraints, also ties our hands. We are forced to make sacrifices somewhere. For example, we plan to incorporate certain activities, but then it becomes a matter of 'let's do this later if we have time.' So, we have to prioritize and make distinctions. This is the most important point I can add. (T2)

The teacher, who highlights the need to make sacrifices in certain areas to complete the topics, stresses that they are consequently unable to engage in activities that require time as for competency development. A science teacher highlights the severity of the situation in 8th graders so called "the exam group" with the following statement:

> We make a promise to parents to complete all topics by April, and after that, students take three mock exams per week. As a result, regular lessons are barely conducted. We try to finish the entire curriculum by April, following a very fast-paced schedule. That's why our instructional time is even more limited. (F3)

This statement points to a disadvantageous situation for 8th graders. Despite the fact that most teachers have already emphasized the lack of sufficient time even in regular lesson planning, the additional challenges specific to 8th grade further highlight how restricted and exam-oriented the teaching process has become, often at the expense of holistic learning. Regarding that, a mathematics teacher demonstrates their struggle in their practice with these statements:

> I actually relate this to something else. For example, in middle school, we plan to administer the GAUSS exam. We want to make an announcement about it in class, but there is an ongoing, fast-paced curriculum to follow. In my opinion, the most manageable grade in middle school, where the curriculum can be fully covered and the maximum number of questions can be solved, is 7th grade, yet even in 7th grade, I struggle to find time for this. (M1)

As illustrated, it reflects that the intensity of the curriculum may limit teachers' flexibility to some extent, even in grade levels where content delivery is considered relatively more manageable. There is an emphasis on covering topics and solving a maximum number of questions within a limited timeframe suggests that instructional practices are driven by content coverage and assessment preparation, leaving little room for broader competency development. The same mathematics teacher further underlines how academic expectations take precedence over efforts to foster different skills in mathematics.

> Even though we try to focus on students' social skills as private schools, academic expectations, whether explicitly stated or not, take priority. These expectations exist both among students and parents. I often find myself thinking, ‘There was also this question format I wanted to present, we had another one left, let’s go over this before finishing the topic.’ I focus a lot on demonstrating different question types, and our students are also very oriented toward that. As a result, we barely find time to discuss global issues, world citizenship, or fostering social awareness. (M1)

Test-oriented teaching, including the demonstration of various question formats as much as possible, may refer to rote learning of question structures, narrowing instructional focus, and reinforcing a question-solving-oriented approach particularly in mathematics, that limits opportunities for competency development, as it is illustrated in the statement above. As a result, students may struggle to engage in deeper learning or apply their knowledge in real-life contexts. On the other hand, exam-oriented education is also evident in other types of assessments, such as formative and summative assessments, which are implemented in schools to identify students' learning gaps and evaluate their overall performance in specific subjects. A social studies teacher refers to regulatory changes in the assessment introduced by MoNE and highlights how this new assessment approach has influenced their teaching practices.

> Besides that, as you know, the exam system for in-school written assessments has also changed. Now, we have skill-based speaking exams. In one of these speaking exams, for example, we asked our students to describe their favorite dish while considering its process steps and algorithm, explaining it step by step. Of course, this also plays a determining role in how we approach the lesson. (T3)

As illustrated, the Turkish teacher highlights how changes in assessment methods lead to adjustments in lesson planning, emphasizing the impact of evaluation approaches on instructional design. On the other hand, a social studies teacher highlighted the concerns of teachers regarding common exams conducted by MoNE at the provincial level, which play a decisive role in determining students' year-end grades. If any subject is not covered or is skipped in the lessons and later appears in the common exams, teachers may feel hesitant about the potential reaction of students in such cases.

> Due to common exams, teachers experience extreme anxiety. The phrase, ‘We didn’t cover this topic in class, teacher,’ is as alarming for a teacher as a company declaring bankruptcy with a concordatum notice. No teacher ever wants to hear this. It is something that shakes the very essence of being a teacher. It undermines their professional identity and existence. That’s why these exams create significant anxiety for teachers. (S3)

Regarding that, what is particularly noteworthy is that the “anxiety” appears among teachers to be on ensuring topics are covered rather than fostering a deeper understanding of that subject matter. The intensity of the curriculum, or curriculum overload, has emerged for teachers to priorities content coverage over meaningful engagement with skills and competencies. The findings suggest that an emphasis on “breadth rather than depth” or “quantity rather than quality” may limit the learning experiences of students in developing competencies. Based on the analysis, another concern expressed by teachers was the differing instructional needs of 8th graders, commonly referred to as the “exam group.” A science teacher further elaborates it with the following statement:

> To be honest, from my perspective, there is a significant difference between how I approach teaching 7th or 6th graders and how I handle 8th graders. In the lower grades, we prioritize lesson planning with activity-based methods that allow students to engage and enjoy learning. However, for 8th graders, we

> don’t even consider such an approach. At this stage, my primary concern ishow quickly students can grasp the required knowledge and which types of questions they need to solve. I focus solely on how they can learn more efficiently, how they can internalize the learning outcomes more effectively, and most importantly, how quickly they can recognize and apply this knowledge during an exam. (F1)

This statement highlights the fundamental shift in instructional priorities for 8th graders due to their status as the "exam group." While lower-grade students benefit from interactive lesson designs, the exam-driven nature of 8th grade compels teachers to focus primarily on exam success rather than competency development. This transition demonstrates the extent to which high-stakes assessments shape teaching practices, forcing teachers to prioritize content delivery, question-solving strategies, and exam techniques over exploratory learning. Such a shift in focus reflects the pressures of exam-oriented systems on instructional decision-making. This viewpoint was also supported by another teacher, who delivers Turkish lessons at 8th grade, indicating that development of compound competencies is neglecting in that grade, as follows:

> It's difficult to enhance different competencies in 8th grade. 8th grade is really challenging. Of course, we continue reading books and mainly conduct activities based on them in Turkish lessons. However, when it comes to writing-focused tasks, such as creative writing exercises or speaking activities, we do very few. Instead of activities, 8th grade is more exam-oriented. (T2)

The above statement of the Turkish teacher was supported by the following remarks of a mathematics teacher:

> As I mentioned, this happens more frequently at the 5th and 6th-grade levels. However, 8th graders are more of an exam-group, such activities might be given less emphasis. (M3)

These findings suggest that in the lower grades, there is more room for teachers to design lessons with a more activity-based approach. In the following a science teacher's experience about fostering literacy for sustainable development as a compound competency in 8th grade is presented:

> Therefore, at the beginning of the last academic year, we received training on the Sustainable Development Goals. We also set a goal for ourselves to integrate them into our lessons. However, it was not always possible to consistently incorporate them in 8th grade. Given the realities of the curriculum, along with the expectations of students and parents, it was quite difficult. However, in one of the units, specifically the one related to the environment, we were able to elaborate a bit more and discuss the topic with the students. (F3)

As illustrated, it reflects the constraints of integrating compound competencies, such as literacy for sustainable development, into exam-focused grade levels. Even though, teachers recognize the importance of embedding such content in their teaching, the pressure to cover the exam-related topics appears to limit their ability to incorporate them consistently. It also highlights how stakeholders' expectations shape the implementation of the written curriculum, reinforcing the prioritization of exam preparation over competency development in instruction. As exemplified, the literacy for sustainable development was incorporated into a specific unit related to the environment, suggesting that teachers seek opportunities within the curriculum to engage students in such activities. While the integration of such competencies into practice remains challenging for 8th graders, making connections with the curriculum creates opportunities for developing compound competencies within implementation.

In summary, the findings show that high-stakes examinations, especially in Grade 8, have a notable impact on teaching decisions that reveal an exam-oriented education and guide teaching practices. In this regard, teachers mostly emphasize the constraints of exam-oriented classrooms dominated by multiple-choice assessments or question & answer sections, and limiting opportunities for competency development. As is exemplified in the statements of the teachers, the shift in instructional focus for 8$^{th}$ graders, commonly referred to as the "exam group," is especially pronounced, with exam preparation taking precedence over interactive and skill-based learning. Thereby, teachers highlighted that the content coverage is often prioritized over deeper learning in teaching practices. On the other hand, the frequent administration of various exams, such as mock or monitoring assessments, also reduces the necessary teaching time to remedy learning gaps after identifying them. Some teachers indicated that they try to find opportunities to integrate compound competencies into their implementation when there is a room; yet, the pressure of high school entrance exam preparation remains as a crucial factor. As a result, the findings reveal how the high school entrance exam has influenced teaching strategies, curriculum implementation, and stakeholder expectations in middle school education by reinforcing an exam-driven approach.

#### 4.3.3.4. The Influence of Teachers' Workload on Competency Development

The category of *teachers' workload* emerged from teachers' perspectives, highlighting several key challenges such as *lack of teachers*, *other required in-school tasks and responsibilities*, and *the demanding teaching hours*. Teachers pointed out the *lack of teachers*, which often leads to an increased burden on the existing ones. They also indicated the role of *other required in-school tasks and responsibilities*, such as administrative duties and extracurricular activities, which contribute to their workload. Additionally, their views revealed that the *demanding teaching hours* result in a lack of planning time, which has emerged as a factor that hinders the development of compound competencies. In addition to teaching, various in-school tasks and responsibilities, such as administrative duties, extracurricular activities, school events, and ceremonies, take up a significant portion of teachers' time. A social studies teacher explained: “Beyond our teaching responsibilities, school events, ceremonies, and projects consume a considerable amount of our time.” (S1). Similarly, another Turkish teacher described how the limited number of teachers in their school further intensifies this issue:

> For example, we have only two Turkish teachers, two science teachers, two math teachers, and one social studies teacher at our school. In reality, we have a shortage of teachers, which increases our teaching workload. Because of this, we often struggle to find time to communicate effectively with other teachers. Everyone is mostly focused on their own planning and tries to manage their lessons accordingly. In this sense, the lack of time is a major issue that prevents us from enriching and diversifying our lessons. To truly develop engaging content, we need the opportunity to sit down at home with a clear mind and brainstorm ideas. Unfortunately, the constant time constraints make this extremely difficult. (T2)

These statements illustrate how additional school responsibilities, along with teacher shortages, lead to significant time constraints, making it harder for teachers to collaborate, innovate, and enhance their teaching practices. Instead of investing time in professional development and creative lesson planning, teachers are often occupied with non-teaching tasks, reducing their ability to focus on the development of compound competencies. Thereby, it highlights the systemic challenge of balancing teaching with non-instructional responsibilities, which can ultimately impact the overall quality of education. Another mathematics teacher illustrated this challenge by stating:

> I often come up with great ideas, but I don't have the time or space to implement them. This is a very common issue. Ideas emerge, but due to our workload, we lack the time to develop them further, and sometimes we don’t even have the right environment to apply them. (M3)

Teachers describe how their workload is already at full capacity, making it difficult to take on additional responsibilities or integrate new initiatives into their teaching. One teacher illustrated this reality by stating:

> Teachers are overwhelmed with both lessons and in-school duties. Everything is running at full capacity; it is like a full glass of water! If you add even a single drop more, it overflows! (S3)

As stated, the metaphor of a "full glass" vividly portrays how teachers' workloads leave little to no room for additional tasks, whether they be new projects, professional development, or collaborative efforts. Similarly, another science teacher echoed this sentiment when describing interdisciplinary collaboration efforts: “Everyone has an extremely busy schedule. For instance, we have a joint project with the IT department, but we can only do it once a year.” (F3). As illustrated, despite the promises of interdisciplinarity, time and workload issues bound such attempts by teachers. The findings, therefore, illustrate that such issues hinder the cultivation of compound competencies in practice since teachers lack time to improve, experiment, and apply novel approaches through which students' learning outcomes can be enhanced. Accordingly, the study identified that teacher shortages, workload, and time constraints inhibit compound competencies' development. The additional responsibilities of in-school tasks, administrative duties, and demanding teaching timetables serve as obstacles to planning innovative lessons and fostering collaboration among teachers.

### 4.3.4. The Role of Teacher's Capacity in Promoting or Hindering Compound Competencies

The findings on the role of teachers' capacity are presented under three categories: *teachers' competency*, *accessing information sources*, and *supportive mechanisms*. Findings revealed that these three categories contribute to the professional capacity development of teachers, particularly in terms of competency development.

#### 4.3.4.1. The Influence of Teachers' Competency on Competency Development

First, the *teachers' competency* category encompasses their *awareness of compound competencies*, which is essential to reflect this awareness in their practice and their *classroom management* competencies in order to regulate the classroom effectively while competency development activities. The findings suggest that one of the key challenges in implementing compound competencies is the lack of awareness among teachers, which directly affects their ability to integrate these competencies into their teaching practices.

Some teachers are unfamiliar with the terminology and underlying concepts, making it difficult for them to translate these competencies into meaningful classroom applications. Such cases illustrate how conceptual gaps can affect classroom implementation. This lack of familiarity is evident in the following statement from a mathematics teacher:

> Global competency, for instance, makes me think of how a student interacts with a changing society, how they internalize and make sense of the information they learn in their environment. For example, they should be able to apply a skill in real life and integrate it into their daily experiences. I might

> not be explaining it correctly, but this is how I understand it. However, I am quite unfamiliar with the terms you are mentioning. (M1)

As illustrated, this statement highlights how teachers unfamiliar with the compound competencies, which in turn limits their ability to consciously develop and apply these competencies in practice. Without a clear understanding, teachers find it challenging to integrate such concepts effectively into their lessons. Therefore, raising awareness and ensuring systematic training for teachers is essential to bridge this gap and facilitate the meaningful application of compound competencies in practice. This lack of awareness among teachers highlights the need for clear guidance and structured support in integrating compound competencies into their teaching practices. As a science teacher emphasized:

> When these competencies are embedded into learning outcomes, teachers should be explicitly informed about what they are expected to achieve. There should be a clear and comprehensive guide for teachers. They must fully understand how to implement these competencies so that they can effectively help students apply them. I believe this is the most important aspect. (F2)

A key challenge in the adoption of compound competencies is ensuring that teachers are not only aware of them but also actively incorporate them into their teaching practices. Without a structured approach to dissemination and integration, these competencies may remain underutilized. A Turkish teacher highlighted this concern by emphasizing the necessity of a nationwide effort to promote awareness and implementation:

> What I actually mean is that all teachers should be aware of these six competencies. The most crucial point is to ensure that they are widely communicated and understood. Raising awareness and taking action to promote these competencies should be a priority. Just like the Sustainable Development Goals (SDGs), which are not yet known by everyone but are gradually gaining recognition within a limited timeframe, these competencies also need to be disseminated with urgency. There is a set target and a deadline for their implementation. Similarly, the Ministry of Education should take the initiative to introduce these competencies to all teachers and integrate them into the newly developed curriculum. A well-structured plan should be put in place to ensure a conscious and strategic implementation. Moreover, this effort should extend nationwide. If only a small portion of teachers are aware and

> apply these competencies, it will not be sufficient to drive national progress or ensure widespread adoption. Therefore, it is essential that all teachers not only know about these competencies but also actively engage with them, demonstrate willingness to apply them, and work towards a shared understanding. In this regard, fostering a collective awareness among all educators is of utmost importance. (T3)

The importance of awareness and guided reflection in fostering compound competencies is further emphasized by teachers' responses during the research process. Engaging in discussions about these competencies allows teachers to critically reflect on their practices, challenge their existing perspectives, and consider new ways to integrate these skills into their teaching. Such moments of reflection can serve as starting points for meaningful professional growth. One social studies teacher highlighted how this interview process itself was beneficial in raising awareness:

> For example, this conversation we're having has been very helpful for me. An exchange of knowledge like this can be highly productive and valuable. It encourages us to think, to push ourselves a little, to challenge our limits. Of course, we can also do this introspectively, but sometimes we need external guidance to facilitate that process. (S1)

As illustrated, structured discussions and guided reflections play an important role in raising teachers' awareness of compound competencies. As part of the interview process, prompts paused teachers to think about compound competencies and reflect on their teaching. This demonstrated that creating opportunities for teachers to reflect on their knowledge gaps and providing collaborative approaches to implementation is also necessary for their professional development. Encouraging such reflective moments can contribute to deeper engagement with competency-based teaching. This is evident in the perspectives shared by two mathematics teachers:

> This discussion has actually helped me realize my own need for improvement. I wish I could confidently say that I can implement these competencies seamlessly, but I now see that I have much more to learn. I need to become more aware, conduct more research, and receive more training. I also believe that collaboration among teachers would make these efforts more effective. If this were done collectively within a subject department rather than individually, it would have a greater impact. Perhaps, we should even turn this into a project. (M1)

> We talk about sustainable literacy, computational thinking, and financial literacy, but what comes next? We could conduct more extensive research to understand how to integrate these concepts into our lessons. Can we apply them effectively? Where can they be used? This discussion has been extremely beneficial for us, as it has raised our awareness in this area. (M2)

The findings indicate that even these semi-structured interviews provide teachers with the opportunity to critically examine their familiarity with compound competencies and recognize the need for further professional development. By that, it has helped teachers identify their own learning needs and the potential for interdisciplinary collaboration in their lessons. Additionally, both teachers highlight the importance of collaboration, suggesting that working collectively within their subject departments could increase the impact and effectiveness of competency develop.

#### 4.3.4.2. The Influence of Accessing Information Sources on Competency Development

The category of *accessing information sources* is another aspect of the teachers' capacity theme since these sources enhance the implementation of compound competencies in practice. Teachers noted that for their ongoing professional development, they access such sources as *participation in national and/or international online in-service training or webinars*, *staying updated via social media platforms*, *engagement with scientific research and articles*, *pursuing graduate programs to deepen their expertise*, and *regularly monitoring news and updates from official educational institutions to stay informed about relevant developments and guidelines*. It was stated that these information sources provide support for integrating compound competencies into teaching practices. The findings suggest that teachers rely on multiple channels to stay informed, ranging from official announcements and digital resources to social media and professional networks.

A social studies teacher described how official sources such as the MoNE's websites, regional education communications, and official announcements play a role in their access to educational updates. However, they also emphasized the role of informal digital networks, such as WhatsApp groups and social media, in staying informed:

> Our main sources of information are usually official websites. We can access certain updates through announcements from the Ministry of National Education and regional education offices. Apart from that, I follow education news sites online, and we also share updates through WhatsApp groups and social media. (S3)

While official sources provide structured information, some teachers seek additional resources beyond national platforms, especially through international education networks. A science teacher explained how foreign language proficiency offers them an advantage in accessing global webinars, research articles, and professional learning networks, particularly through platforms such as OECD Education 2030 initiative and LinkedIn connections:

> Since I have foreign language skills, I frequently follow international education resources, which gives me an advantage. It's not always easy to find webinars or exemplary practices in Turkish. I actively follow global teacher networks, international events, and digital platforms that promote educational best practices. Recently, I attended an OECD-led program, 'Teacher 2030,' where I expanded my network through LinkedIn and other channels. Once you engage with such platforms, new opportunities and information continuously flow in. (F1)

This perspective aligns with another Turkish teacher, who emphasized the role of academic research and journal articles in staying informed about emerging educational practices: "I try to follow academic studies since I am also pursuing my master's degree. I frequently read research articles." (T3). However, not all teachers find research articles practical for immediate classroom application. Another science teacher highlighted the practicality of social media platforms like Instagram, where teachers share ready-to-use lesson ideas and interactive teaching strategies:

> I follow teacher-focused sites, mainly through Instagram. I often come across amazing activities and think, 'This is great! My students will love this!' I find the internet to be the most useful tool for discovering engaging lesson ideas. (F2)

Similarly, another Turkish teacher noted how technology and internet-based research have become their primary means of accessing educational resources: "Nowadays, I rely more on technology and online research to explore new teaching ideas." (T2). The analysis reveals that teachers utilize a diverse range of information sources to enhance their awareness of compound competencies such as official government and institutional announcements, academic research, international education networks, and digital platforms such as social media and teacher-sharing websites. As illustrated in from the statements of teachers, many of them favor webinars and interactive social media platforms for practical applications and classroom integration. The accessibility of digital tools facilitates peer exchange, continuous learning, and the adaptation of new competencies into teaching. However, the findings also indicate a disparity in professional development engagement, whereas some teachers seek out structured learning opportunities, others rely primarily on informal networks. This suggests a gap in in-service training which highlights a need for institutional support and structured competency development programs to ensure that all teachers have equitable access to high-quality professional learning resources and effective implementation strategies.

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#### 4.3.4.3. The Influence of Supportive Mechanisms on Competency Development

Besides the information sources available to teachers, another aspect of the teachers' capacity theme is the *supporting mechanisms* surrounding them, such as *the profile of the school they work in, the presence of learning communities within or outside the school*, and *Implementation of tailored school programs*. The findings suggest that teachers experience varying levels of institutional support, ranging from administrative encouragement to structured professional collaboration networks. One of the fundamental aspects of institutional support is the school’s vision and mission alignment with competency-based education. Some schools actively revise their educational framework to foster competency development, as one social studies teacher noted:

> We review necessary resources, examine examples, and try to understand how we can implement competencies through collaboration. As a result, our school has recently updated its vision and mission. (S3)

Similarly, the institutional identity of the school plays a significant role in fostering a supportive culture for professional development. A teacher emphasized how being part of this private school network creates a unique professional environment:

> I strongly believe that our school have a distinctive approach. It's not just about the curriculum; the network that our school belong instills a certain mindset. Being part of an educational institution backed by a civil society organization makes a difference. (S3)

In addition to institutional values, administrative support is crucial in providing teachers with the freedom and encouragement to explore new methodologies and innovative teaching practices. Several teachers highlighted that their schools fully support their initiatives:

> For instance, in our school, there are no barriers to implementing new ideas. Whatever kind of project or activity we want to carry out, we are always supported. (S1)

> The school administration actively informs and supports us. They are very encouraging and genuinely want students to participate in these projects. (F1)

Furthermore, teachers benefit from structured decision-making processes that facilitate communication and validation of their ideas before implementation. A mathematics teacher indicated how their school provides an organized framework for evaluating and approving new educational initiatives:

> Whenever we want to organize an activity for students or the classroom, we first discuss it with our vice principal and subject coordinators. We always receive support, provided that the activity aligns with the curriculum objectives. So far, I have never felt that any of my ideas were rejected without reason. (M2)

Beyond administrative encouragement, some schools also promote teacher autonomy and self-directed professional development by supporting teachers in pursuing external training and learning opportunities: "If we want to seek further training, our school administration is always supportive. They encourage us to improve ourselves in any area we choose." (M3). Apart from administrative support, peer collaboration and learning communities play an essential role in teachers' professional growth. Some schools provide structured spaces for knowledge-sharing and joint curriculum planning, particularly during beginning-of-term teacher seminars and interdisciplinary meetings:

> During our initial seminar periods, we engage in knowledge exchange. For instance, in past years, we have reviewed social sciences curricula across different grade levels. We simplify learning outcomes, reinforce concepts through different activities, and explore ways to incorporate competencies into teaching. (S1)

In smaller schools, a well-connected teaching staff can facilitate faster decision-making and collaborative efforts, as one science teacher described:

> Our school fosters great communication among teachers. It's a smaller institution compared to my previous workplace, which had a much larger staff. Here, because it's a more tight-knit community, we can quickly coordinate and implement ideas. The ability to communicate efficiently within a school structure is a major advantage. (F3)

Some schools go beyond individual teacher support and implement whole-school programs that integrate global competencies and SDGs into their instruction. A Turkish teacher explained how Sustainable Development Goals (SDGs) were introduced in their school through interdisciplinary collaboration:

> My first introduction to the SDGs was through my social studies colleagues. A close colleague who has now moved to the high school department introduced me to the topic, and we later formed a Sustainability Committee. This committee meets every two weeks to discuss potential projects. Each class has two sustainability ambassadors who work closely with social studies teachers. There is also an SDG-focused club in both middle and high school. This year, our theme was waste management, and we implemented various initiatives within the school. However, SDG integration is not limited to specific students or committees. It has become a whole-school effort, with the social studies department leading initiatives to educate other departments and ensure cross-curricular integration. (T3)

Overall, the findings suggest that school-level supportive mechanisms play an important role in either fostering or hindering the development of compound competencies. Schools that align their vision and mission with any competency development provide strong administrative support and encourage professional development. Collaborative learning communities further develop the capacity of teachers by facilitating peer learning and cross-disciplinary engagement. However, the analysis suggests that the level of support may vary across schools. At the same time, some teachers benefit from well-structured collaboration and institutional encouragement, while others may be left alone and only rely on informal networks. This indicates that the absence of structured professional development or in-service training related to competency development can hinder the instruction fostering the development of any skills or competencies. Therefore, it can be interpreted as the need for school-wide initiatives and policy-driven support to ensure that all teachers should have equitable opportunities to develop and integrate compound competencies into their practice.

In addition to school-wide supportive mechanisms, implementation of tailored alternative school programs to equip students with diverse skills, attitudes, and competencies by the approval of MoNE to complement the national curriculum while aligning with its broader educational goals, plays a role in developing teachers' capacity. Teachers articulated alternative programs as Eco-Schools Programs, Global Schools Program and Understanding by Design (UbD), since these programs provide guided opportunities for experiential learning, interdisciplinary collaboration, and real-world application of knowledge, ensuring that students develop skills beyond traditional subject-based instruction. The findings highlight several examples of such initiatives, ranging from environmental awareness programs to financial literacy education and global competencies integration. One example is the Eco-Schools Program, which empowers students to take an active role in environmental sustainability, starting in the classroom and extending to the school and community. It allows students to contribute to school environmental policies, fostering a sense of achievement as they work toward Green Flag certification. This initiative helps schools promote environmental awareness while creating a lasting impact on students, teachers, and the wider community (Eco-Schools, n.d.). A social studies teacher described how this initiative allows students to work on projects related to water conservation, electricity usage, and natural resources, reinforcing their understanding of environmental issues and supporting the development of compound competencies:

> What you mentioned reminds me of our Eco-School membership. Every two years, we select a specific theme and work on projects related to it such as water, electricity, and natural resources. Students conduct projects under the guidance of teachers, allowing them to engage with these topics in a meaningful way. (S1)

Another example of alternative programs supporting teacher capacity development is the Global Schools Program, which aims "to transform learning and give students the values and skills to succeed in an increasingly complex and challenging world. This program believes teachers are crucial in the learning process, and provides teachers with free tools, frameworks, and training to teach sustainable development in the classroom; improve student skills; introduce the use of new pedagogical approaches such as active-learning and student-centered teaching methods; and improve the overall quality of education." (Global Schools Program, n.d.). A science teacher emphasized how this program promotes the literacy for sustainable development among middle school students and encourage teachers to align their teaching with global objectives:

> From what I understand about compound competencies, we are in a phase of rapid transformation on a global scale. In our school, the concept of 'Global School' is frequently discussed. We try to integrate these objectives into our lessons, and as far as I know, there is a standardized skills list that guides these efforts. (F3)

Likewise, a social studies teacher from the same school also emphasizes the importance of the Global Schools Program in integrating sustainability and global awareness into their teaching practices. They highlight their school's active participation in the initiative, with their department head representing the school in the program. This involvement fosters a strong commitment to embedding sustainability concepts into the curriculum, as reflected in their classroom environment:

> We are part of the Global Schools Program, and our department head represents our school in the initiative. It's a great program. For instance, right now, as I sit here, I can see the Sustainable Development Goals (SDG) board I created on the wall in front of me. We actively integrate these goals into our lessons. (S3)

Beyond sustainability and global awareness, alternative programs also contribute to the development of practical life skills. Teachers described an alternative planning framework used in their school called Understanding by Design (UbD), which "offers a planning process and structure to guide curriculum, assessment, and instruction. Its two key ideas are contained in the title: 1) focus on teaching and assessing for understanding and learning transfer, and 2) design curriculum "backward" from those ends." (Wiggins & McTighe, 2012). UbD promotes a backward design approach, where the curriculum is structured around desired learning outcomes, assessment evidence, and instructional planning, ensuring that teaching aligns with meaningful educational goals (Wiggins & McTighe, 2012). In this regard, a mathematics teacher explained how a lesson planned using the UbD framework fosters compound competencies, providing an example in financial literacy:

> Last year, we conducted activities under the Understanding by Design (UbD) framework. When introducing a lesson, we gave students an amount of money and had them allocate it across essential needs, such as bills, personal expenses, and groceries. This allowed them to engage in financial planning and reinforced the importance of financial literacy. (M3)

As illustrated, students are encouraged to simulate real-world financial decision-making, which also supports their financial literacy through a lesson designed in UbD. The findings suggest that alternative programs provide structured opportunities for teachers to engage with compound competencies and integrate them into their teaching practices. Programs such as Eco-School and Global Schools help teachers implement environmental sustainability and global awareness, while frameworks like UbD support the development of skill sets for students. These initiatives also serve as professional development opportunities for teachers while enhancing learning. However, even though they enable teachers to explore innovative pedagogical approaches, the effectiveness of these programs depends on institutional support and resource availability as well. The findings suggest that the implementation of alternative programs may further enhance teachers' capacity to develop and apply compound competencies in diverse educational settings.

### 4.3.5. The Role of Instructional Strategies Dynamics in Promoting or Hindering Compound Competencies

The interviewed data revealed four categories under the role of instructional strategies *integration & association, student-centered education, instructional materials and extra-curricular activities,* in promoting or hindering compound competencies among students.

#### 4.3.5.1. The Influence of Subject Area Integration and Association on Competency Development

The category of *integration & association* emerged from teachers' views on whether or not to integrate and associate the subject areas with compound competencies and how this integration and association promotes or hinders the development of these competencies. Teachers mentioned that, even if compound competencies are not explicitly included in the curriculum, there is flexibility to integrate them with subject content and learning objectives through instructional techniques, such as using relevant texts for reading or incorporating problem-based learning. On the other hand, some teachers expressed that the development of compound competencies is not part of their subject's focus and should be addressed in other disciplines, where it is a primary concern.

A mathematics teacher reflects on the occasional and selective integration of compound competencies, acknowledging that while they can be linked to various disciplines, their inclusion in lessons may be sporadic:

> As you mentioned in the survey, sometimes teaching naturally involves integrating different disciplines, but I believe we can only include them occasionally, making references where appropriate. (M2)

Another teacher highlights the challenge of integrating these competencies due to curriculum constraints, explaining that finding appropriate points for incorporation within the curriculum can be difficult and requires strategic planning:

> Yes, I agree. We sometimes struggle in practice due to curriculum constraints. We have difficulty identifying where and how to integrate these competencies effectively. (T1)

Some teachers believe that systematic planning and explicit curriculum connections are necessary to successfully integrate compound competencies into lessons. A mathematics teacher suggests that having a structured framework that clearly outlines connections between competencies and subject content could facilitate better integration:

> There are many opportunities to make connections, but it requires careful planning. Perhaps if the curriculum explicitly mapped out these competencies—such as aligning them with sustainability goals—it would be easier. We need to highlight where these connections exist in daily life and work on integrating them systematically. (M1)

Similarly, a science teacher shares how global competencies can be linked to environmental topics such as global warming by incorporating discussions on international policies and actions:

> For example, when discussing the greenhouse effect and global warming, I refer to how different countries approach this issue. I may not focus directly on the cultural aspects of those countries, but I do incorporate discussions about their environmental policies. (F2)

Teachers also shared specific curriculum connections where compound competencies can be embedded within existing learning objectives. A Turkish teacher illustrates how data analysis skills, typically associated with mathematics, can be used in their subject through graph reading and interpretation:

> In Turkish lessons, we already have learning objectives related to reading and interpreting graphs and tables. For example, students analyze a given visual or numerical dataset and derive meaning from it. We usually use examples related

> to reading habits, but this could easily be expanded to include financial data, budget-related graphs, or other real-world statistics. There's no reason why we can't integrate these into our lessons. (T2)

Beyond financial literacy, a mathematics teacher explains how their school actively integrates sustainability topics into lessons. They describe how students engage with the 17 SDGs as part of the learning environment:

> For example, we connect topics like healthy living and gender equality to our lessons. In fact, we even have a club dedicated to these issues. Every classroom has the 17 SDGs posted to raise student awareness, and we frequently reference them in our discussions. (M3)

Mathematics teachers also emphasize how problem-solving activities can promote different perspectives and critical thinking, aligning with global competencies:

> We encourage students to approach problems from different angles. For instance, when solving a problem, students explore multiple strategies to find a solution. They might say, 'Teacher, I solved it this way,' and I respond, 'That's great—there are many ways to approach a problem!' We discuss the validity of different methods in class. This process requires students to express themselves clearly, develop communication skills, and validate their reasoning. If I were to integrate global competencies into my lesson, this would be one way to do it. (M2)

Similarly, another mathematics teacher states that problem-solving itself is inherently associated with compound competencies, as it requires students to apply different perspectives, personal characteristics, and analytical skills:

> Problem-solving is at the core of mathematics. If we incorporate global competencies, students will develop different perspectives and apply their critical thinking and problem-solving skills within a changing world. We actively use these approaches in our lessons. (M2)

Based on prompts, the findings suggest that while teachers recognize opportunities to integrate compound competencies into their subjects, effective implementation requires intentional planning and structured support. Subjects like science and social studies naturally align with global awareness and sustainability, whereas mathematics and Turkish need careful association with competencies through. Mapping these competencies to learning objectives could support teachers identify meaningful connections. While some actively integrate them, others find it challenging due to curriculum constraints or view them as outside their subject's primary focus.

#### 4.3.5.2. Student-Centered Education in Competency Development

The *student-centered* education category emerged from teachers' statements about various methods they implement in practice, such as active and collaborative learning, problem-solving, and inquiry-based approaches. Aside from the traditional teaching approaches, teachers pointed out that *active and collaborative teaching strategies* provide support for promoting the development of compound competencies. They identified those teaching strategies as *activity-based learning, applying the station rotation technique, engaging in group work, hands-on learning, cooperative learning, experiential learning, active learning environments, real-life examples,* and *differentiated activities*. They also pointed to the contribution of *problem-solving and inquiry-based approaches*, including *simulation-based teaching, debates, problem-based learning, inquiry-based learning strategies,* and *project work,* which further support the development of compound competencies. Such practices reflect an effort to move beyond content transmission by creating flexible learning environments that respond to students' diverse needs. As key methods for fostering compound competencies, a mathematics teacher described using activity-based learning to accommodate students with different learning paces, allowing them to work on exercises and receive individualized feedback to address specific gaps in their understanding:

> At the end of a lesson, we give students an activity and monitor their step-by-step progress. Some students grasp the topic quickly, while others need more reinforcement. By analyzing their errors, I can identify learning gaps and provide targeted support, whether through individual exercises or group study sessions. (M2)

Beyond mathematics, collaborative discussion methods like debates are used in social studies to develop critical thinking and argumentation skills. One teacher shared an example of a classroom debate on hydroelectric power plants and their impact on sustainable development:

> We created a debate environment discussing whether hydroelectric power plants should be expanded in our country. Some students opposed the idea, citing concerns about submerged agricultural lands and settlements. (S2)

In mathematics, real-life applications such as financial literacy exercises create engaging learning experiences. One teacher illustrated how they integrate percentage and discount calculations through real-world shopping scenarios:

> When discussing percentage problems, I ask students: 'If an item has a 20% discount, what happens if you buy two? Three?' Some assume that buying five would result in a 100% discount, which leads to an interesting discussion on how discounts actually work in stores. (M1)

Another teacher emphasized entrepreneurship and creativity, noting that even if financial literacy is not explicitly integrated into their projects, students are encouraged to generate original ideas and develop products based on their interests:

> Entrepreneurship is about using existing resources and knowledge to create something new. While financial literacy may not always be included in our projects, students engage in independent research and product development based on their interests. (S1)

Teachers also discussed the role of project-based learning and inquiry-driven instruction in enhancing student engagement and fostering problem-solving skills. A science teacher shared how they integrate Understanding by Design (UbD) principles by incorporating performance-based assessments at the end of each unit:

> If we want to improve media literacy, we adopt a project-based approach using the UbD framework. Each unit ends with a performance task aligned with UbD principles. (F3)

Similarly, a mathematics teacher described a computational thinking project, where students design, test, and refine their own board games, integrating problem-solving, creativity, and hands-on learning:

> Students first design a game and present their ideas. In the next session, they refine their designs by considering materials and construction. Finally, they complete their game and present it, ensuring it functions as intended. (M3)

Based on prompts, teachers described these student-centered approaches, which provide opportunities for learners to actively engage, think critically, collaborate, and apply knowledge in real-world contexts, all of which are essential for the development of compound competencies. However, the findings indicate that the extent to which these methods are used depends on curriculum flexibility, teacher autonomy, and institutional support. Some teachers naturally integrate financial literacy, sustainability, and media literacy into their lessons, while others may require structured frameworks like UbD to guide competency-based instruction effectively.

This variation highlights the need for differentiated support tailored to teachers' readiness and instructional styles. The findings suggest that ensuring professional development, curriculum alignment, and institutional support enhances the integration of compound competencies through student-centered strategies in practice.

#### 4.3.5.3. The Influence of Instructional Materials on Competency Development

The instructional materials category emerged from teachers' views on *the insufficiency of the MoNE-provided textbooks, utilization of supplementary resources, and the integration of Web 2.0 tools to enhance learning.* The interview data revealed that the adequacy, variety, and incorporation of digital tools in instructional materials contribute in promoting or hindering the development of compound competencies.

A mathematics teacher expressed dissatisfaction with the textbooks of MoNE, citing its lack of diverse examples, insufficient activities, and conceptual misconceptions, which hinder the development of compound competencies:

> I know the book, and I always check the unit assessments because MoNE conducts standardized exams at our level. So, we always look at what is covered. However, I find both the given examples and the activities very limited and insufficient. I also notice many conceptual misconceptions in the book, some terms and definitions are incorrect or incomplete. (M1)

Similarly, a science teacher acknowledged that while the textbook of MoNE in science does include some research questions and basic activities, it lacks depth and global perspectives, limiting its effectiveness in fostering higher-order thinking skills:

> The MoNE's textbook in science, provides some support. For example, it asks research questions to guide students and includes a small activity, but the topic is immediately concluded after that. However, this remains a very basic competency exercise. I would like to see more comprehensive, globally relevant, and in-depth activities that broaden students' perspectives. I don't find the book sufficient in this regard. (F2)

Another mathematics teacher straightforwardly stated their belief that the MoNE's textbook in mathematics is inadequate: "Unfortunately, I don't think the MEB book is sufficient. (M2)". Given these perceived shortcomings, many teachers rely on alternative resources to provide more effective learning materials that support competency-based education and skill development. A social studies teacher emphasized the importance of supplementary resources in fostering students' competencies, stating that their teaching focuses more on these than on the standard textbook,

> Beyond that, we also use supplementary books that we ask students to purchase. We focus more on these resources in our activities to promote skills as well. (S1)

A Turkish teacher highlighted instead of MoNE's textbook in Turkish, how their school's own Turkish language book, provides a richer learning experience with well-designed activities that enhance skill development, with this statement: "In this regard, our book is much better! It's our school's own book. It contains enriched activities that effectively support skill development. (T2)". Similarly, a science teacher mentioned that while they use the textbook of MoNE, they prefer additional materials as well, which offers real-life examples and supports competency development:

> We use the MoNE's textbook, when necessary, particularly for solving questions. But aside from that, as I mentioned, we mostly follow an alternative book because it includes real-life examples and contributes to skill development. (F3)

Another Turkish teacher emphasized the importance of text selection in shaping students' competency development, explaining that alternative textbooks provide clearer visibility of competency-based learning goals:

> The alternative textbooks we use, explicitly highlight competency-based learning objectives. In this sense, I believe that a Turkish teacher's selection of texts plays a crucial role in fostering these competencies and guiding students' skill development. (T3)

The findings suggest that instructional materials play a critical role in the development of compound competencies, yet the textbooks of MoNE are perceived as insufficient in providing diverse, comprehensive, and competency focused content. Teachers frequently need to use supplementary resources to fill these gaps. They also indicated that supplementary books, such as those developed by private institutions are preferred due to their richer content, real-world applications, and clear alignment with skill development. The variety of instructional materials directly influences whether competencies are effectively integrated into teaching or remain underdeveloped due to curriculum constraints.

#### 4.3.5.4. Extracurricular Activities in Competency Development

The extra-curricular activities category emerged from teachers' perspectives on the role of *co-curricular activities, student clubs, and outside-school activities* in supporting students' competency development beyond the standard curriculum. Teachers highlighted various initiatives, such as career observation programs, volunteer-based student club activities, international competitions, social responsibility projects, and awareness campaigns related to Sustainable Development Goals (SDGs), which serve as pedagogical frameworks for experiential learning, research skills development, social engagement, and real-world knowledge application, providing students with opportunities to cultivate diverse competencies. A social studies teacher described how their school organizes career observation programs, where students can explore different professions by interacting with professionals, including parents and teachers' acquaintances. Additionally, students have the opportunity to observe a chosen profession during the summer through voluntary collaboration:

> In our school, career observation programs are conducted. Professionals from different fields, including parents and teachers' acquaintances, participate in these events, allowing students to explore various career paths. Additionally, students voluntarily collaborate with their connections to observe a profession during the summer. They are already involved in such initiatives. (S1)

Another teacher emphasized the role of student clubs and international competitions, the teacher noted the difficulty of maintaining student engagement in the classroom alone and described how they encourage students to participate in environmental awareness projects:

> We mostly conduct our work in this area through volunteer-based student club activities and competitions organized by different institutions. Maintaining this dynamic solely in the classroom is not always feasible. For instance, there is an international competition called 'Young Reporters for the Environment.' We make announcements several times in classrooms to encourage 5th, 6th, and 7th-grade students to participate voluntarily. We provide insights on its purpose and significance, post announcements on bulletin boards, and create awareness about the competition. (F1)

Some teachers implement innovative and student-driven learning co-curricular activities to promote self-expression and collaboration. A social studies teacher explained how their podcast club enables students to express opinions, exchange ideas, and develop communication skills, with this statement:

> As social studies teachers, we run a podcast club where students exercise their freedom of thought and expression. This initiative helps them establish a student network within the school and amplify their voices. (S3)

However, some teachers expressed challenges in integrating extra-curricular activities into their specific subject areas. A science teacher stated that, while entrepreneurship clubs and similar activities are frequently organized within the school, they are rarely implemented within the scope of science lessons, as follows:

> Entrepreneurship clubs and similar activities frequently take place in our school, but I cannot say that we implement them often in science lessons. In fact, I would say that we almost never do. (F1)

Meanwhile, another teacher highlighted that, aside from lessons, they organize special day events related to the Sustainable Development Goals (SDGs) to raise student awareness: “Yes, we do. Both within and outside lessons, we designate special days and organize activities related to the Sustainable Development Goals.” (S3). A social studies teacher shared an example of a student-led entrepreneurship project, where students designed a software application and participated in a competition, as follows:

> We have a team—a student entrepreneurship team—and they designed a software application. They entered a competition and travelled to Antalya to present their project. (S3)

Additionally, a teacher emphasized the importance of out-of-school learning opportunities, arguing that research, observation, and social engagement activities should be given more focus to support students' competencies:

> If we want to provide these competencies to students, we must prioritize out-of-school learning opportunities. We need to emphasize students’ research and observation skills and increase their engagement in social activities. (S2)

A mathematics teacher acknowledged that, while their school implements social responsibility projects across different subjects, they are not systematically embedded within mathematics lessons:

> We create social responsibility projects for all subject areas and implement them within our school. However, we do not directly integrate them into mathematics lessons. I can say that we include them only occasionally. (M2)

A science teacher shared an initiative where students planned an environmental awareness march for World Environment Day. The event involved creating banners and organizing a demonstration in the schoolyard to raise awareness about environmental issues while also developing related competencies:

> To raise awareness on World Environment Day, we planned to organize a march in our schoolyard with banners. It was an entrepreneurial initiative. The students were very excited about it, saying, 'Yes, teacher, this sounds great!' Hopefully, they will implement it by June 5th. (F2)

The findings suggest that extra-curricular activities significantly contribute to the development of compound competencies by providing students with opportunities to engage in real-world applications, explore careers, participate in global competitions, and develop social responsibility. However, the degree to which these activities are systematically integrated into the educational framework varies across disciplines. The findings include that career observation programs and volunteering initiatives allow students to explore professional fields, develop entrepreneurship skills and gain practical experience beyond the classroom. Student clubs and international competitions provide platforms for students to engage in environmental activism and develop competencies related to it. Special day events and awareness campaigns facilitate the integration of global citizenship and sustainability principles into the school culture. Some subjects, such as social studies, highlighted that they could incorporate extracurricular activities more frequently, while others, such as mathematics and science, indicated that they struggle to find structured ways to integrate them. In sum, teachers acknowledge the importance of out-of-school learning opportunities in the development of compound competencies; however, they emphasize the need for greater institutional support and structured implementation. The findings emerged that ensuring better alignment between the curriculum, co-curriculum, and extracurricular initiatives could further enhance students' competency development, making learning more dynamic, interdisciplinary, and applicable to real-life contexts.

### 4.4. Summary of the Results

This section presents the integrated findings of the study, combining quantitative and qualitative results from the explanatory sequential mixed-methods approach. The analysis highlights the alignment and discrepancies between the written curricular emphasis on compound competencies and their implementation in teaching practices across different subject areas. These integrated findings illustrate the extent of curriculum integration and teachers' focus, revealing both hindering and promoting factors that influence the development of these competencies. The overall summary of these results is presented in accordance with the research questions outlined below in Table 14.

**Table 14**. *The Overview of Integrated Results*

| Compound Competencies | Subject Areas | Curricular Emphasis | Teachers' Implementation Level |
|---|---|---|---|
| Global competency | Mathematics | No emphasis | Low level of focus |
| | Turkish | No emphasis | High level of focus |
| | Science | Limited emphasis | Moderate level of focus |
| | Social Studies | Strong emphasis | High level of focus |
| Media literacy | Mathematics | No emphasis | Low level of focus |
| | Turkish | Moderate emphasis | High level of focus |
| | Science | Minimal emphasis | Moderate to high level of focus |
| | Social Studies | Minimal emphasis | High level of focus |
| Literacy for sustainable development | Mathematics | No emphasis | Low level of focus |
| | Turkish | No emphasis | Low level of focus |
| | Science | Minimal emphasis | Moderate level of focus |
| | Social Studies | Moderate emphasis | Moderate level of focus |
| Financial literacy | Mathematics | Limited emphasis | No focus |
| | Turkish | No emphasis | No focus |
| | Science | Limited emphasis | No focus |
| | Social Studies | Minimal emphasis | Low level of focus |
| Computational thinking skills | Mathematics | Strong emphasis | Moderate to high level of focus |
| | Turkish | Low emphasis | Low level of focus |
| | Science | Moderate emphasis | Moderate to High level of focus |
| | Social Studies | Low emphasis | Moderate level of focus |
| Entrepreneurship | Mathematics | No emphasis | Low level of focus |
| | Turkish | Limited emphasis | Low level of focus |
| | Science | Low emphasis | Moderate level of focus |
| | Social Studies | Minimal emphasis | High level of focus |

**Factors Influencing the Development of Compound Competencies**

| Hindering Factors | Promoting Factors |
|---|---|
| **The Role of Targeting**<br>*Not Targeting*:<br>- Lack of clear objectives at the middle school level<br>- Lack of intentional activities<br>- Lack of departmental targeting<br>- Insufficient interdisciplinary collaboration | **The Role of Targeting**<br>Directly or indirectly developed<br>**The Role of Individual and Social Dynamics**<br>*Student Profile*<br>- Student's attitudes and behaviors<br>- Alignment with student interests<br>- Appropriateness for students' developmental levels. |

**Table 14** *(continued)*

| | |
|---|---|
| **The Role of Individual and Social Dynamics**<br>Parents' expectations and priorities<br><br>**The Role of the Educational System**<br>*National Education Policies*<br>- Systemic challenges caused by the Ministry of Education<br>- Frequent and sudden policy changes<br><br>*Curriculum:*<br>- The structure and design of the curriculum<br>- Curriculum overload<br>- Insufficient instructional and preparation time<br><br>*Exam-oriented Education:*<br>- Differing needs of exam-oriented groups (e.g., Grade 8)<br>- Test-driven classrooms<br>- The impact of various exam types (such as mock exams, assessments, quizzes, etc.).<br><br>*Teacher's Workload:*<br>- Lack of teachers,<br>- Other required in-school tasks and responsibilities, and the demanding teaching hours.<br><br>**The Role of Instructional Strategies**<br>*Instructional Materials*<br>- Insufficiency of MoNE-provided textbooks | .<br>**The Role of the Educational System**<br>*Curriculum*<br>- Integration of compound competencies into curriculum components.<br><br>**The Role of Teachers' Capacity**<br>*Teacher's Competency*<br>- Teachers' awareness of compound competencies<br>- Classroom management skills of teachers<br>*Accessing Information Sources*<br>- In-service training or webinars<br>- Use of social media for professional development<br>- Engagement with scientific research and articles,<br>- Pursuing graduate programs to deepen their expertise<br>*Supportive Mechanisms*<br>- School characteristics<br>- The presence of learning communities<br>- Implementation of tailored school programs<br><br>**The Role of Instructional Strategies**<br>*Integration and association*<br>*Student-centered education*<br>*Instructional Materials*<br>- Utilization of supplementary resources<br>- Integration of Web 2.0 tools<br>*Extra-Curricular Activities*<br>- Co-curricular activities<br>- Outside-school activities<br>- Student club activities |

As shown in Table 14, the curriculum analysis addressing the first research question, "to what extent do middle school intended curricula promote the development of compound competencies among students?" revealed that the integration of compound competencies varies across subjects, and there is no unified framework ensuring their systematic development. In this respect, the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) revealed a strong emphasis on computational thinking. However, it provided no emphasis on global competency, media literacy, and literacy for sustainable development, while financial literacy and entrepreneurship received limited emphasis. The 5th-8th Grade Turkish Curriculum (MoNE, 2019) demonstrated a moderate emphasis on media literacy yet provided no emphasis on global competency, literacy for sustainable development, and financial literacy. Additionally, it placed low emphasis on computational thinking skills and limited emphasis on entrepreneurship. The 5th-8th Grade Science Curriculum (MoNE, 2018) incorporates computational thinking and entrepreneurship more frequently while addressing literacy for sustainable development, media literacy, global competency, and financial literacy at minimal levels. In contrast, the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) appears to be the most comprehensive, demonstrating strong emphasis on global competency and moderate emphasis on literacy for sustainable development. Additionally, it incorporates minimal emphasis on media literacy and financial literacy, while computational thinking skills receive low emphasis. The distribution of curricular emphasis across subjects suggests that while certain subject areas inherently align with specific competencies, such as the strong emphasis on computational thinking skills in the Mathematics Curriculum, the overall framework lacks a cohesive and interdisciplinary structure that ensures balanced competency development across subjects' areas. For instance, global competency is strongly emphasized in Social Studies but not addressed in Mathematics or Turkish, while financial literacy and entrepreneurship receive minimal or limited attention across all subjects. These curriculum findings provide a foundational perspective on how compound competencies are embedded within middle school education; however, their effective implementation ultimately depends on how teachers interpret, integrate, and deliver these competencies in practice.

Understanding this implementation gap is essential for gaining a more comprehensive view of competency development in middle school education. Therefore, the second research question and its sub-question shifts the focus from curriculum design to classroom practice, examining the extent to which teachers promote the development of compound competencies by exploring the degree of focus they place on them in instruction and the variations in their integration across different subject areas. To address this, a descriptive survey was employed to systematically capture teachers' self-reported implementation levels of compound competencies across different subjects. The combined analysis of the written curriculum and teachers' implementation levels for global competency reveals both alignment and discrepancies across subject areas. Social studies demonstrated the strongest curricular emphasis on global competency, aligning with teachers' high level of focus. In contrast, Turkish and science curricula lacked explicit focus, yet teachers reported a high level of focus in Turkish and a moderate to high level of focus in science, suggesting they compensate through instructional practices. Mathematics, with minimal curricular emphasis, showed a low level of focus, reflecting a consistent lack of attention in both intended and implemented curricula. Across all subjects, teachers consistently supported key aspects such as respecting different worldviews, promoting sustainable development, and encouraging community engagement. However, social studies teachers stood out in addressing intercultural differences and fostering global interaction more actively than their counterparts. Despite this, integrating foreign language skills into global competency development remained a less emphasized aspect, particularly among mathematics, social studies, and Turkish teachers. These findings highlight the varying degrees of implementation across disciplines and suggest the need for a balanced and interdisciplinary approach to fostering global competency in middle school.

The combined analysis of the written curriculum and teachers' implementation levels for media literacy reveals both alignment and discrepancies across subject areas. Turkish demonstrated the moderate curricular emphasis on media literacy, aligning with teachers' high level of focus in practice. In contrast, science and social studies curricula placed minimal emphasis on media literacy, yet teachers in these subjects reported a moderate to high level of focus, suggesting that they actively integrate media literacy into their instruction despite its limited presence in the curriculum. Mathematics, with no curricular emphasis on media literacy, showed a low level of teacher focus, reflecting a consistent lack of attention in both intended and enacted curricula. Despite these variations, survey findings revealed that most teachers across all subjects emphasize ethical and legal considerations in accessing and using information. Social studies and Turkish teachers, in particular, demonstrated a high level of implementation in drawing attention to media literacy, critically questioning media content, and addressing ethical issues. However, a significant number of mathematics teachers reported rarely or never integrating key aspects into their practice such as evaluating media content, creating their own media, and recognizing false information.

The combined analysis of the written curriculum and teachers' implementation levels for literacy for sustainable development reveals both alignment and discrepancies across subject areas. Social studies demonstrated a moderate emphasis on the curriculum, aligning with teachers' moderate level of focus in practice. In contrast, Turkish and mathematics curricula lacked an explicit focus on literacy for sustainable development, and this was reflected in teachers' low level of focus in both subjects. Science, despite having only minimal curricular emphasis, showed a moderate level of teacher focus, indicating that teachers actively integrate relevant concepts into their lessons to bridge the gap in curricular emphasis. Survey findings further highlight that teachers across all subjects placed significant emphasis on recognizing students' positive actions toward sustainability. Regarding that, the concept of sustainability and promoting sustainable behaviors received considerable attention across subject areas. While Turkish, social studies, and science teachers generally demonstrated a moderate level of implementation regarding various aspects of the Sustainable Development Goals (SDGs), mathematics teachers exhibited a noticeably lower level of integration, with sustainability-related concepts being less frequently addressed in mathematics instruction

The combined analysis of the written curriculum and teachers' implementation levels for financial literacy reveals both alignment and discrepancies across subject areas. Mathematics demonstrated limited curricular emphasis, yet when all subdimensions of financial literacy were considered, teachers did not reveal particular emphasis on its implementation. On the other hand, while mathematics teachers did not indicate that they frequently or always implement activities to develop their students' financial literacy, they demonstrated a moderate level of implementation in 12 out of 14 items within the financial literacy dimensions of the survey. In this context, categorizing mathematics as having "no focus" would not be entirely accurate, as teachers do integrate financial literacy concepts to some degree, though they do not prioritize specific activities. Survey findings further illustrate variations across different aspects of financial literacy. Promoting conscious consumer behavior and teaching consumer rights and responsibilities received the highest emphasis, particularly in social studies lessons, where teachers exhibited a strong commitment to fostering these skills. While basic financial literacy terms and the use of financial materials were moderately integrated into instruction by social studies, science, and Turkish teachers, their overall implementation remained inconsistent. In contrast, mathematics teachers demonstrated a moderate level of integration across all aspects of financial literacy, yet missed opportunities to connect financial literacy with mathematical concepts. More advanced financial skills, such as calculating interest rates and budget preparation, were particularly underemphasized in mathematics instruction, further reinforcing this gap.

The combined analysis of the written curriculum and teachers' implementation levels for computational thinking skills reveals both alignment and discrepancies across subject areas. Mathematics demonstrated the strongest curricular emphasis, aligning with teachers' moderate to high level of focus in practice. In contrast, Turkish and social studies curricula placed low emphasis on computational thinking, which was reflected in teachers' low to moderate level of focus in both subjects. Science, despite having only a moderate curricular emphasis, showed a moderate to high level of teacher focus, suggesting that teachers actively incorporate the development of computational thinking skills into their instruction, even when curricular emphasis is not particularly strong. Survey findings further indicate that teachers across all subjects frequently support certain aspects of computational thinking skills, such as ordering steps to solve problems logically, distinguishing necessary information, developing alternative solutions, and adapting solutions to new problems. Teachers across the four subject areas reported high-frequency engagement in various sub-dimensions of computational thinking, particularly in pattern recognition, problem-solving, inference making, and algorithmic thinking. However, the most critical aspect of computational thinking which is computer-related activities and programming, remained at a low level of implementation. This gap highlights the limited opportunities for students to engage in hands-on programming activities, which are crucial for developing computational thinking skills in the modern digital era.

The combined analysis of the written curriculum and teachers' implementation levels for entrepreneurship reveals both alignment and discrepancies across subject areas. Social studies demonstrated the highest curricular emphasis, aligning with teachers' high level of focus in practice. In contrast, Turkish and mathematics curricula placed limited or no emphasis on entrepreneurship, which was reflected in teachers' low level of focus in both subjects. Science, despite having only a low curricular emphasis, showed a moderate level of teacher focus, suggesting that teachers incorporate entrepreneurship-related activities into their instruction even when it is not a strong curricular component. These findings indicate that while social studies provide a structured foundation for entrepreneurship education, its integration in other subjects remains limited. Survey findings further illustrate variations in the implementation of different aspects of entrepreneurship education. Problem-based learning with real-life examples received significant attention across all subjects as a reflection of a common instructional approach. However, providing mentor support and involving industry professionals in the learning process was implemented at a moderate level across subjects. Notably, science teachers demonstrated a strong emphasis on designing products for innovative ideas, integrating this aspect more actively than their counterparts in other disciplines.

While mathematics, science, and Turkish teachers demonstrated a moderate level of implementation in areas such as presenting designed products, exploring different types of entrepreneurships, analyzing entrepreneurs' success stories, and participating in entrepreneurship events, social studies teachers exhibited the highest level of support in fostering these skills. These findings highlight that while certain subjects align more naturally with specific competencies, others rely on teachers' efforts to integrate them into their instruction. This underscores the need for interdisciplinary integration to ensure a structured approach to competency development in middle school education. The analysis also reveals alignment and discrepancies between the written curriculum and its implementation in practice. In some cases, teachers' instructional practices closely reflect curricular emphasis, ensuring a cohesive approach to competency development. However, in other instances, competencies emphasized in the written curriculum are not fully enacted in classrooms, while some teachers compensate for curricular gaps by incorporating competencies that are not explicitly addressed in official learning objectives. This inconsistency limits students' ability to develop compound competencies and reinforces the importance of curricular revisions and targeted professional development to enhance competency focused education and ensure a more consistent implementation across subjects.

As an extension of these findings, the third research question sought to uncover the factors that promote or hinder the development of compound competencies in daily practices through the analysis of interview data. Teachers' perspectives revealed that in many cases, these competencies are not explicitly planned but rather emerge as emergent learning outcomes, often lacking systematic integration across subjects and grade levels. Additionally, teachers across different subject areas recognized the importance of these competencies but highlighted the absence of structured planning mechanisms to facilitate their integration. The responses suggest that when competency development is not deliberately planned, it tends to occur in an ad-hoc manner rather than through intentional curriculum design. This finding is particularly evident in statements indicating that interdisciplinary activities and project-based learning often incorporate elements of these competencies, but without explicit framing, students may not fully recognize or internalize them.

Secondly, the findings revealed that individual and social dynamics, particularly parental expectations and student profiles, significantly influence the development of compound competencies. These factors shape the extent to which teachers can integrate competency-based learning into their instruction, either facilitating or constraining its implementation. In this respect, parental expectations play a crucial role in determining the instructional priorities within schools. The findings suggest that parents tend to prioritize academic achievement, exam success, and measurable learning outcomes, which often leads to a misalignment between parental expectations and competency-based education. Teachers reported that parents frequently express concerns over whether skill-based activities contribute directly to exam performance, viewing competency development as a secondary priority. This exam-oriented mindset restricts teachers' flexibility in employing innovative, student-centered teaching strategies, as they feel pressured to focus on content delivery rather than fostering holistic skill development. On the other hand, student profiles, including their interests, engagement levels, and developmental stages, were identified as key determinants in competency development. Teachers emphasized that students’ willingness to engage in competency-based learning varies significantly across different age groups. Younger students, particularly in 5th and 6th grades, tend to be more enthusiastic and open to skill-building activities, whereas 7th and 8th graders often exhibit decreased motivation and shifting priorities. Teachers also highlighted a growing need for differentiated and developmentally appropriate instruction, as older students may require more structured engagement strategies to maintain interest and participation. Additionally, the findings revealed that students’ digital literacy and media consumption habits influence their ability to develop certain competencies, such as media literacy and critical thinking skills. Teachers expressed concerns about students' unsupervised technology use, which, in some cases, led to distractions rather than meaningful learning experiences. Taken together, these findings suggest that both parental expectations and student characteristics play a significant role in shaping the implementation of competency-based education. While parents’ exam-focused priorities can limit opportunities for holistic skill development, students' age-related engagement and behavioral patterns require tailored instructional approaches to ensure meaningful learning experiences. Addressing these challenges necessitates greater communication between teachers and parents, as well as the adoption of adaptive teaching strategies that align with students' developmental needs.

Third, the findings revealed that the educational system including national education policies, curriculum, exam-oriented education and teachers workload plays also a crucial role in either facilitating or constraining the integration of compound competencies into educational practices. Regarding national education policies, teachers highlighted that systemic challenges caused by MoNE hinder the development of competencies, as the existing educational structures do not adequately support competency-based learning. This reflects broader systemic issues in effectively integrating these approaches into teaching practices. Moreover, frequent and sudden regulatory changes further interrupt instructional planning, making it more difficult to integrate these competencies effectively into teaching practices. Sudden shifts, particularly in assessment policies and examination formats, drive teachers to prioritize content delivery over skill-based, interdisciplinary, and real-world learning experiences. The findings suggest that a more structured and stakeholder-inclusive policy-making approach is necessary to ensure that competency development is a sustainable part of the educational framework, rather than an overlooked aspect of subject instruction.

The curriculum itself also emerged as a key factor, with teachers identifying issues such as misalignment between subjects and grade levels, an overwhelming number of learning objectives, and insufficient time for competency-focused instruction. The interview data indicated that while competency development is stated in national curriculum documents, the actual design and structure of the curriculum do not adequately facilitate interdisciplinary connections that would naturally promote competency development. In particular, the misalignment between subject curricula and grade-level expectations creates obstacles for teachers who attempt to integrate competencies across disciplines. Additionally, curriculum overload was consistently cited as an obstacle, with teachers stating that the pressure to cover all required content restricts them to implement activities that foster competency development. The findings suggest an explicit guidance on how to embed competencies into learning objectives and instructional strategies further facilitates their integration.

The findings revealed that the high school entrance exam at the end of 8th grade influences middle school education and shapes teachers' instructional practices through an exam-oriented approach. The emphasis on high-stakes exams prioritizes content coverage and question-solving strategies over interactive and skill-based learning. This shift in instructional focus is especially pronounced in the final years of middle school, where preparing students for standardized assessments takes precedence over fostering deeper learning experiences. One of the main challenges identified is the dominance of test-driven classrooms, where multiple-choice assessments and frequent mock exams consume valuable instructional time. Teachers reported that this approach not only reduces opportunities for developing critical skills but also increases the pressure on educators to ensure that all required topics are covered within a limited timeframe. The findings highlight that this time constraint forces teachers to make trade-offs, often sacrificing competency development activities to keep pace with the curriculum and exam schedules. Additionally, the findings indicate that this high school level entrance exam creates a distinct divide between grade levels, with students in exam-oriented groups (primarily Grade 8) receiving a different instructional approach compared to younger graders. While lower grades may allow for more interactive and activity-based learning, the final year of middle school is largely characterized by intensive exam preparation, reducing the integration of any competencies. The interview data also illustrated the broader influence of exam-oriented education on stakeholder expectations. Both parents and school administrations prioritize academic success and measurable outcomes, further reinforcing a system that values exam performance over holistic skill development. This expectation adds additional pressure on teachers, making it more difficult to implement competency focused learning approaches in their classrooms. As a part of an educational system, the findings also indicate that teacher workload, compounded by teacher shortages, administrative duties, and extensive teaching hours, notably limits the effective integration of compound competencies into classroom practices. The lack of dedicated time for lesson planning, interdisciplinary collaboration, and professional development prevents teachers from implementing innovative approaches that could enhance student learning outcomes. A key challenge is that teachers are already operating at full capacity, balancing multiple responsibilities beyond teaching. This results in a prioritization of immediate instructional needs over long-term competency development. Without sufficient time and institutional support, efforts to integrate compound competencies will continue to be constrained by structural limitations rather than pedagogical intent.

Forth, the findings indicate that teachers' capacity plays a crucial role in promoting or hindering the development of compound competencies. The three key areas including teachers' competency, access to information sources, and supportive mechanisms, emerging as essential for strengthening professional development and instructional practices of teachers. The lack of awareness and familiarity with compound competencies poses a challenge to integrate these competencies into practice due to limited knowledge. The interview data highlights the need for systematic training and clear instructional guidelines for competency development. Addressing this gap through structured professional development programs and nationwide competency-awareness initiatives is emerged from the interview data for effective implementation. While teachers rely on various information sources, including official announcements, academic research, webinars, and social media, disparities exist in professional development regarding competency development. Some teachers actively seek structured learning opportunities, whereas others depend on informal networks which points to a gap in institutional in-service training and emphasizing the need for accessible, high-quality resources to ensure all educators can effectively implement competency focused education. Additionally, institutional support, school policies, and collaborative learning communities significantly influence teachers' capacity to adopt competency focused teaching. Schools with strong administrative support, interdisciplinary collaboration, and alternative programs (e.g., Eco-Schools, Global Schools, and Understanding by Design) offer structured opportunities for competency development. However, the level of support varies across schools, highlighting the need for policy-driven initiatives that provide equitable access to professional learning and competency integration across all educational settings.

Fifth, the findings revealed that instructional strategies play a fundamental role in fostering the development of compound competencies. The integration and association, learner-centered approach, instructional materials, and extracurricular activities are described as key strategies in competency-focused education. Learner-centered approaches, including project-based learning, problem-solving, and active learning strategies, effectively support competency development. However, their implementation also depends on teacher capacity. While some teachers can integrate and associate compound competencies within their subjects, others struggle due to a lack of familiarity, curriculum constraints, and structured guidance. Curriculum mapping also has emerged as a need to facilitate the development of competencies. On the other hand, Instructional materials, particularly MoNE textbooks, are often perceived as inadequate for competency development, leading teachers to rely on supplementary resources, digital tools, and alternative instructional strategies to enhance student learning.

Additionally, extracurricular activities such as career observation programs, student clubs, international competitions, and social responsibility projects have emerged as valuable experiential learning opportunities for students to foster their compound competencies. Yet, according to the interview data, their integration into the formal curriculum remains inconsistent. These findings suggest a structured, policy-driven approach is needed to ensure systematic integration of competencies within instructional strategies, professional development, and school-wide initiatives.

# CHAPTER 5

# DISCUSSION

This chapter discusses the main findings by first examining the quantitative results, followed by an in-depth discussion of the qualitative data, and concludes with implications for educational practice and future research.

## 5.1. Discussion of the Findings

This study investigated the extent to which subject-specific middle school written curricula and their implementation promote the development of compound competencies among students, utilizing an explanatory sequential mixed methods design to integrate quantitative and qualitative findings. The quantitative phase provided a foundational understanding through content analysis of curricula and descriptive survey data, while the qualitative phase offered in-depth insights about the factors that promote or hinder the development of those competencies through interviews with teachers. Accordingly, the following section discusses the findings by interpreting both sets of data in light of existing literature and within the framework of the OECD E2030 initiative.

### 5.1.1. Developing Compound Competencies in Intended (Written) and Implemented Curricula

In this study, the results gathered from the subject-specific intended curricula in Türkiye were discussed in comparison with the findings from the OECD's Curriculum Content Mapping (CCM) exercise, conducted between 2017 and 2018 as part of the OECD Learning Compass 2030 (OECD, 2019a; 2020a). The CCM exercise was designed to explore how knowledge, skills, attitudes, and values are integrated within curricula and to understand their relevance across different learning areas (OECD, 2020a). Notably, although Türkiye did not participate in the OECD 2018 CCM exercise, a curriculum mapping process was conducted in this study to analyze the subject-specific written curricula (MoNE, 2018; 2019). While the approach utilized is not identical to OECD’s, it is parallel to OECD's methodology and seeks to provide a meaningful comparative perspective. To elaborate on this difference, The OECD’s CCM exercise utilizes a rating scale with four categories to systematically analyze curriculum documents from participating countries, focusing on the extent to which content item from a broader range of subjects, including Arts, Humanities, National Language, Mathematics, Science, Physical Education, and Technology/Home Economics, support compound competencies either as a main or sub-target (OECD, 2020a). In contrast, this study employed a three-category rating scale to conduct curriculum analysis which was narrowed to four core subjects in Türkiye’s middle school curriculum, including Turkish (National language), mathematics, science, and social studies. Those subjects were chosen because of their weekly lesson hour weight in Türkiye’s middle school education. As highlighted by Cummings (1999), comparative studies in education can contribute to policy formulation, educational reform, and the identification of best practices. In this study, the written curriculum analysis focused on the degree to which the learning objectives in these subject-specific curricula support compound competencies either as a main or sub-target, similar to the CCM exercise. Despite differences in rating scale categorization (three categories in Türkiye vs. four in the OECD) and subject coverage (four core subjects in Türkiye vs. a broader range in the OECD), both approaches provide a structured analysis of intended curricula and offers insights into the integration of compound competencies. These differences necessitate cautious interpretation of the findings, as the comparison should be seen as indicative, highlighting general trends and areas for further exploration rather than enabling direct one-to-one comparisons. This study aims to provide insights into the relative positioning of Türkiye’s subject-specific middle school curricula within the global landscape and the alignment of compound competencies in the Turkish education system. Accordingly, the findings on intended and implemented compound competencies are discussed in the following sections.

### 5.1.2. Compound Competencies in Curricula and Implementation

#### 5.1.2.1. Global Competency in Curricula and Implementation

As one of the compound competencies, global competency is defined as the ability to investigate local, global, and intercultural issues, appreciate and respect diverse perspectives, communicate openly and effectively with individuals from different cultural backgrounds, and contribute to the common good through collective action (OECD, 2020a). In this study, the integration of global competency within the subject-specific intended curricula in Türkiye was examined and compared with the findings from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). The Figure 13 is illustrated the distribution of the content items in the mapped curricula targeting global competency (as main or sub-target) by each learning area. In figures the humanities learning area is composed of content items from four different subject areas including history, geography, citizenship, and economics and business.

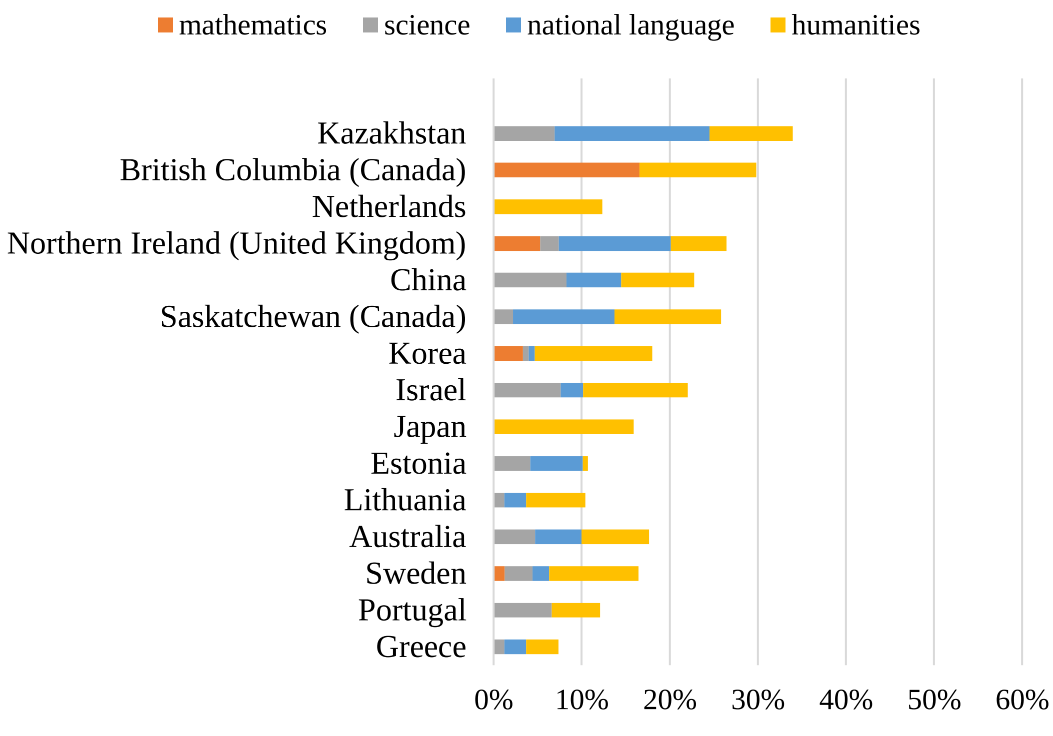


**Figure 13.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Global Competency (As Main or Sub Target), By Learning Area*

The findings of this study reveal that, in Türkiye, global competency is not emphasized in the learning objectives of the 5th-8th Grade Mathematics Curriculum (MoNE, 2018)

(MoNE, 2018), and teachers also report a low level of focus on integrating global themes into their practice. This aligns with trends observed in most OECD countries as it is illustrated in Figure 13, where mathematics is rarely used as a medium for global competency development (OECD, 2024). However, British Columbia (Canada) stands out as an outlier, dedicating 17% of its Mathematics curriculum to global competency learning. This suggests a deliberate effort to incorporate global problem-solving and critical thinking into mathematical contexts (Boix Mansilla & Jackson, 2011). Similarly, Northern Ireland (United Kingdom) integrates global themes in 5% of its Mathematics content, while Korea and Sweden incorporate global perspectives at 3% and 1%, respectively. These countries show a more holistic approach by promoting globally-minded problem solvers who can apply mathematical skills across diverse contexts (Schleicher, 2018). Research suggests that integrating real-world issues into mathematics education enhances students' problem-solving skills and critical thinking, preparing them for complex challenges in an interconnected world (Szabo et al., 2020) In contrast, Türkiye's lack of emphasis highlights a missed opportunity to enhance global awareness through interdisciplinary learning in mathematics. Integrating real-world issues into mathematics education has been shown to enhance students' problem-solving skills and critical thinking, preparing them for complex challenges in an interconnected world (Niss, 2015; Zhao, 2010). To bridge this gap, Türkiye could consider incorporating real-world global issues into Mathematics education, promoting complex problem-solving and critical thinking with a global perspective (Whitney-Smith et al., 2022). This study reveals that the learning objectives of the 5th-8th Grade Turkish Curriculum (MoNE, 2019) place no emphasis on global competency, yet teachers demonstrate a high level of focus on integrating global perspectives into their practice. This indicates a teacher-driven approach where they compensate for the lack of curricular guidance by incorporating global themes through narratives and discussions (Isbell, 2002; Petersen & Spencer, 2012). Selecting appropriate texts in teaching the Turkish language not only enhances language skills but also fosters critical thinking, intercultural understanding, and global awareness (Ulutaş & Kaya, 2019; Urlaub, 2013). Research indicates that

incorporating culturally diverse narratives and thematically rich literary works encourages students to explore different perspectives and engage in complex problem-solving, thereby developing an understanding for diverse cultures and communities (Urlaub, 2012; 2013). This approach promotes critical literacy, enabling students to analyze social issues, question biases, and reflect on their roles as global citizens. Such holistic text selection strengthens language proficiency while nurturing social, emotional, and cognitive skills, preparing students for success in an interconnected world (Urlaub, 2012; 2013). In contrast, as it is illustrated in Figure 13, OECD countries such as Kazakhstan, China, and Northern Ireland (UK) explicitly embed global competency within their National Language curricula, fostering intercultural understanding and critical thinking through structured language arts programs (OECD, 2024; Schleicher, 2018). On the other hand, this study revealed that the learning objectives of the 5th-8th Grade Science Curriculum (MoNE, 2018) provide limited emphasis on global competency, and teachers report a moderate level of focus on integrating global perspectives. This suggests an attempt to incorporate global issues such as environmental sustainability and scientific literacy, although the lack of systematic curricular support limits consistency. In contrast, China and Saskatchewan (Canada) demonstrate stronger alignment in their curricula by explicitly embedding global themes related to sustainability and scientific inquiry (OECD, 2024). Science teachers could enhance global competency development through inquiry-based learning, project-based investigations, and STEM collaborations, which are proven methods for promoting global awareness and problem-solving skills (Bybee, 2010; Zhao, 2010). The 5th-7th Grade Social Studies Curriculum (MoNE, 2018) stands out with a strong emphasis on fostering global competency, with teachers likewise focusing on integrating global themes. This aligns with OECD trends where Social Studies or Humanities serve as the primary vehicle for developing global competency through discussions on global citizenship, cultural diversity, and social justice (Schleicher, 2018). Countries like Northern Ireland and Saskatchewan (Canada) effectively embed global themes in Social Studies curricula, enhancing intercultural understanding and civic engagement. By employing discussion-based learning, case studies, and project-based activities, teachers encourage students to engage with global issues from multiple perspectives (Gaudelli, 2016; Merryfield, 1997).

### 5.1.2.2. Media Literacy in Curricula and Implementation

Media literacy, as one of the compound competencies, refers to the ability to think critically and analyze information encountered in various media platforms, including social media and news outlets. It involves the capacity to identify "fake news" and distinguish between accurate and misleading information. Additionally, media literacy encompasses the skills to assess, evaluate, and reflect on the presented information, enabling individuals to make well-informed and ethical judgments (OECD, 2020a). This study examines the integration of media literacy into the subject-specific intended curricula in Türkiye, comparing it with the results obtained from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). Figure 14 illustrates how content items targeting media literacy (main or sub-target) are distributed across different learning areas within the mapped curricula.

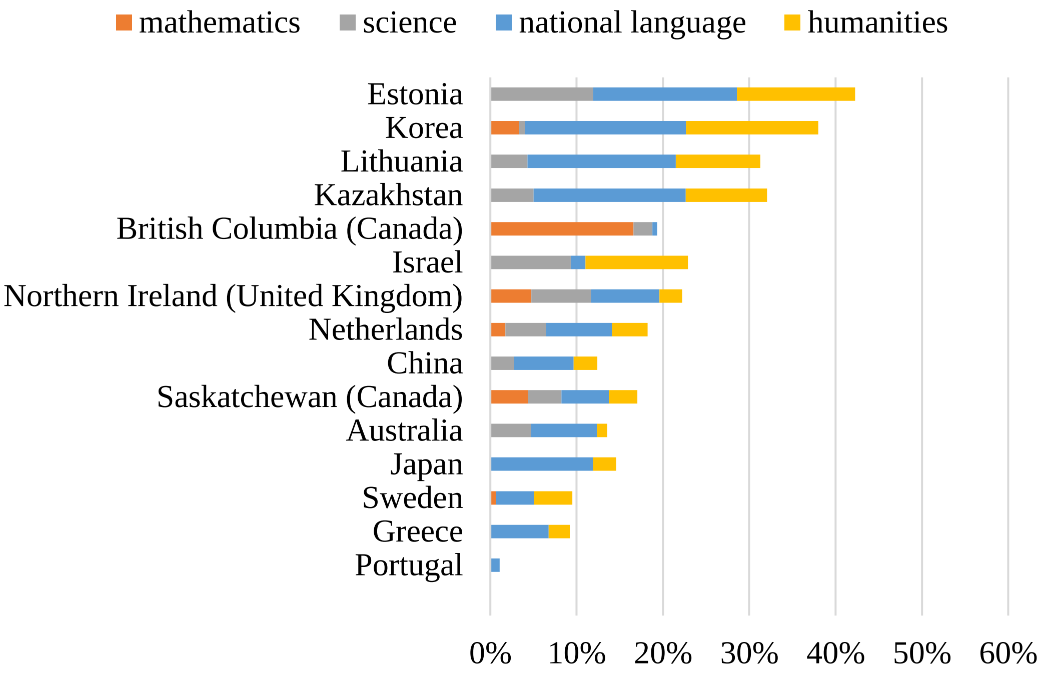


**Figure 14.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Media Literacy (As Main or Sub Target), By Learning Area*

The integration of media literacy into middle school subject-specific curricula in Türkiye presents notable disparities. The findings of this study reveal that 5th-8th

Grade Mathematics curricula in Türkiye place no emphasis on media literacy, which is consistent with the broader trends observed across OECD countries. As shown in Figure 14, Mathematics is rarely used as a medium for developing media literacy, with most countries showing minimal to no integration. Only British Columbia (Canada) stands out, dedicating 17% of its Mathematics curriculum to media literacy, emphasizing critical thinking and problem-solving through real-world media contexts (OECD, 2024). However, Mathematics has the potential to enhance critical data literacy by contextualizing mathematical concepts within real-world media issues through statistical literacy, data visualization, and critical evaluation of media representations, particularly in an era of misinformation (Hobbs, 2004; Stein, 2009). Integrating media literacy in Mathematics not only helps students in understanding numerical and visual data but also empowers them to critically assess the information they encounter (OECD, 2024). In this study, the self-reported survey findings of teachers exhibit a low focus on media literacy within Mathematics due to the emphasis on standardized testing and rigid curricular structures, limiting its application to basic data interpretation and graph analysis (Bayraktar, 2024; Hobbs & Tuzel, 2015). It is assumed that Mathematics is predominantly perceived as a neutral and technical discipline, which contributes to its exclusion from media literacy integration. Consequently, critical media literacy skills such as statistical literacy, data visualization, and critical evaluation of media representations are often overlooked in mathematics education (Hobbs, 2010; OECD, 2024).

This study revealed that the 5th-8th Grade Turkish Curriculum places moderate emphasis on media literacy, mainly through developing language skills and critical interpretation of texts. This aligns with global practices where national language curricula more readily integrate media literacy. In this context, Turkish (language) teachers demonstrate a high level of focus on media literacy in which they use cultural narratives, contemporary texts, and multimedia to foster critical thinking and media analysis skills (Çakmak & Altun, 2013; Tüzel 2012). Tüzel (2012) asserts that the integration approach is an effective method for linking media literacy education with Turkish Language courses, as it aligns with students' lived experiences and the demands of the digital age. Thereby, the integration approach helps students critically engage with the multimodal texts they encounter daily, including visual, auditory, and digital media (Tüzel, 2012). Similarly, Potur (2023) indicates that the Turkish Language Curriculum (MoNE, 2018) integrates fundamental language skills with media literacy competencies. These learning objectives aim to help students accurately interpret messages conveyed through various media channels, critically evaluate the source and authenticity of these messages, make comparisons to form reasoned judgments, and share their assessments through writing. This approach fosters students' abilities to engage critically and reflectively with media content, enhancing both their language and media literacy skills (Potur, 2023). According to OECD data, as illustrated in the Figure 14, countries with the highest emphasis on media literacy within National Language curricula include Estonia, Korea, Lithuania, and Kazakhstan. This highlights a global preference for embedding media literacy within national language education, leveraging its natural alignment with multimedia and critical literacy approaches (Hobbs & Jensen 2009; Tüzel, 2012).

The integration of media literacy within social studies curricula shows variations across OECD countries. Based on the findings of this study, there is a minimal emphasis in the learning objectives of the 5th-7th Grade Social Studies Curriculum, which is consistent with other countries like Estonia, Korea, Lithuania, and Kazakhstan, where notable integration of media literacy within their Social Studies curricula is observed. According to Figure 14, other countries like Portugal, British Columbia (Canada), and Australia show minimal or no integration of media literacy within their Social Studies curricula. Embedding media literacy into social studies promotes civic engagement, critical thinking, and active citizenship which aligns with global trends emphasizing political literacy and democratic participation (Manfra & Holmes, 2018; Stein & Prewett, 2009). The self-reported findings of teachers revealed that they demonstrate a high level of focus on media literacy by using documentaries, news analysis, questioning bias, fake news, and digital narratives to enhance students' critical media awareness and social consciousness (Manfra & Holmes, 2018; Sperry, 2012). Cross-curricular integration also strengthens media literacy within Social Studies (Manfra & Holmes, 2018; Sperry, 2012), as illustrated in Figure 14, which shows this approach being implemented in countries like Estonia and Korea. As seen in Figure 14, the integration of media literacy within science curricula varies across OECD countries. This study revealed that in Türkiye, the 5th-8th Grade Science Curriculum (MoNE, 2018) places limited emphasis on media literacy, whereas the self-reported findings of teachers demonstrate a moderate to high level of focus in practice. This trend in intended curricula is consistent with countries like Portugal, Greece, Sweden, and Japan, which also show minimal integration. In contrast, Estonia, Korea, Lithuania, and Kazakhstan embed media literacy within science education to enhance scientific literacy and critical thinking by teaching students to critically evaluate scientific claims and interpret data. Research suggests that inquiry-based learning encourages students to investigate scientific claims presented in the media, critically evaluate information sources, and identify biases or misinformation, thus fostering both scientific inquiry and media literacy skills (Hobbs, 2004; Whitelegg, Carr, & Holliman, 2013). Data literacy and visualization techniques enable students to interpret data and critically evaluate statistical claims encountered in scientific news and enhance their scientific reasoning (Jenson & Droumeva, 2016). Therefore, cross-curricular integration links science education to societal issues, contextualizing scientific learning within real-world contexts and promoting critical thinking and media literacy (Hobbs & Tuzel, 2015; Whitelegg et al., 2013). Additionally, using creative media literacy skills within STEM education has been shown to raise student aspirations by challenging stereotypical representations and fostering scientific identity, thus encouraging diversity and inclusion within STEM fields (Whitelegg et al., 2013).

Overall, the integration of media literacy within intended curricula across OECD countries is variable, with mathematics showing minimal emphasis, social studies demonstrating notable integration, and science placing limited emphasis. In contrast, National Language curricula generally show a moderate to high emphasis among OECD countries. In terms of implemented curricula, in order to develop media literacy among students, teachers enhance their practices by employing inquiry-based learning, critical discourse, data visualization techniques, and identifying fake news to foster critical thinking and media literacy. These findings also highlight the importance of cross-curricular integration to support consistent and effective media literacy practices.

### 5.1.2.3. Literacy For Sustainable Development in Curricula and Implementation

Literacy for sustainable development is defined as the knowledge, skills, attitudes, and values necessary to support and promote sustainable ways of living (OECD, 2020a). It involves understanding the interconnectedness of social, economic, and environmental systems and recognizing how these systems collectively sustain life. Additionally, literacy for sustainable development requires an appreciation of diverse perspectives influencing sustainability and active participation in practices that contribute to sustainable development. It empowers individuals to make informed decisions and take responsible actions that promote environmental stewardship, social equity, and economic viability (OECD, 2020a). This study explores the integration of literacy for sustainable development within subject-specific intended curricula in Türkiye and compares it with the findings from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). As illustrated in Figure 15, content items targeting (main and sub-target) literacy for sustainable development are distributed across various learning areas within the mapped curricula.

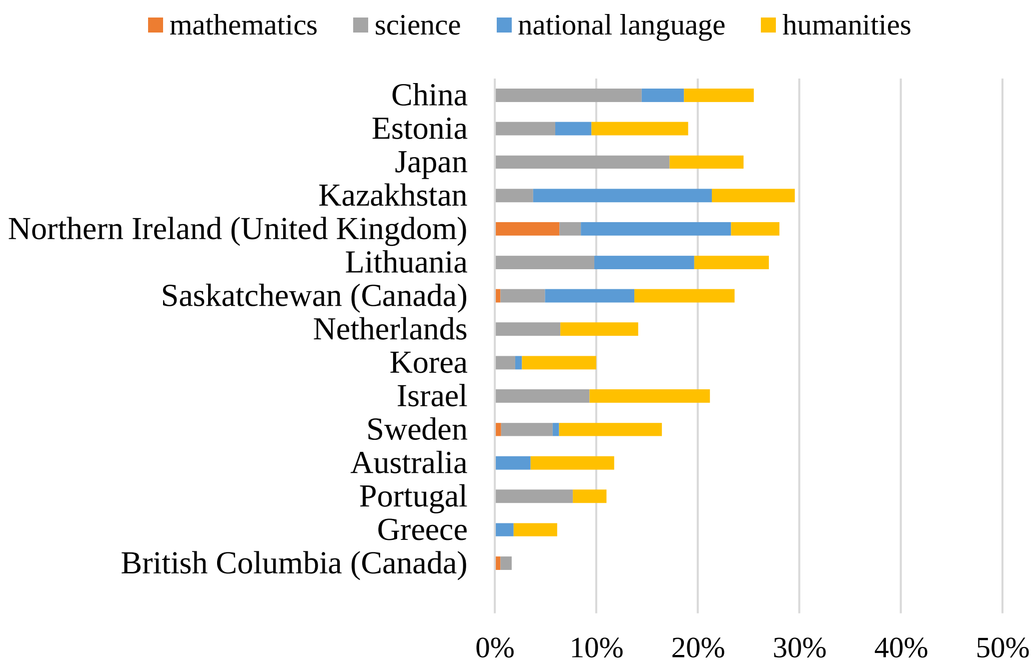


**Figure 15.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Literacy for Sustainable Development (As Main or Sub Target), By Learning Area*

As illustrated in Figure 15, the integration of literacy for sustainable development within mathematics curricula varies across learning areas in OECD countries. This study reveals that the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) in Türkiye places no emphasis on sustainable development literacy, and the implementation level among mathematics teachers also demonstrates a low level of focus in their teaching. This finding is consistent with countries like Portugal, Greece, Korea, Estonia, and Japan, which similarly show no integration in their mathematics curricula. Despite its limited presence in mathematics curricula, research suggests that integrating literacy for sustainable development into mathematics education holds significant potential. (Gadzaova, Murauyova, & Urban, 2017; Kuznetsova, Zhbanova, & Golovaneva, 2021). It empowers students to use mathematical skills to address sustainability challenges through quantitative insights and informed decision-making (OECD, 2024). By connecting sustainability topics with mathematical skills like data analysis and statistical reasoning, students can better understand and evaluate complex environmental issues (OECD, 2024; Su et al., 2023; Vintere, 2018). Additionally, using mathematical modeling to address environmental challenges demonstrates the practical applicability of math skills to real-world issues, fostering a commitment to sustainability and problem-solving (Lafuente-Lechuga et al., 2020; Li & Tsai, 2022).

The integration of literacy for sustainable development within the National Language curriculum shows varying degrees of emphasis across OECD countries. This study reveals that the learning objectives of the 5th-8th Grade Turkish Curriculum (MoNE, 2019) in Türkiye place no emphasis on literacy for sustainable development. This is also reflected in the implementation practices of teachers, who demonstrate a low level of focus on this literacy in their teaching. This trend aligns with global practices observed in countries like Israel, Portugal, British Columbia (Canada), and Japan, where sustainable development is not integrated into their national language curricula. However, countries like Kazakhstan, Northern Ireland, Saskatchewan (Canada), and Lithuania promote sustainable development within their national language curricula, fostering students' abilities to critically evaluate texts or narratives related to environmental and societal issues (Bulut & Çakmak, 2018; Kansızoğlu, 2014; Ölçer & Öztürk, 2025). Research suggests that embedding sustainability topics within

language education enhances students' socio-cultural understanding and civic engagement, fostering holistic thinking and informed decision-making (Bulut &

Çakmak, 2018). Additionally, integrating sustainability themes through contextual texts encourages students to engage critically with social and environmental issues (Ölçer & Öztürk, 2025). According to Sever (2018), the use of informative and educational texts in teaching not only stimulates students through the multi-layered structures and linguistic features of the texts but also influences their perceptions by reflecting values related to humanity and life. Such texts encourage readers to engage in cognitive and emotional thinking, fostering awareness and responsible behaviors toward environmental and social issues (Sever, 2018).

The integration of literacy for sustainable development within the social studies curriculum is included at varying levels across OECD countries, reflecting different degrees of emphasis. Similarly, this study reveals that the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) in Türkiye also incorporates sustainable development literacy with a moderate emphasis. In alignment with this, the implementation practices of teachers demonstrate a moderate level of focus, as social studies aim to cultivate active citizens who contribute to social equality, equal opportunities, and welfare. As Azrak (2022) asserts, in Türkiye, social studies emphasize fostering individuals who are aware of natural resource production and consumption and who actively participate in ensuring social welfare and justice. Achieving sustainable development goals depends on nurturing such responsible and conscious citizens. Therefore, integrating sustainable development into the social studies curriculum is essential, as it directly relates to educating students about environmental responsibility, social justice, and economic sustainability (Azrak, 2022). This trend aligns with most OECD countries like Israel, Estonia, Kazakhstan, Northern Ireland (UK), Lithuania, and Saskatchewan (Canada), which similarly embed sustainability themes within their humanities curricula, whereas British Columbia (Canada) shows no integration. The Social Studies curriculum also intends to foster values such as sensitivity, responsibility, frugality, and diligence, which are related to responsible production and consumption and are integral to promoting sustainable economic practices (Tosun & Gökçe, 2024). For the implementation, using inquiry-based learning, debate, and scenario analysis within Social Studies enhances students' abilities to critically evaluate social, environmental, and economic issues related to sustainable development (Dere & Ateş, 2022; Kaya & Tomal, 2011). Moreover, embedding sustainability topics within Social Studies not only promotes civic engagement and ethical reasoning but also prepares students for active participation in sustainable societies (Azrak, 2022). Cross-curricular integration with environmental science and economics is recommended to foster holistic thinking and informed decision-making, which contextualizes learning within real-world challenges, promoting responsible citizenship and sustainable development goals (Dere & Ateş, 2022; Tosun & Gökçe, 2024).

The integration of literacy for sustainable development within the science curriculum varies across OECD countries, reflecting different degrees of emphasis. This study reveals that the learning objectives of the 5th-8th Grade Science Curriculum (MoNE, 2018) in Türkiye incorporate sustainable development literacy with minimal emphasis, whereas the implementation practices of teachers demonstrate a moderate level of focus. The findings of the curriculum analysis are consistent with countries like British Columbia (Canada), Korea, and Northern Ireland (UK), which also show minimal integration within their science curricula. In contrast, countries like Japan, China, Lithuania, Israel, and Portugal exhibit a higher level of integration in promoting sustainability themes. Research suggests that interdisciplinary science education effectively fosters sustainable development competencies by linking environmental, social, and economic dimensions within science learning contexts (Aytar & Özsevgeç, 2019). Using inquiry-based learning and scenario analysis as teaching methods also supports students in investigating sustainability challenges by assessing the impact of scientific decisions and formulating evidence-based solutions (Yüzbaşıoğlu & Kurnaz, 2022). Additionally, the study by Suaco (2024) indicates that Sustainable Development Goals (SDGs) provide a powerful framework for enriching the science curriculum by connecting real-world scenarios and life skills to classroom learning. The inclusive nature of SDGs allows teachers to enhance lesson plans with depth and perspective, transforming SDGs from merely additional content into opportunities for developing well-informed, responsible citizens (Suaco, 2024). To cultivate literacy for sustainable development in practice, project-based learning also plays a crucial role in science education. Dembereldorj et al. (2024) state that project-based learning in

STEM education enables students to tackle real-world environmental challenges, such as renewable energy solutions or water purification systems, by designing and implementing sustainable solutions. This hands-on approach cultivates problem-solving skills and critical thinking by encouraging students to hypothesize, test, and refine their solutions. Additionally, integrating engineering design processes connects scientific theories with practical applications, fostering systems thinking and anticipatory competencies necessary for sustainability (UNESCO, 2017). Incorporating social and ethical dimensions further enhances normative and strategic competencies, enabling students to evaluate the societal impacts of environmental technologies (UNESCO, 2017).

Overall, the integration of literacy for sustainable development within intended curricula across OECD countries shows significant variability. Mathematics generally shows minimal emphasis, with Northern Ireland (UK) being an exception. In contrast, social studies/humanities and science curricula consistently emphasize sustainability across OECD countries. National Language curricula vary widely, with some countries actively integrating sustainable development literacy, while others do not consider it at all. Apart from the intended curriculum, research suggests that effective implementation involve teaching methods such as inquiry-based learning, project-based learning, scenario analysis, and interdisciplinary approaches for cultivating the literacy for sustainable development. These pedagogical strategies not only enhance critical thinking and problem-solving skills but also contextualize sustainable development within real-world challenges. Additionally, cross-curricular integration, particularly with STEM and humanities, strengthens sustainability literacy by promoting holistic thinking and informed decision-making.

#### 5.1.2.4. Computational Thinking Skills in Curricula and Implementation

Computational thinking is defined as the ability to identify problems and design solutions that can be executed by computer-based technologies. It encompasses programming and coding, which involve acquiring knowledge, skills, and an understanding of languages, patterns, processes, and systems needed to control and direct devices such as computers and robots (OECD, 2020a). This study examines the integration of computational thinking skills within subject-specific intended curricula in Türkiye and contrasts it with the results from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). As shown in Figure 16, content items aimed at developing computational thinking skills (as main or sub-targets) are distributed across various learning areas within the mapped curricula across OECD countries.

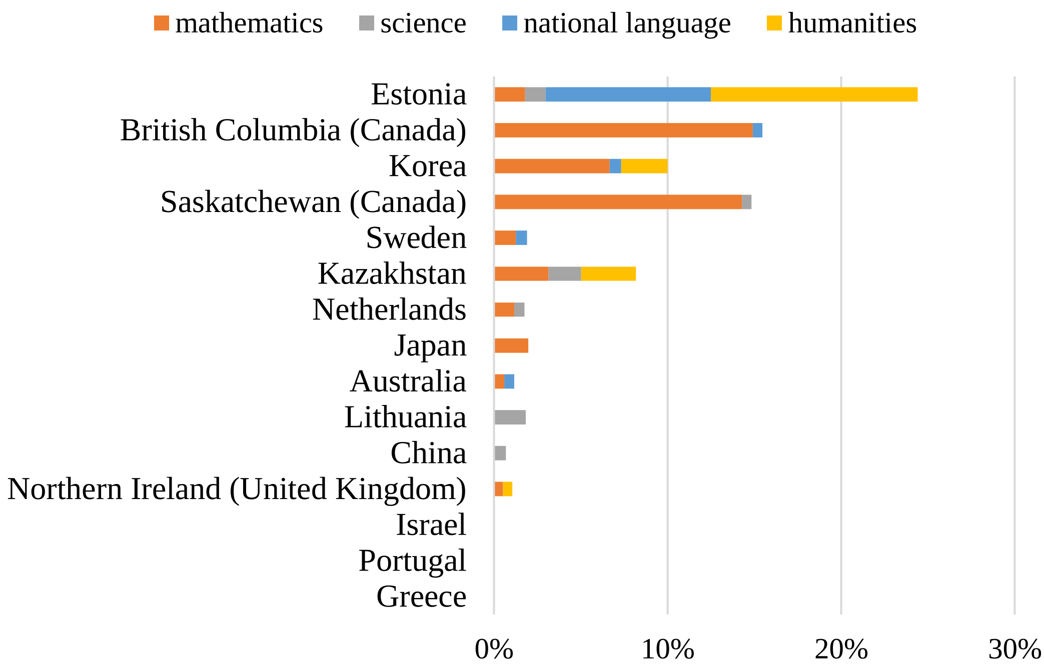


**Figure 16.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Computational Thinking Skills (As Main or Sub Target), By Learning Area*

As illustrated in Figure 16, the integration of computational thinking skills within curricula varies across learning areas in OECD countries. This study reveals that the 5th-8th Grade Mathematics Curriculum (MoNE, 2018) in Türkiye places a strong emphasis on computational thinking skills, and the implementation level among mathematics teachers demonstrates a moderate to high level of focus. The self-reported survey findings also indicate that this focus is primarily on the subdimensions

of computational thinking that are inherently related to mathematics, such as analytical skills, problem-solving, and pattern recognition. However, activities related to programming are notably underrepresented. This suggests that while teachers effectively incorporate problem decomposition, pattern recognition, and abstract modeling into their mathematics instruction, they are less likely to engage students in programming-related tasks, which are also integral to computational thinking. As shown in Figure 16, the strong emphasis on computational thinking skills in the curriculum is consistent with trends observed in countries such as British Columbia (Canada), Saskatchewan (Canada), Korea, Estonia, and Japan, which also demonstrate significant integration of computational thinking within their mathematics curricula. In contrast, countries such as Israel, Portugal, China, and Greece place no emphasis on these skills within mathematics education. Research indicates that using visual programming languages such as Scratch positively impacts students' computational thinking skills by enhancing their understanding of abstract mathematical concepts through hands-on activities (Atman Uslu, Mumcu, & Eğin, 2018; Oluk, Korkmaz, & Oluk, 2018).

Interdisciplinary approaches that link computational thinking with other STEM areas promote deeper conceptual understanding by contextualizing abstract mathematical concepts within real-world applications. This cross-curricular integration supports students in developing algorithmic thinking, pattern recognition, and problem decomposition skills, which are essential for computational thinking (OECD, 2024; Weintrop et al., 2016). Incorporating computational thinking into mathematics education not only enhances cognitive skills of students but also enriches teachers' teaching practices by integrating technology-supported teaching tools into lessons (Beyazhançer, 2024).

This integration fosters a dynamic learning environment, making mathematical concepts more accessible and engaging for students. Additionally, the interdisciplinary relevance of computational thinking supports broader STEM education goals, equipping students with systematic problem-solving skills applicable across science, technology, and engineering domains (Weintrop et al., 2016).

As illustrated in Figure 16, the integration of computational thinking skills within national language curricula across OECD countries shows minimal emphasis.

Regarding this, the findings of this study reveal that the learning objectives of the 5th-8th Grade Turkish (National Language) Curriculum place a low emphasis on computational thinking skills, and the implementation level among Turkish teachers demonstrates a similarly low level of focus. Among OECD countries, only Estonia places notable emphasis on computational thinking within its national language curriculum, while other countries show limited to no emphasis on this skill area. Despite this, computational thinking offers substantial potential for enhancing language skills development (Rottenhofer, Sabitzer & Rankin, 2021). Specifically, computational thinking enhances pattern recognition, sequence organization, and problem decomposition, which are critical in language learning (Rottenhofer et al., 2021; Yu, Varela & García, 2024). For instance, pattern recognition aids in identifying grammatical structures, while problem decomposition supports breaking down complex sentences into understandable parts. These skills not only facilitate language acquisition but also develop logical reasoning and critical thinking (Sabitzer, Demarle-Meusel & Jarnig, 2018). Moreover, the connection between algorithmic thinking and language learning is evident in activities that involve following directions, sequencing narratives, and understanding cause-and-effect relationships in texts. This is especially relevant in the context of reading comprehension, where understanding the logical flow of a narrative mirrors the step-by-step process in computational algorithms (Sabitzer et al., 2018). Furthermore, modeling techniques, such as using diagrams to map story structures or grammar rules, provide visual scaffolding that enhances cognitive processing and memory retention (Yu, Soto-Varela & García, 2024).

As seen in Figure 16, the integration of computational thinking skills within science curricula across OECD countries shows minimal emphasis. Correspondingly, this study reveals that the learning objectives of the 5th-8th Grade Science Curriculum (MoNE, 2018) in Türkiye place a moderate emphasis on computational thinking skills, while the implementation practices among science teachers demonstrate a moderate to high level of focus. Among OECD countries, Estonia, Saskatchewan (Canada), Kazakhstan, Lithuania, and China place limited emphasis on computational thinking

within their science curricula, whereas countries like Korea, Japan, Israel, Portugal, and Greece show no emphasis on this skill in their science curricula. Integrating computational thinking into science education enhances students' abilities to engage in problem decomposition, abstraction, and simulation, which are crucial skills for scientific inquiry and reasoning (Sengupta et al., 2013). Research indicates that it also allows students to model complex systems and phenomena, fostering a deeper conceptual understanding of scientific processes and mechanisms (Basu et al., 2016; Sengupta et al., 2013). Furthermore, computational thinking skills, including algorithmic thinking and systems thinking, are essential for understanding dynamic scientific systems (Sengupta et al., 2013). Basu et al. (2016) assert that implementing computational thinking through visual programming environments enhances student engagement by providing intuitive interfaces that reduce cognitive load and enable students to focus on conceptual understanding. In practice, effective implementation of computational thinking in science education involves using simulations, visual programming tools, and problem-based learning approaches. These methods encourage students to iteratively design, test, and refine computational models, fostering a deep understanding of scientific concepts through active exploration and inquiry (Sengupta et al., 2013; Basu et al., 2016). Supporting that, the use of augmented reality, robotics, and computer-free coding enhances motivation, engagement, and retention in science learning, making abstract concepts more tangible and accessible (Arslanhan & Artun, 2021).

As shown in Figure 16, the integration of computational thinking skills within social studies/humanities curricula across OECD countries shows uneven emphasis. In this respect, only Estonia, Korea, and Kazakhstan place notable emphasis on computational thinking within their social studies curricula, whereas other countries exhibit no emphasis on these skills in their humanities curricula. For Türkiye, this study reveals that the learning objectives of the 5th-7th Grade Social Studies Curriculum (MoNE, 2018) place a low emphasis on computational thinking skills, while the implementation practices among social studies teachers demonstrate a moderate level of focus which reveals that the development of computational thinking skills are somehow under the consideration of both curricular intentions and implementation. Research suggests that integrating computational thinking into social studies enhances students' critical thinking, problem-solving, and data analysis skills by linking historical and social patterns with algorithmic thinking and data modeling (Manfra, Hammond, & Coven, 2022). Coding activities, such as creating interactive timelines or simulations of historical events using block-based programming tools, help students develop sequencing, pattern recognition, and algorithmic thinking skills, thereby deepening their understanding of complex societal systems (Ray, Rogers, & Gallup, 2022). This approach also supports students in understanding cause-and-effect relationships within historical and social contexts and thus prepares students as active citizens (Güven & Gülbahar, 2020). Effective implementation practices for integrating computational thinking in social studies include using problem-based learning, data visualization, and digital simulations, which engage students in interactive and experiential learning. Thereby, teachers also foster collaboration by employing team-based projects that require negotiation, decomposition of complex social issues, and abstraction of patterns from historical data (Ray et al., 2022). These methods not only contextualize computational thinking within real-world social issues but also cultivate interdisciplinary connections between social sciences, technology, and data literacy.

Overall, the integration of computational thinking skills within intended curricula across OECD countries shows significant variability. Mathematics consistently exhibits a strong emphasis on computational thinking, particularly in countries like Estonia, Saskatchewan (Canada), and British Columbia (Canada). In contrast, social studies/humanities and national language curricula generally show minimal to no emphasis, with the exception of Estonia, which integrates computational thinking notably within humanities. Science curricula display moderate emphasis in countries such as Estonia, Saskatchewan (Canada), Kazakhstan, Lithuania, and China, while other OECD countries show limited integration. Regarding implementation practices in order to cultivate computational thinking skills, effective strategies include the use of visual programming tools, interdisciplinary approaches, problem-based learning, cross-curricular integration with STEM and humanities. These methods enhance critical thinking, problem-solving, and algorithmic reasoning, contextualizing computational thinking within real-world scenarios for social studies.

#### 5.1.2.5. Financial Literacy in Curricula and Implementation

Financial literacy is defined as the ability to effectively utilize financial knowledge and skills in real-life scenarios that involve financial decisions and challenges. It encompasses an understanding of financial concepts and risks, as well as the ability, motivation, and confidence to apply this knowledge to make informed decisions in diverse financial situations. These decisions range from managing pocket money in childhood, budgeting and purchasing as adults, to complex financial planning such as saving for future expenses, understanding loans and credit payments, and preparing for retirement (OECD, 2020a). This study examines the integration of financial literacy within subject-specific intended curricula in Türkiye and contrasts it with the results from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). As shown in Figure 17, content items aimed at developing financial literacy (as main or sub-targets) are distributed across various learning areas within the mapped curricula across OECD countries.

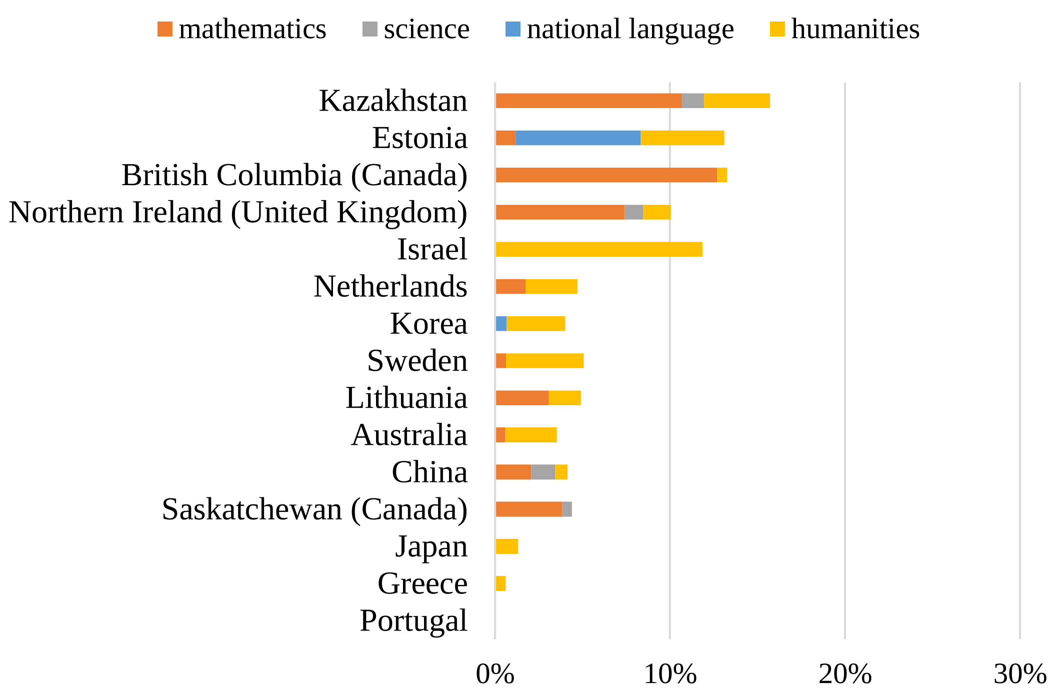


**Figure 17.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Financial Literacy (As Main or Sub Target), By Learning Area*

As shown in Figure 17, the integration of financial literacy into the written curricula of OECD countries is generally limited across all subject areas. Although it is predominantly embedded in mathematics and humanities, the level of emphasis remains low, indicating an underutilization of these subjects' potential to promote financial literacy. This trend is also evident in Türkiye's 5th-8th Grade Mathematics Curriculum (MoNE, 2018), where financial literacy is mainly covered through basic concepts such as problem-solving about money and promoting thriftiness, without incorporating comprehensive financial decision-making scenarios. Mathematics and financial literacy are closely connected, as financial literacy provides students with real-world applications for mathematical skills, helping them make informed financial choices throughout their lives (OECD, 2024). However, studies conducted in Türkiye specifically on mathematics education by Güvenç (2017) reveal that financial literacy is mainly included in social studies and mathematics, but the scope is insufficient to foster financial skills effectively. Tural Sönmez and Topcal (2022) indicate that financial literacy-related questions constitute only 2% to 6% of all questions in middle school mathematics textbooks, mainly appearing in the "Numbers and Operations" learning area with a focus on "Percentages" and "Planning and Managing Finances" as per the PISA content dimensions. These questions are predominantly placed at the second and third levels of PISA's mathematical literacy, emphasizing basic skills rather than advanced financial reasoning (Tural Sönmez & Topcal, 2022). On the other hand, Aydogdu and Tuna (2024) found a significant correlation between financial literacy levels and students' academic success in mathematics and the Turkish language. International research by Zhu (2021) further highlights that the mismatch between objective and subjective financial knowledge significantly impacts financial behaviors among adolescents, emphasizing the need for a strategic and comprehensive integration of financial literacy education to better equip students with financial skills needed in real life.

As shown in Figure 17, the integration of financial literacy into the national language curricula of OECD countries is generally absent, with the exception of Estonia, which shows some emphasis, and Korea, which demonstrates very limited integration. This trend is also evident in Türkiye's 5th-8th Grade Turkish Curriculum, where financial literacy is not addressed, and Turkish teachers do not incorporate it into their teaching practices. There is also limited research on the integration of financial literacy within national language curricula and the teaching methods that could effectively support this integration. Since the main learning areas of language curricula involve literacy in speaking, reading, writing, and visual interpretation, there is a potential to incorporate financial literacy through these modalities. Visual literacy plays a crucial role in language teaching, as it involves skills such as interpreting graphs, tables, and data, which are essential for comprehending financial literacy. Although graphs are generally used to identify trends in numerical sciences, they can also be effectively utilized for systematic organization and enhancing comprehension across various fields. In this context, integrating visual literacy into language education encourages students to extract information not only from traditional texts but also from graphs and tables, thereby enriching their interpretive and analytical skills (Maden & Altunbay, 2016). Such an interdisciplinary strategy fosters a deeper understanding of complex information presented in visual formats and thereby enhances the students' financial literacy. In accordance with that, the case study on financial literacy in the context of mother tongue education supports the idea that integrating financial literacy through practical and contextualized learning experiences such as analyzing advertisements, reading financial news, and discussing investment risks, effectively bridges the gap between financial knowledge and real-world application. This suggests that leveraging visual literacy tools, incorporating financial texts related to financial decision-making, and using contextual financial narratives in language education offer a strategic pathway to fostering financial literacy (Bahar, Büyükdoğan & Şen, 2024). As Sever (2007) indicates, text selection is crucial in shaping students' language development and literary appreciation, particularly in Turkish language education. Choosing relatable and contextually relevant texts enhances students' engagement and learning effectiveness (Sever, 2007). This approach aligns well with the integration of financial literacy into language education, as carefully selected finance-related texts or reading materials can effectively engage students and enhance their financial literacy. Building on these, limited research suggests that there is potential to incorporate financial literacy into Turkish language education; however, this opportunity is largely overlooked in current teaching practices.

As shown in Figure 17, the integration of financial literacy into the science curricula of OECD countries is generally absent, with limited emphasis observed in Kazakhstan, Northern Ireland (UK), China, and Saskatchewan (Canada). Similarly, in Türkiye's 5th-8th Grade Science Curriculum (MoNE, 2018), financial literacy receives minimal attention, and science teachers do not actively incorporate it into their teaching practices. Despite this gap, STEM education may offer promising opportunities for developing financial literacy skills through project-based and problem-based learning. In particular, project-based learning approaches could allow students to engage with real-life scenarios (Gök, Yıldırım, Gök & Yıldırım, 2024) practically with financial concepts such as resource management, budgeting, and financial decision-making. Capraro and Slough (2013) state, project-based learning (PBL) within the context of STEM education provides an integrated approach that connects science, technology, engineering, and mathematics, effectively enhancing problem-solving skills while offering real-world applications relevant to financial literacy. For example, Korkmaz and Kaptan (2001) highlight that project-based learning in science education enhances students' creative thinking and problem-solving abilities while providing practical experiences in budgeting and resource management. Additionally, exploring the economic impacts of scientific topics, such as conducting cost-benefit analyses in environmental sustainability, further supports the integration of financial literacy within science education by linking financial decision-making with scientific inquiry.

As shown in Figure 17, the integration of financial literacy into humanities curricula varies across OECD countries. Although financial literacy is predominantly embedded within the humanities, the level of emphasis remains limited, indicating an underutilization of the subject's potential to enhance financial literacy. This trend is also evident in Türkiye's 5th-7th Grade Social Studies Curriculum, which demonstrates minimal emphasis on financial literacy. Regarding implementation, the focus among social studies teachers in Türkiye is at a low level, reflecting a gap between curriculum intentions and teaching practices. Research indicates that while financial literacy is included in the Social Studies curriculum to develop effective citizens with knowledge, skills, and values, its integration remains superficial (Ünlüer, 2020). The curriculum mentions financial literacy under the "Production, Distribution, and Consumption" learning area, but the emphasis is insufficient to significantly impact students' financial literacy levels. Teacher perspectives further reveal that although they are aware of financial literacy's importance, they lack the knowledge of effective activities to enhance this skill, leading to minimal application in classrooms (Seyhan, 2020). Globally, policies and programs for youth financial literacy education highlight the importance of introducing foundational financial concepts early in the educational journey. Studies show that early integration correlates with better financial behaviors and decision-making in adulthood (Kasman et al., 2018).

In contrast, Türkiye's approach lacks comprehensive implementation strategies. Despite the inclusion of financial literacy in the 5th-7th Grade Social Studies curriculum, teachers report challenges in translating this into effective teaching practices. They often cite a lack of resources, insufficient training, and a limited understanding of how to integrate financial literacy activities into their lessons. As a result, the curriculum's goals are not fully achieved, and students do not develop the necessary financial competencies (Seyhan, 2020).

To sum up, the integration of financial literacy within intended curricula across OECD countries demonstrates significant variability. Financial literacy is predominantly embedded in mathematics and humanities but with low emphasis, underutilizing these subjects' potential to promote financial literacy. On the other hand, national language and science curricula generally show minimal to no emphasis, with a few countries like Estonia and Korea showing limited integration. In contrast, only humanities curricula demonstrate moderate emphasis, targeting the development of financial literacy within content items. Similarly, this trend is also observed in the findings of this study's curriculum analysis. There are opportunities for teachers to enhance the development of financial literacy using certain teaching methods or strategies. Effective implementation practices include integrating financial literacy through real-life scenarios, interdisciplinary approaches, and project-based learning, particularly in STEM and humanities contexts. These methods enhance critical thinking, problem-solving, and financial decision-making skills, contextualizing financial literacy within practical experiences.

### 5.1.2.6. Entrepreneurship in Curricula and Implementation

Entrepreneurship is characterized as the capability to create value by assessing situations, organizing resources, and identifying or developing opportunities. This value can take the form of a product, service, idea, or a solution that addresses a problem or fulfills a need (OECD, 2020a). Based on this definition, this study examines how Entrepreneurship skills are incorporated into subject-specific intended curricula in Türkiye and compares these findings with data from the OECD's Curriculum Content Mapping (CCM) exercise (OECD, 2024). As illustrated in Figure 18, content items aimed at developing Entrepreneurship skills (as main or sub-targets) are distributed across various learning areas within the mapped curricula across OECD countries.

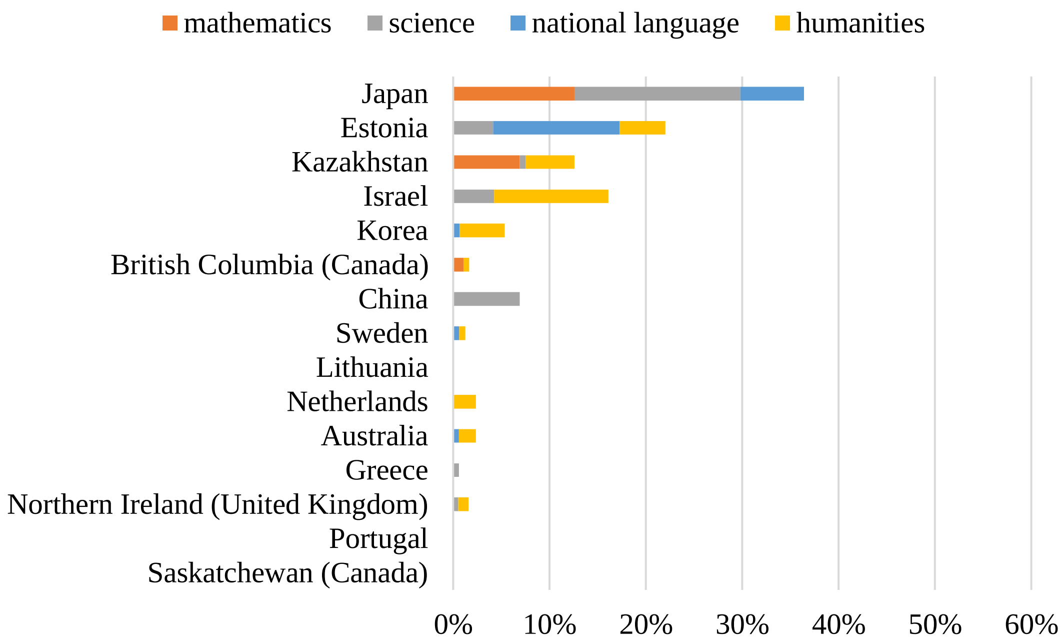


**Figure 18.** *Distribution of Content Items in the Mapped Curricula of OECD Countries Targeting Entrepreneurship (As Main or Sub Target), By Learning Area*

As illustrated in Figure 18, the integration of entrepreneurship within curricula across OECD countries varies unevenly by learning area. Science and humanities receive the most attention, whereas mathematics generally shows no to limited emphasis, particularly in countries like Estonia, Israel, Korea, China, and Sweden. This trend is also observed in Türkiye's 5th-8th Grade Mathematics Curriculum (MoNE, 2018), where entrepreneurship is notably absent in the learning objectives. Regarding that, the implementation level among mathematics teachers in Türkiye remains low which reflects a gap both in curriculum goals and classroom practices. However, research highlights effective strategies to integrate entrepreneurship into mathematics education. One effective approach is using gamification, which enhances students' motivation and entrepreneurial skills by incorporating game elements into learning activities, thus fostering creativity, decision-making, and problem-solving abilities (Çin et al., 2023). Another method is the use of problem-based learning (PBL), where students engage in real-world problem scenarios that require entrepreneurial thinking and mathematical reasoning, promoting initiative-taking and strategic thinking (Palmér & Johansson, 2018). Research indicates that STEM-based approaches effectively enhance entrepreneurial skills by fostering creativity, leadership, problem-solving, and risk-taking through interdisciplinary applications (Meral & Yalçın, 2022) In accordance with that the combining mathematical tasks with entrepreneurial projects, such as designing small-scale business plans or budgeting simulations, enhances students' financial literacy and entrepreneurial mindset while solidifying mathematical concepts (Palmér & Johansson, 2018). These approaches demonstrate that when mathematics lessons are designed with entrepreneurial competencies in mind, they can significantly enhance students' entrepreneurial skills without compromising mathematical learning.

As Figure 18 illustrates, the integration of entrepreneurship within national language curricula across OECD countries varies unevenly. It receives the most attention in countries like Japan and Estonia, whereas in Korea, Sweden, and Australia, it receives minimal attention. This trend is also observed in Türkiye's 5th-8th Grade Turkish Curriculum, where entrepreneurship places limited emphasis on the learning objectives. In accordance with this, the implementation level among Turkish teachers also remains at a low level of focus, which reflects a gap in both curriculum intentions and teaching. Besides that, research on the integration of entrepreneurship in national language curricula, particularly in Turkish language education, is also scarce. There is a need for research to clarify how language skills education can leverage essential skills for entrepreneurship, such as persuasive communication, debates, effective presentation, and strategic narrative-building, which are crucial for business plan design and entrepreneurial success (Johansen & Schanke, 2013). Turkish language education inherently supports the development of effective communication skills through activities like storytelling, debate, and public speaking. These activities align well with entrepreneurial skills such as opportunity recognition, risk-taking, and strategic thinking. For instance, Tarakcı, Bilgen, and Karagöl (2021) emphasize that speaking and writing skills, which are core components of narrative abilities, are essential for effective communication and persuasion in social and professional contexts. Similarly, Demirkol and Aytaş (2023) highlight those speaking skills foster social interaction, strategic thinking, and problem-solving, which could be considered also indispensable for entrepreneurial skills. Aktaş and Bayram (2021) further indicate that activity-based teaching strategies in Turkish classes significantly enhance students' narrative skills, which are also considered crucial for strategic communication and entrepreneurial storytelling. Therefore, integrating entrepreneurship education into language curricula could be achieved by incorporating business communication exercises, persuasive writing tasks, and real-world scenarios such as pitching business ideas or writing project proposals. This approach not only strengthens language proficiency but also may cultivate an entrepreneurial mindset. Currently, there is a lack of research specifically addressing this potential in Turkish language education. Future studies should explore interdisciplinary approaches that combine language learning with entrepreneurial skill development, thereby bridging the existing gap in both curriculum design and implementation.

As illustrated in Figure 18, the integration of entrepreneurship within science curricula varies unevenly across OECD countries. Countries like Japan, Estonia, China, Israel, Kazakhstan, and Greece show minimal to low emphasis. This trend is also observed in Türkiye's 5th-8th Grade Science Curriculum (MoNE, 2018), where entrepreneurship receives low emphasis in the learning objectives. Correspondingly, the implementation level among science teachers in Türkiye shows a moderate level of focus, which reflects an attempt to foster entrepreneurship in curriculum intentions and teaching practices. To enhance the integration of entrepreneurship in science education, various strategies can be utilized in teaching practices. As an effective approach, STEM-based entrepreneurship education can be used, which encourages students to develop entrepreneurial skills through real-world problem-solving, collaborative projects, and interdisciplinary learning (Meral & Yalçın, 2022). Research indicates that the incorporation of business entrepreneurship practices, such as design thinking, lean startup methods, and fast pitch competitions, also enhances students' entrepreneurial mindset by linking scientific concepts to business development and innovation (Huang et al., 2018). Moreover, problem-based and project-based learning approaches, which involve real-life scenarios and entrepreneurial challenges, effectively cultivate creativity, risk-taking, and strategic thinking among students (Deveci & Çepni, 2017). Kaya et al. (2018) asserts that the integration of economic and entrepreneurial aspects into the nature of science (NoS) framework helps students understand the societal impact of science and fosters entrepreneurial thinking by linking scientific inquiry with economic decision-making (Kaya et al., 2018). However, to achieve effective implementation, science teachers need comprehensive professional development programs, as studies indicate that teachers in Türkiye feel moderately prepared but lack specific pedagogical knowledge on how to integrate entrepreneurship into science courses (Deveci, 2017). By adopting these interdisciplinary and innovative teaching methods, science curricula can better support the development of entrepreneurial competencies alongside scientific literacy.

As illustrated in Figure 18, the integration of entrepreneurship within social studies curricula varies across OECD countries. Countries like Estonia, Kazakhstan, Israel, Korea, Australia, and Sweden show minimal to moderate emphasis. This minimal emphasis is also observed in Türkiye's 5th-7th Grade Social Studies Curriculum, where entrepreneurship receives minimal emphasis in the learning objectives. However, the implementation level among social studies teachers in Türkiye shows a high level of focus, reflecting a proactive approach to bridging the gap between curriculum goals and classroom practices. Eryılmaz, Dilek, and Deveci (2023) indicate that active learning methods, such as group discussions, role-playing, and collaborative projects, enhance entrepreneurial skills in social studies by promoting creativity, initiative-taking, and strategic thinking. These methods create an interactive learning environment for social studies, encouraging students to explore real-world scenarios and develop innovative solutions to societal problems (Eryılmaz et al., 2023). The study by Bayram and Deveci (2022) highlights that Problem-Based Learning (PBL) is also effective in cultivating entrepreneurial skills. Since it involves students in real-life problem scenarios that require creative thinking, risk assessment, and strategic planning, PBL enhances students' ability to identify opportunities and take calculated risks, which are key competencies for entrepreneurship (Bayram & Deveci, 2022). International research in Scandinavian countries suggests using the "pupil enterprise method," which enhances entrepreneurship education by involving students in real entrepreneurial projects, such as designing and running small-scale businesses. This hands-on approach fosters practical business skills, leadership, and innovation, bridging the gap between theoretical knowledge and real-world application (Johansen & Schanke, 2013). On the other hand, e-learning is gaining attention for enhancing the integration of entrepreneurship in social studies education. It provides flexible and accessible learning experiences, allowing students to engage with entrepreneurship concepts through virtual enterprises, simulations, and interactive case studies (Kefis & Xanthopoulou, 2015).

Overall, the integration of entrepreneurship within intended curricula across OECD countries exhibits variability. Entrepreneurship skills are most commonly embedded in science and humanities but with low emphasis, underutilizing these subjects' potential to foster entrepreneurial competencies. In contrast, mathematics and national language curricula generally show minimal to no emphasis, with moderate integration observed only in countries like Estonia and Japan. Correspondingly, a similar trend is observed in the curriculum analysis findings of this study as well. To foster the development of entrepreneurship skills, research suggests using problem-based learning (PBL), gamification, and interdisciplinary STEM approaches, which enhance creativity, critical thinking, and strategic decision-making. For Türkiye, developing entrepreneurship skills requires sufficient emphasis across all subjects to ensure comprehensive integration. Increasing teachers' awareness and providing them with effective training programs are crucial for successful implementation.

### 5.1.3. Ecosystem Approach to Understand Factors Influencing the Development of Compound Competencies

To comprehensively address the third research question, which examines the factors that promote or hinder the development of compound competencies in practice, this study adopts an ecosystem approach to analyze the systemic influences on competence-based education (CBE). This approach has been chosen as it provides a structured framework for understanding competency development and offers a comprehensive perspective on the interconnected influences within educational settings. Based on Bronfenbrenner's ecological model of the basic understanding of human development within nested systems, the OECD's E2030 Ecosystem Approach extends it to the field of education, emphasizing the complex interactions among students, teachers, families, policymakers, and institutions (OECD, 2020b). By integrating this adapted framework of OECD, this section discusses the findings of this study in relation to the key systemic factors that promote or hinder the competency development in middle school education. The analysis examines how the microsystem, mesosystem, exosystem, macrosystem, and chronosystem collectively influence the implementation of competence-based education by providing insights into the broader structural and contextual elements influencing competency development.

#### 5.1.3.1. Microsystem Factors Influencing the Development of Compound Competencies

As the microsystem encompasses direct interactions between students, teachers, peers, and family, it has a crucial role in influencing also the development of compound competencies (Bronfenbrenner, 1989; Härkönen, 2007; OECD, 2020b). However, various factors within this system either promote or hinder the integration of competence-oriented education in practice. The in-depth interviews finding of this study revealed that while student profiles such as their interests, motivation, and developmental appropriateness act as promoting factors, parental expectations and their exam-oriented priorities serve as hindering factors in the development of compound competencies (Bronfenbrenner, 1989; Härkönen, 2007; OECD, 2020b). Based on the learner-centered education framework discussed by Schweisfurth (2013), students' interests and motivation are essential factors in influencing the development of skills, attitudes and behaviors. When students are provided with autonomy and learning environments tailored to their interests, they engage more deeply in skill development and interdisciplinary learning. Schweisfurth (2013) argues that addressing learners' needs, fostering intrinsic motivation, and encouraging active participation facilitate skill development. In accordance with that, the findings of this study indicate, where younger students, particularly those in 5th and 6th grades, demonstrated higher curiosity and engagement in competency-based learning activities, as these are primarily delivered through hands-on approaches. Their cognitive and social-emotional development at this stage enables more effective participation in interactive and experiential learning methods, making them more receptive to skill-based education. However, as a result of this study, when students progress into higher grades (7th and 8th grades), their engagement levels tend to decline, primarily due to exam pressures and external academic demands. As Schweisfurth (2013) notes, the shift from a learner-centered approach to an exam-oriented system often leads students to prioritize memorization over skill development, thereby limiting opportunities for competency acquisition.

In addition to that, in-depth interview findings identified parental expectations as a crucial factor within the microsystem layer. The exam-focused structure of the Turkish education system restricts opportunities for student-centered, skill-based instruction, as teachers often feel constrained by rigid curriculum requirements and parental expectations that emphasize academic performance over holistic competence development (Eranıl & Demirkasımoğlu, 2021). Studies indicate that exams, particularly standardized tests, are a major source of stress and anxiety for students (Demir & Yılmaz, 2019; Karadeniz, Er, & Tangülü, 201;). High-stakes testing environments further intensify this pressure, underscoring the need for strategies that reduce anxiety and support student well-being (Bragg, 2024; Wyn, Turnbull, & Grimshaw, 2014). Exam-related concerns extend beyond students; parents also experience significant anxiety and hold high expectations regarding exam outcomes. These concerns are also pointed out in this study, as parents perceive standardized exams as crucial determinants of their children's future, increasing pressure on students and affecting family dynamics (Demir & Yılmaz, 2019). This finding is consistent with broader research on student motivation, which suggests that exam or test-driven education create barriers to fostering think critically and interdisciplinary skill development (Amrein & Berliner, 2003; Schweisfurth, 2013).

#### 5.1.3.2. Mesosystem Factors Influencing the Development of Compound Competencies

The mesosystem encompasses the interactions between teachers, school leaders, families, and the broader community within an educational setting. Within this system, collaboration among teachers, supportive leadership, and strong home-school connections directly influence students' learning experiences (Bronfenbrenner, 1989; Härkönen, 2007; OECD, 2020b). In accordance with that, the findings from this study concluded that factors such as teachers' capacity, supportive mechanisms within schools, the role of instructional strategies, and extra-curricular activities significantly influence how compound competencies are developed in practice. However, challenges such as the lack of departmental targeting and insufficient collaboration among teachers hinder the effective integration compound competencies and creating barriers for fostering competence-based education approaches.

This study revealed that one of the key promoting factors in the mesosystem is teachers’ competency, including their awareness of compound competencies and their classroom management skills, which are essential for creating an active learning environment to foster skill development and competency acquisition. In line with this, research suggests that teachers who possess a strong understanding of skills, attitudes, values, and competencies, along with well-developed pedagogical strategies, are more effective in fostering student engagement and skill development in their practice (Schweisfurth, 2013).However, findings from this study indicate that while many teachers have some awareness of compound competencies, they lack a deep understanding and sufficient training, leading to inconsistencies in their implementation across subject areas (Güneş Koç & Kayacan, 2018). This study also indicated that supportive mechanisms, such as school characteristics and the presence of professional learning communities, are important factors in promoting or hindering development of compound competencies. In this study, teachers indicated that the school in which they work, run by a non-profit organization, fosters visionary and innovative education and supports their efforts to enhance students' success in the future. In line with that, schools that promote interdisciplinary collaboration both within departments and through external partnerships while offering professional development opportunities cultivate an environment where teachers can effectively integrate competencies into their instruction and enhance student learning experiences (OECD, 2020b; Polatcan & Cansoy, 2018). In accordance with that, research indicates that schools with strong leadership, positive school climate and a collaborative culture tend to foster higher levels of student achievement and engagement, as teachers are better equipped with the necessary skills and strategies to implement competency-based approaches within their teaching (Polatcan & Cansoy, 2018; Üstün, Özdemir, Cansız, & Cansız, 2020). Based on in-depth interviews of this study, teachers pointed out that a positive school climate not only enhances their own motivation to improve their teaching practices but also fosters a more engaging and supportive learning environment, ultimately boosting student motivation and active participation in competency-oriented approach.

Instructional strategies within the mesosystem layer also play a critical role in the implementation of competency-based approach. In this respect, inquiry-based learning, project-based investigations, problem-based learning, design thinking activities, and STEM collaboration activities significantly contribute to meaningful competency development by enhancing interdisciplinary learning and enabling students to engage with real-world challenges (Bybee, 2010; Deveci & Çepni, 2017; Gaudelli, 2016; Huang et al., 2018; Kaya et al., 2018; Meral & Yalçın, 2022; Merryfield, 1997; Schweisfurth, 2013; Whitelegg et al., 2013; Zhao, 2010). As it is also outlined in the findings of this study, interdisciplinary approach fosters connections between various disciplines, creating opportunities for the development of compound competencies without contributing to curriculum overload (Aytar & Özsevgeç, 2019; OECD, 2020c). By embedding competencies across subject areas rather than introducing additional content, interdisciplinary approaches allow students to engage in deeper learning experiences while maintaining a balanced curriculum (Weintrop et al., 2016). The OECD (2020c) highlights that curriculum overload can be mitigated by structuring learning around cross-curricular competencies, ensuring that students develop essential skills without unnecessary content expansion.

As emphasized in this study, instructional strategies and techniques, including hands-on approaches and e-learning platforms such as virtual simulations and case studies, foster compound competencies by creating interactive and technology-enhanced learning environments (Johansen & Schanke, 2013; Kefis & Xanthopoulou, 2015). However, the effective implementation of these strategies depends largely on teachers' perceptions of innovative teaching, which influences student autonomy, classroom interaction, and assessment methods (Stipek et al., 2001). Research suggests that teachers who adopt innovative, active teaching methods, such as student-centered teaching and problem-based learning, create more engaging and effective learning environments. These approaches, which integrate new ideas, tools, and content, foster active learning and enhance students' creative potential (Ferrari, Cachia, & Punie, 2009; Zhu, Wang, Cai, & Engels, 2013).

This study concluded that extracurricular activities, including co-curricular programs, student clubs, and outside-school experiences, play a crucial role within the mesosystem layer in promoting competency-based learning. However, findings from this study indicate that while teachers recognize the value of extracurricular activities, their integration of compound competencies within these activities often occurs unintentionally rather than through deliberate instructional design. Instead of explicitly targeting competencies, many teachers facilitate extracurricular programs primarily for engagement and enrichment, with competency development emerging as an unintentional outcome of these experiences. For example, while career programs, mentorship initiatives, and business-oriented student projects provide opportunities for students to develop entrepreneurship skills, these activities are not always strategically planned with competency-based learning objectives in mind. Similarly, participation in international collaborations, cultural exchange projects, and Model United Nations (MUN) activities fosters global competency, yet this development occurs as a byproduct of engagement rather than through structured pedagogical intent. This unstructured approach reflects a gap in teacher competency and awareness regarding how to intentionally embed and assess compound competencies in educational settings. This study reveals that without explicit instructional strategies, competency development may remain fragmented and inconsistent across educational contexts. Studies highlight that schools with well-structured extracurricular programs create environments where students can explore new interests, develop creativity, and build resilience, ultimately enhancing academic achievement and career readiness (Covay & Carbonaro, 2010; Marsh & Kleitman, 2003). Such activities facilitate the integration of skills across disciplines, bridging the gap between classroom learning and real-world applications. Thus, while extracurricular activities serve as a bridge between theoretical knowledge and practical skills, their potential to systematically cultivate key competencies is often underutilized due to limited strategic planning within teaching practices. This study highlights the need for professional development programs to enhance teachers' capacity to intentionally design curricular, co-curricular and extra-curricular activities that deliberately foster compound competencies, rather than relying on emergent learning experiences.

#### 5.1.3.3. Exosystem Factors Influencing the Development of Compound Competencies

The exosystem encompasses external structures that indirectly influence the learning environment, including education policies, assessment frameworks, curriculum guidelines, and institutional resources. Based on in-depth interviews, the structure and design of the curriculum emerged as a critical factor in fostering or hindering the development of compound competencies. Findings from this study indicate that while the curriculum in Türkiye includes references to competency development, its sequencing and interdisciplinary alignment remain insufficient at some parts, creating barriers to skill acquisition. Within interviews teachers reported that a lack of coherence between units and subject areas negatively impacts competency development in practice. For instance, in science education, students are often required to apply mathematical concepts to understand specific scientific topics. However, due to curriculum misalignment, certain mathematical concepts are introduced in later grades, preventing students from effectively engaging with science topics that require prior knowledge of these mathematical foundations. This mismatch in subject progression hinders interdisciplinary learning and delays the development of key skills that should be progressively built across multiple disciplines.

Another critical issue highlighted by teachers is curriculum overload, which creates significant pressure to cover content within limited instructional time due to the pervasive influence of an exam-oriented focus. Teachers reported that they feel compelled rush to complete learning objectives on time because all forms of assessments, including national exams, school-based assessments, and frequent mock tests, hold significant weight in students' academic trajectories. To avoid falling behind in exam preparation, teachers often prioritize content delivery over in-depth, competency-based learning, further limiting opportunities for skill development and hands-on engagement which requires additional time in fact. The subject-specific curriculum, with its numerous learning objectives, combined with the strict weekly time schedules set by MoNE, forces teachers to prioritize content delivery over hands-on, skill-based activities. This approach directly contradicts the principles of competence-based education, where the primary focus is not on the amount of time spent on a subject but on ensuring that students learn at their own pace and, most importantly, apply what they have learned in meaningful ways. In Türkiye, this misalignment creates significant barriers to fostering competency development.

As Marope et al. (2017) highlight, competence-based curricula prioritize learner-centered environments that encourage students to actively acquire and apply knowledge in meaningful contexts. However, the rigid structure of the Turkish curriculum, which emphasizes content coverage over skill mastery, contradicts this approach. Instead of allowing students to progress based on competence acquisition, the current system sequences subjects by grade level, often creating gaps in interdisciplinary learning. For example, as revealed in this study, students in science courses frequently encounter topics that require prior mathematical knowledge that has not yet been introduced in their mathematics curriculum. This lack of sequence and integration undermines the trans-disciplinary connections that are essential for comprehensive competency development.

At the exosystem layer, exam-oriented education practices influence the teachers' instructional approaches, as assessment frameworks and high-stakes testing significantly influence teaching strategies and student learning experiences (Oliveras-Ortiz, 2015). Findings from this study reveal that teachers, particularly in Grade 8, feel compelled to adjust their instructional methods to meet the demands of exam-driven education. Teachers emphasized that the presence of a high-stakes exam in Grade 8 disrupts the continuity of a holistic middle school education, shifting the focus of instruction as early as Grade 7. They reported that exam preparation activities, such as frequent mock exams, assessments, and quizzes, consume a substantial portion of instructional time, leaving little room for hands-on activities, interdisciplinary learning, or skill development approaches (Oliveras-Ortiz, 2015; von der Embse, 2017).) This shift diverts attention away from broader skill development and competency-based learning, reinforcing a test-driven approach that limits interdisciplinary connections and deeper engagement with learning (von der Embse, 2017). As a result, students engage in repetitive practice, which limits their ability to develop higher-order thinking skills and apply their knowledge in real-world contexts.

Teacher shortages place additional responsibilities on existing staff, increasing their workload and limiting their ability to implement competency-based education, within the exosystem layer. Beyond teaching, teachers are may tasked with administrative duties, supervision, and school event participation, consuming time that could be dedicated to lesson planning, professional development, and innovative instructional strategies. Findings from this study indicate that teachers struggle to balance these responsibilities, often prioritizing content coverage over skill-building activities due to time constraints. Additionally, demanding teaching schedules, with long hours and back-to-back classes, further reduce opportunities for student-centered instruction. When overwhelmed by excessive workload pressures, teachers are less likely to adopt interactive, inquiry-based methods, ultimately hindering the development of compound competencies. Without systemic support, such as workload adjustments and professional development opportunities, the effective implementation of competence-based education remains significantly constrained.

Teachers' access to information sources influences their capacity to integrate a competence-based approach into their practice, within the exosystem layer. Findings from this study indicate that teachers acquire knowledge about compound competencies through various channels, including in-service training programs, webinars (both national and international), engagement with scientific research, and participation in graduate programs. Additionally, teachers also indicated the utilizing social media as an informal professional development tool, following educational discussions, online communities, and expert opinions to stay updated on emerging pedagogical trends. While these self-directed learning efforts contribute to professional growth, they largely depend on individual initiative rather than a structured, system-wide approach. The lack of systematic professional development programs means that knowledge acquisition remains inconsistent, with some teachers gaining deeper insights while others lack sufficient exposure about educational trends. Without a coordinated effort to provide comprehensive and standardized training, the implementation of compound competencies risks being fragmented, further reinforcing disparities in instructional practices and limiting the widespread adoption of competency-based approaches in education.

Within the exosystem layer, instructional materials play also crucial factors in shaping competency development. Findings from this study indicate that teachers find MoNE-provided textbooks inadequate for fostering compound competencies, as they primarily focus on content delivery rather than interdisciplinary learning, and hands-on applications (Çarkıt, 2019; Kuru, & Şimşek, 2020). Teachers reported that to address these gaps, they frequently rely on supplementary resources, including alternative textbooks, digital tools, and project-based materials, to better support students' diverse competencies. In particular, the integration of Web 2.0 tools has emerged as an essential strategy for enhancing interactive and student-centered learning, yet access to these resources and relevant training remains inconsistent (Ramaila & Molwele, 2022). In addition, teachers highlighted the benefits of alternative school programs such as Eco-Schools (Taşar, 2020), Global Schools Program (Global Schools, 2022), and Understanding by Design (UbD) (Dari, Hidayat, & Wulandari, 2024), which provide structured frameworks for competency development while simultaneously supporting teachers' professional growth. These findings underscore the need for more comprehensive and skill-oriented instructional materials that align with the principles of competence-based education, ensuring both students and teachers are equipped for meaningful competency development.

#### 5.1.3.4. Macrosystem Factors Influencing the Development of Compound Competencies

Since the education system operates as a multi-layered structure, understanding the development of compound competencies requires insights from multiple perspectives. In this study, data were gathered from both written curriculum documents and teachers' perspectives, offering valuable insights into how these competencies are integrated into educational practice. As key actors within this structure, teachers provide critical yet inherently limited insights into macrosystem-level factors, as their experiences primarily reflect challenges in curriculum implementation rather than broader policy-making and systemic planning. A comprehensive understanding of these challenges necessitates input from various stakeholders, including school leaders, NGOs, and national education experts etc, whoever influences policies, designing curricula, and ensuring the systematic integration of competencies at the national and institutional levels. Research suggests that aligning educational policies with classroom realities requires collaboration between curriculum designers, policymakers, and practitioners to ensure that competency frameworks are not only well-defined but also effectively implemented (Hamsi İmrol et al.2021).

The findings of this study highlight several systemic challenges that influence the development of compound competencies in middle school education. Despite the identification of key skills in curriculum documents, it is revealed that there is no shared vision or detailed planning regarding their integration into learning objectives, leading to limited embedding of compound competencies in the curriculum and inconsistent implementation in classroom practices. Research suggests that well-structured curriculum frameworks, aligned with national education policies, are crucial for fostering 21st-century competencies, yet frequent modifications and inconsistencies create uncertainty among teachers and also limiting their ability to implement competency-based approach effectively (Aykaç, 2023). Teacher interviews also revealed that frequent and sudden policy changes in national level, often occurring mid-academic year, disrupt instructional planning and hinder the systematic integration of these competencies. Research highlights that frequent curriculum changes and insufficient teacher training reduce the effectiveness of implementation, preventing teachers from applying new frameworks efficiently (Tekalmaz, 2019) To create a sustainable model for embedding compound competencies into education, it is crucial to establish a shared vision among stakeholders at all levels of the system. This includes ensuring clear learning objectives in curriculum design, providing continuous teacher training, and developing adaptive policies that allow for structured and flexible implementation. By fostering collaboration across different audiences, from educators to policymakers, a more cohesive and effective framework for competency development can be achieved, ultimately supporting students in acquiring the skills necessary to navigate the complex demands of the future.

#### 5.1.3.5. Chronosystem Factors Influencing the Development of Compound Competencies

The chronosystem, as defined by Bronfenbrenner and Morris (2006), refers to the evolution of systems over time, highlighting how long-term changes in policies, societal structures, and institutional practices shape educational development. In the context of curriculum reform, the OECD's curriculum redesign approach emphasizes the importance of adaptive, future-focused education systems that evolve in response to changing economic, technological, and social demands (OECD, 2020b). Therefore, this perspective aligns with the global shift in education toward competency-based approaches, moving away from strictly subject-specific curricula to models that emphasize the development of transferable skills and holistic competencies. Across the world, education systems are increasingly redesigning curricula to prioritize competency development, ensuring that learning remains dynamic, relevant, and responsive to the future workforce and societal needs. In this context, this study revealed how this global shift is reflected in Türkiye's curriculum policies and implementation, identifying both the challenges encountered in practice and the implications of transitioning toward a competency-based educational framework. One of the most influential chronosystem factors in competency development is the impact of policy changes over time. In Türkiye, frequent and abrupt shifts in education policies, particularly those implemented without sufficient long-term planning or stakeholder involvement, create disruptions in curriculum implementation (Eranıl & Demirkasımoğlu, 2021).

The OECD, in its thematic reports from the E2030 project (2020b) and the curriculum (re)design series, emphasizes that curricula should not only respond to current needs but also anticipate future challenges, necessitating policy stability and forward-thinking approaches (OECD, 2020b). However, in many cases, policy instability leads to fragmented reforms by hindering educational continuity and long-term competency development (Hamsi İmrol et al., 2021). In the context of developing compound competencies and applying competency-based education, Marope et al. (2017) argue that future curricula should prioritize holistic, flexible, and transferable learning models, enabling students to adapt to lifelong learning and evolving professional landscapes. However, achieving this vision requires systemic policy coherence to ensure that competency-based approaches are effectively integrated and sustained within all interconnect system layers. Addressing these challenges requires a strategic, future-oriented policy framework that emphasizes continuity, stakeholder collaboration, and adaptability, ensuring that educational systems remain resilient and responsive to the evolving needs of learners and society. The findings of this study shed light on how these challenges are reflected in the Turkish education system, highlighting the gaps in policy implementation, the impact of frequent curriculum changes, and the obstacles to embedding competency-based approaches effectively, further highlighting the need for practical alignment. By examining these dynamics, this research provides valuable insights into the implications of transitioning toward a future-oriented, competency-based educational framework.

## 5.2. Implications for Theory and Practice

The findings of this study revealed critical insights into the alignment and gaps between intended and implemented curricula regarding the development of compound competencies in Türkiye's middle school education. It also provided a comparative analysis of middle school subject-specific intended curricula in relation to global standards, particularly the OECD Curriculum Content Mapping (CCM) exercise. Although Türkiye did not participate in the OECD Curriculum Content Mapping exercise, this study adopted a not identical but parallel methodology to assess the extent to which core subject curricula (Turkish, Mathematics, Science, and Social Studies) promote future-oriented competencies. Thereby, both approaches offered structured insights about intended curriculum, contributing to curriculum design policies (Cummings, 1999). By systematically evaluating how compound competencies, which encompass knowledge, skills, attitudes, and values, are integrated within middle school curricula, the study highlighted alignment gaps, implementation challenges, and areas for improvement in competency-based education. These findings have significant implications for both educational practice and future curriculum design. In terms of educational practice, the study underscores the necessity for enhancing teachers’ pedagogical approaches, increasing institutional support, and refining assessment methodologies to effectively integrate compound competencies into daily instruction. At the curricular level, the results highlight the importance of dynamic, interdisciplinary, and flexible curriculum structures that align with the evolving demands of 21st-century education. Addressing these challenges requires a systems approach, where all layers of the educational ecosystem collaborate to develop a future-oriented education system. In line with the OECD Education 2030 System Approach, the following sections explore these implications in greater depth.

Aligning with the OECD Education 2030 Project and current educational trends, this study suggests that future curricula in Türkiye should transition toward a competency-based, interdisciplinary, and adaptive learning framework. Given the ongoing efforts to enhance competency development and the recent curriculum reform initiatives in Türkiye, the insights gained from this study are expected to provide valuable contributions to these developments (Board of Education, 2024). In this respect, the findings reveal that, despite some degree of emphasis on compound competencies, the current subject specific middle school curricula lack a holistic, future-oriented approach to fully integrating these competencies into learning objectives. Notably, mathematics and Turkish demonstrate the most limited integration of these future-oriented competencies. While mathematics strongly emphasizes computational thinking, it shows no emphasis on global competency, media literacy, or literacy for sustainable development. Similarly, Turkish only moderately incorporates media literacy while providing no emphasis on global competency, literacy for sustainable development, or financial literacy. This pattern suggests that both subjects remain largely subject-centric, focusing on traditional content areas rather than embedding interdisciplinary, real-world applications of competencies.

While mathematics inherently fosters computational thinking through problem-solving, logical reasoning, and algorithmic thinking, it lacks integration with interdisciplinary competencies such as global competency, literacy for sustainable development, and media literacy, which could provide students with a broader perspective on applying mathematical skills to real-world challenges. Similarly, Turkish naturally contributes to the development of media literacy by engaging students in text analysis, critical reading, and effective communication. However, its limited emphasis on global competency, literacy for sustainable development, and financial literacy suggests a missed opportunity to use language education as a vehicle for fostering a broader set of skills, including intercultural understanding, civic engagement, and financial awareness. In contrast, social studies emerge as the most competency-inclusive subject, with strong or moderate emphasis on competencies such as global competency and literacy for sustainable development. This suggests that social studies are structured to engage students with broader societal issues, whereas mathematics and Turkish primarily maintain a content-driven focus, missing opportunities to integrate 21st-century skills into their learning frameworks.

Science, on the other hand, also demonstrates a balanced approach, incorporating computational thinking and entrepreneurship at a notable level while addressing global competency, media literacy, and literacy for sustainable development with minimal emphasis. Based on these findings, addressing these gaps through competency-based curricular reforms would allow students to engage with their subjects not just as isolated knowledge domains but as interconnected disciplines that contribute to solving complex societal challenges.

This gap in curricular design is also reflected in teachers’ instructional practices, as the study highlights inconsistencies in how teachers implement competency-based learning in classrooms when developing compound competencies. Without a systematic framework that explicitly supports competency development, teachers often struggle to integrate these skills effectively, despite their efforts, resulting in fragmented and emergent learning experiences rather than structured competency-building. This misalignment also raises a critical question about the expectations for middle school graduates. If the current curriculum does not adequately emphasize future-oriented competencies, then it becomes necessary to redefine what is expected from a student when transitioning from middle to high school. Findings from in-depth interviews with teachers also reflect this issue, revealing a lack of explicit focus on developing compound competencies, which are essential for preparing future-ready students (OECD, 2019a).

As observed in the educational settings of this study, teachers working in a private school network run by a non-governmental organization with a clear mission and vision to cultivate future leaders have reported making efforts to develop these competencies through curricular, co-curricular, and extracurricular activities. Their strategies include structured interdisciplinary projects, enrichment programs incorporating national and international alternatives, and specialized training opportunities provided by the institution, all aimed at fostering 21st-century skills among students. Moreover, school administration support, enriched learning environments, and professional development programs have served as additional support mechanisms for teachers to facilitate competency development in their practices. Despite these institutional supports and efforts, teachers have emphasized that systemic challenges within the broader education system and its interconnected layers continue to hinder competency development in middle school education. These challenges can be understood through the OECD Education 2030 Ecosystem Approach (OECD, 2020b), which helps reveal the interactions and influences between different system levels, highlighting key implications for competency-based education.

At the microsystem level, this study suggests that individual and social dynamics play a crucial role in the development of those competencies. Teachers noted that parents' expectations and exam-driven priorities often hinder the development of compound competencies, as the pressure for academic performance limits opportunities for interdisciplinary and competency-based learning. However, student attitudes and behaviors serve as promoting factors, particularly when activities align with their interests and developmental levels. This highlights the importance of engaging, student-centered approaches not only in the development of compound competencies but also in fostering a broader range of skills and competencies.

Within the mesosystem, this study suggests that school and teacher practices significantly shape competency development by influencing the quality of interactions among students, teachers, families, and the broader community. A lack of interdisciplinary collaboration and limited intentional activities create inconsistencies in targeting competencies, leading to fragmented integration. However, teacher competency, professional learning communities, and school-supported initiatives serve as facilitators, enabling educators to bridge these gaps through structured instructional strategies. The study highlights the potential for integrating and connecting compound competencies across subject areas, which can ease the burden of additional curriculum load if teachers are aware of these competencies and have the capacity to incorporate them into their teaching. This study suggests that when competency development is embedded within existing school activities, certain aspects of these skills can naturally become part of lessons rather than being treated as an extra load. Collaboration between subjects and well-planned instructional strategies can enhance a smooth and meaningful learning experience for students. Thereby, this approach helps prevent emergent learning and further ensures that students develop these skills in a structured and intentional way. The interviews highlighted that at the school level and the classroom level, fostering meaningful connections between students and their surroundings create more opportunities for competency-based learning. In this respect, student-centered approaches, including discussion-based learning, peer collaboration, project-based learning, problem-based learning, and activity-based constructivist methods, enhance students' competency development. The findings of this research suggests that extracurricular activities, such as student club activities, community service initiatives, and interdisciplinary projects, provide additional areas for students to engage with real-world challenges, reinforcing competencies beyond the classroom and promoting holistic engagement. However, despite these facilitating factors, this study underlines those systemic barriers, such as curriculum limitations and exam-oriented pressures, continue to hinder the holistic integration of competencies. Addressing these challenges requires a more cohesive approach that strengthens collaboration among teachers, actively involves families and communities in education, and expands learning opportunities beyond formal curricula.

This study revealed that at the exosystem level, structural and policy challenges create obstacles to competency integration. Curriculum overload, insufficient preparation time, and an exam-oriented approach limit teachers' ability to implement competency-driven learning effectively. Frequent and sudden policy changes by the Ministry of Education further contribute to instability in instructional planning, making long-term competency development more challenging. Additionally, the heavy weekly teaching schedules that require teachers to reach their maximum course hours result in an overwhelming workload, which, in turn, reduces their capacity to focus on competency-based instruction. While these challenges are broadly recognized as systemic issues within the Turkish education system, this study highlights that they also significantly hinder the development of competencies, making it difficult for both teachers and students to fully engage in future-oriented learning. Despite these challenges, this study highlights that some teachers seek professional development opportunities to enhance their understanding of competency-based education. Although institutions provide in-service training, it is observed that these programs remain insufficient for the development of compound competencies. Teachers reported that they often become aware of these competencies through their individual interests, participation in webinars, and engagement with social media platforms rather than through structured institutional training. This study underscores the necessity of systematic in-service training programs at both national and institutional levels, specifically designed to support a competence-based approach in education. In accordance with this, the study reveals that the use of supplementary instructional resources, the integration of Web 2.0 tools, school-specific initiatives, tailored instructional programs, and engagement in professional learning communities serve as additional support mechanisms that facilitate the implementation of a competency-based approach in education. Considering these findings, future efforts in competency development should take into account the role of alternative learning resources, the enhancement of existing MoNE-provided textbooks, and the establishment of collaborative professional learning communities to provide teachers with more structured and sustainable opportunities for growth. To address the structural barriers within the exosystem, this study underscores the need for a more coherent and stable policy framework that ensures long-term alignment between curriculum structures, teacher workload, and professional development opportunities. Strengthening institutional support systems, increasing access to diverse instructional materials, and reforming assessment practices to move beyond exam-driven education can create a more enabling environment for competency integration in middle school education.

Finally, at the macrosystem level, broader educational policies and curriculum design reflect systemic gaps in embedding competency-based learning. The lack of clear objectives and explicit targeting in middle school curricula results in inconsistencies across subjects, limiting the holistic development of future-oriented skills. Successful integration of these competencies requires long-term policy coherence and a structured framework, ensuring that students are adequately prepared for the demands of the future workforce and society. Teachers emphasized that while localized efforts within their school help mitigate some of these challenges, systemic barriers at the exosystem and macrosystem levels continue to restrict the full implementation of competency-driven learning. To address these issues, a more cohesive, multi-level approach is needed, aligning national policies, curriculum structures, and school-based practices to create a sustainable, future-oriented education system that fosters interdisciplinary and competency-driven learning at all levels.

To extend these implications to the chronosystem level, it is essential to consider how educational policies, curricular frameworks, and systemic structures evolve over time in response to societal, technological, and economic changes (Fullan, 2016). The future of curricula must not only address the current gaps in competency integration but also remain adaptable to the shifting demands of the workforce and global challenges (OECD, 2019a; 2019b; 2019c; 2020b). In this regard, ensuring long-term policy coherence is not just about addressing present deficiencies but also about creating a system that can continuously adapt to future needs (OECD, 2020b). The interplay between long-term policy coherence at the macrosystem level and the evolving demands at the chronosystem level suggests that a future-oriented education system must embrace flexibility, innovation, and sustained evaluation. Without a forward-looking approach that anticipates and integrates these shifts, competency-based learning will struggle to remain relevant and impactful in preparing students for an uncertain and rapidly changing future (Marope et al., 2017, OECD, 2020b).

### 5.3. Recommendations for Further Research

This study provided crucial insights into the extent to which the Turkish, Mathematics, Science, and Social Studies (MoNE, 2018) curricula for middle school education in Türkiye align with the OECD's E2030 framework for future skills (OECD, 2019a). These four subjects were selected based on their weight in the weekly course schedule, reflecting their central role in shaping students' learning experiences within the national education system. By analyzing both curricular emphasis and classroom implementation, this study provided empirical insights into how competency-based learning is integrated into the education system and how effectively these competencies are reflected in instructional practices. In this context, the study offers a comprehensive analysis of how future-oriented competencies are embedded in the curriculum and the extent to which they are implemented in classroom practices.

First of all, the findings of this research are expected to serve as critical data for informing future curriculum reforms, particularly in designing a competency-focused educational framework that ensures a more balanced and interdisciplinary approach to preparing students for evolving global challenges. However, more comprehensive research is needed to explore how the curriculum is intended, designed, interpreted, enacted, and experienced to identify gaps between policy and practice. As highlighted in this study, triangulation was employed to understand the complexities of curriculum implementation through a mixed-method explanatory sequential design.

Future studies should consider the use of triangulation and incorporate multiple perspectives, including those of school principals, parents, and students, to capture their experiences and perceptions of curriculum implementation. In line with the ecosystem approach, this multi-perspective analysis can provide deeper insights into the gaps between intended, implemented and attained curricula, ultimately informing future curriculum reforms to create a more adaptable, competency-based framework that aligns with the evolving demands of education.

Secondly, rather than focusing solely on the four core subjects Turkish, Mathematics, Science, and Social Studies (MoNE, 2018) which play a central role in shaping students' learning experiences within the national education system, future research should consider a broader range of disciplines. The development of compound competencies is not necessarily confined to these subjects; areas such as physical education, arts, music, and history may also contribute to fostering these skills. Future research could explore the extent to which these subjects foster the compound competency development and examine whether a more holistic and interdisciplinary approach enhances student outcomes.

Thirdly, while this study concentrated on middle school education, further research should explore different levels of education, such as high school, to investigate how these competencies are reinforced at the secondary level. A comprehensive analysis of high school curricula would provide insights into whether competency-based learning builds upon middle school foundations, addresses existing gaps, or diverges in focus.

Examining the alignment and differences between educational stages could reveal how competencies evolve across grade levels, highlighting both consistencies and discrepancies in their implementation.

Another important aspect to consider is this study was conducted within a visionary private school network run by a prestigious NGO that aims to cultivate future leaders, allowing for a rich and in-depth exploration of competency-based learning practices. Future research could extend this examination to public schools across Türkiye. Investigating the extent to which competency-based learning is implemented in public schools and identifying region-specific challenges and best practices would provide critical insights for policymakers, helping to design inclusive reforms that address the needs of all students. Building on this, in Türkiye, ongoing curriculum reform initiatives continue to shape the education system, with the newly published 2024 curricula also playing a role in this transformation process. A similar study could be conducted within the framework of the new curriculum to examine how evolving educational policies and future skill requirements are being addressed. From a chronosystem perspective, analyzing the long-term impacts of these reforms and how the education system adapts to emerging needs over time would provide valuable insights for future curriculum design and policymaking processes.

Finally, when curriculum design and implementation are examined through a systems approach, it becomes evident that understanding the interactions between the intended, implemented, and attained curriculum is crucial for Türkiye’s ongoing educational reforms. The complexity of curriculum transformation involves multiple stakeholders, including policymakers, educators, and school communities, each influencing how competency-based learning is integrated into practice. To ensure that curriculum reforms effectively support competency development, future research should focus on identifying the gaps and misalignments between policy intentions, classroom practices, and student learning outcomes. A comprehensive analysis of these dimensions would provide a stronger foundation for evidence-based curriculum decisions, ensuring that reforms align with both national educational goals and evolving global skill demands.

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## APPENDICES

## A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

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16 AĞUSTOS 2023

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

**Sayın Prof.Dr. Cennet Engin DEMİR**

Danışmanlığını yürüttüğünüz Begüm Erikçi'nin ***"Türkiye'deki Ortaokul Öğretim Programlarının OECD 2030 Bileşik Yetkinlikleri Açısından İncelenmesi "*** başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek **0348-ODTUİAEK-2023** protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan

Prof.Dr. İ. Semih AKÇOMAK
Üye

Doç. Dr. Ali Emre Turgut
Üye

Doç. Dr. Şerife SEVİNÇ
Üye

Doç.Dr. Murat Perit ÇAKIR
Üye

Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ
Üye

## B. RATING SCALE FOR ANALYZING CURRICULUM DOCUMENTS

| | Kategori | Ölçüt | Örnek |
|---|---|---|---|
| **1** | Öğretim programının; kazanımlarında ve kazanım açıklamalarında açıkça **hedeflenmemektedir.** | Bu yetkinlik, dersin yazılı öğretim programının genel amaçları arasında yer alabilir veya yer almayabilir. Öğretmenler çeşitli ilişkilendirmelerle söz konusu etkinliği geliştiriyor olabilirler. Ancak, yetkinliğin kendisinin veya alt boyutlarının gelişimi; öğretim programının kazanımlarında ve kazanım açıklamalarında apaçık ve spesifik hedef olarak **belirtilmemektedir.** | Örneğin, girişimcilik becerisi öğretim programının amaçları arasında yer almasına rağmen, bu becerinin kendisini ve alt boyutlarını geliştirmeye yönelik spesifik kazanımlar veya alt kazanımlar bulunmamaktadır.<br><br>Örneğin, matematik dersine ait aşağıdaki kazanım bilgi işlemsel düşünme ya da finansal okuryazarlık becerilerinin gelişimi için öğretmen tarafından uygulanacak etkinliklerle ilişkilendirilebilir gözükmektedir ancak öğretim programı kazanımları açıkça her iki beceriyi de hedeflememektedir.<br><br>*“En çok dokuz basamaklı doğal sayıların bölüklerini, basamaklarını ve rakamların basamak değerlerini belirtir.”* |

| | | | |
|---|---|---|---|
| **2** | Derse ait öğretim programının kazanımlarında **hedeflenmektedir;** ancak açıkça ifade edilmemektedir. (Örneğin; yetkinliğin alt boyutlarına kazanım ifadesinin içinde veya kazanım açıklamalarında yer verilmektedir.) | Söz konusu yetkinlik; yazılı öğretim programında sadece bir alt hedef olarak yer almaktadır. Kazanım ifadesinde ve kazanım açıklamalarında, yetkinliğin alt boyutlarının gelişimi desteklenmiştir. | Örneğin; kazanım ifadesi, bilgi işlemsel düşünme becerisini doğrudan belirtmese de öğrencinin bilgi işlemsel düşünme yetkinliğini geliştirmesine yardımcı olacak alt boyutları içermektedir. Bu doğrultuda, “örüntü oluşturma” bilgi işlemsel düşünme için önemli bir alt boyuttur. Dolayısıyla aşağıda yer alan kazanım ifadesinin bu alt boyutu hedeflediği görülmektedir.<br><br>*“Kuralı verilen sayı ve şekil örüntülerinin istenen adımlarını oluşturur.”* |
| **3** | Derse ait öğretim programının **kazanım ifadelerinde doğrudan hedeflenmiştir ve açıkça belirtilmiştir.** | Söz konusu yetkinlik; yazılı öğretim programının kazanımlarında ana hedef olarak açıkça yer almakta ve ifade edilmektedir. | Kazanım ifadesi, apaçık bir şekilde söz konusu yetkinliği içerir. Örneğin; medya okuryazarlığı yetkinliği için aşağıdaki kazanımlar apaçık bir şekilde bu yetkinliğin gelişimini hedeflemektedir.<br><br>*“Medyanın sosyal değişim ve etkileşimdeki rolünü tartışır.”*<br>Kazanım Açıklaması: “*Seçilen bir iletişim kanalının (TV, İnternet, akıllı telefonlar vb.) bireyler arasındaki iletişimi ve toplumsal olarak da kültürü nasıl değiştirdiği ele alınır.”*<br><br>Bu kazanım ifadesinin kendisi söz konusu yetkinliğe apaçık bir şekilde yer verildiğini göstermektedir. |

## C. INFORMED CONSENT FORM: ONLINE SURVEY PARTICIPATION

### BİLEŞİK YETKİNLİK ÇEVRİM İÇİ ANKETİNE GÖNÜLLÜ KATILIM FORMU

Bu araştırma, ODTÜ Eğitim Bilimleri, Eğitim Programları ve Öğretim Programı doktora öğrencisi Begüm Erikçi tarafından Prof. Dr. Cennet Engin danışmanlığındaki doktora tezi kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

**Çalışmanın amacı nedir?**
Araştırmada; OECD E2030 kapsamında geleceğin becerileri olarak tanımlanan bileşik yetkinliklerin öğretimi ile ilgili olarak amaçlanan ve uygulanan MEB ortaokul öğretim programları arasındaki uyumun belirlenmesi amaçlanmaktadır.

**Bize nasıl yardımcı olmanızı isteyeceğiz?**
Araştırmaya katılmayı kabul ederseniz, sizden beklenen, çevrim içi ortamda yer alan bu anketteki bir dizi soruyu derecelendirme ölçeği üzerinde yanıtlamanızdır. Bu çalışmaya katılım ortalama olarak 40 dakika sürmektedir.

**Sizden topladığımız bilgileri nasıl kullanacağız?**
Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Ankette, sizden kimlik veya kurum belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak, sadece araştırmacı tarafından değerlendirilecektir. Katılımcılardan elde edilecek bilgiler toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır. Sağladığınız veriler gönüllü katılım formlarında toplanan kimlik bilgileri ile eşleştirilmeyecektir.

**Katılımınızla ilgili bilmeniz gerekenler:**
Anket, genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çevrim içi sistemden çıkabilirsiniz.

**Araştırmayla ilgili daha fazla bilgi almak isterseniz:**
Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Eğitim Programları ve Öğretim Programı doktora öğrencisi Begüm Erikçi (e-posta: ) ile iletişim kurabilirsiniz.

***Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.***
(Katılım durumunuza göre lütfen aşağıdaki kutucu işaretleyiniz.)

- □ Onaylıyorum (Çevrim içi ankete başlayabilirsiniz.)
- □ Onaylamıyorum (Çevrim içi anketten ayrılabilirsiniz.)

## D. DESCRIPTIVE STATISTICS OF TEACHERS' RESPONSES TO ONLINE SURVEY, INCLUDING FREQUENCY, MEAN, AND STANDARD DEVIATION

| | | Never | | Rarely | | Sometimes | | Frequently | | Always | | *M* | *SD* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | | |
| 1 | Derslerimde konu alanı doğrultusunda farklı kültürlere ait değerleri, inançları, bakış açılarını ve/veya uygulamaları işlerim. | 15 | 3,30% | 51 | 11,30% | 133 | 29,60% | 153 | 34,00% | 98 | 21,80% | 3,60 | 1,05 |
| 2 | Öğrencilerin; yerel, küresel ve/veya kültürler arası konular üzerine tartışmalarına imkân tanırım. | 9 | 2,00% | 44 | 9,80% | 156 | 34,70% | 156 | 34,70% | 85 | 18,90% | 3,59 | 0,97 |
| 3 | Derslerimde, kültürler arası farklılıklara dikkat çeken etkinliklere yer veririm. | 25 | 5,60% | 67 | 14,90% | 180 | 40,00% | 115 | 25,60% | 63 | 14,00% | 3,28 | 1,06 |
| 4 | Öğrencilerimin farklı dünya görüşlerine saygı duymalarını teşvik ederim. | 1 | 0,20% | 7 | 1,60% | 40 | 8,90% | 137 | 30,40% | 265 | 58,90% | 4,46 | 0,74 |
| 5 | Derslerimde öğrencilerin; yerel, küresel ve/veya kültürler arası konulara dair bilgileri eleştirel bir bakış açısıyla ele almalarını isterim. | 10 | 2,20% | 28 | 6,20% | 92 | 20,40% | 157 | 34,90% | 163 | 36,20% | 3,97 | 1,01 |
| 6 | Öğrencilerin; işlenen konu, ünite ve/veya kavramlara yönelik | 43 | 9,60% | 81 | 18,00% | 155 | 34,40% | 104 | 23,10% | 67 | 14,90% | 3,16 | 1,17 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | yabancı dil becerilerini kullanmalarını sağlayacak çalışmalara yer veririm. | | | | | | | | | | | | |
| 7 | Öğrencileri; ortak bir problemin çözümünde iş birliği yapmalarını teşvik etmek amacıyla çok kültürlülüğe odaklanan uluslararası yarışmalara, projelere ve/ veya etkinliklere katılmaları için teşvik ederim. | 7 | 1,60% | 25 | 5,60% | 110 | 24,40% | 159 | 35,30% | 149 | 33,10% | 3,93 | 0,97 |
| 8 | Öğrencilerin küresel meseleler üzerine düzenlenen kongre/konferans/forum/proje/yarışmalarda yer almalarına imkân tanıyarak küresel etkileşim içerisinde bulunmalarını sağlarım. | 8 | 1,80% | 67 | 14,90% | 142 | 31,60% | 132 | 29,30% | 101 | 22,40% | 3,56 | 1,05 |
| 9 | Öğrencilerin dünya vatandaşı olabilmeleri için derslerimde; adil, barışçıl, kapsayıcı, çevresel sorunlara duyarlı sürdürülebilir bir dünya kurulmasına yönelik farkındalık çalışmalarına yer veririm. | 3 | 0,70% | 20 | 4,40% | 87 | 19,30% | 169 | 37,60% | 171 | 38,00% | 4,08 | 0,90 |
| 10 | Öğrencileri, küresel esenliğe ve sürdürülebilir kalkınmaya katkıda bulunmaları için teşvik ederim. | 2 | 0,40% | 14 | 3,10% | 93 | 20,70% | 170 | 37,80% | 171 | 38,00% | 4,10 | 0,86 |
| 11 | Öğrencileri, yaşadıkları toplumun yaşam koşullarını iyileştirebilecekleri inisiyatifler içinde (Sivil Toplum Kuruluşu, Sosyal Sorumluluk, Topluma Hizmet Projeleri vb.) yer almaları yönünde teşvik ederim. | 2 | 0,40% | 20 | 4,40% | 97 | 21,60% | 162 | 36,00% | 169 | 37,60% | 4,06 | 0,90 |

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| 12 | Derslerimde medya okuryazarlığının ne olduğuna dikkat çekerim. | 4 | 0,90% | 39 | 8,70% | 129 | 28,70% | 162 | 36,00% | 116 | 25,80% | 3,77 | 0,96 |
| 13 | Öğrencilerin eleştirel bir bakış açısı geliştirebilmeleri için yazılı, görsel veya işitsel medya içeriklerinde (gazete, afiş, dergi, blog, sosyal medya, podcast vb.) sunulan fikir, bilgi ve/veya haber içeriklerini sorgulamalarını isterim. | 3 | 0,70% | 20 | 4,40% | 110 | 24,40% | 169 | 37,60% | 148 | 32,90% | 3,98 | 0,90 |
| 14 | Derslerimde; yazılı, görsel ve/veya işitsel medya içeriklerinin öğrenciler tarafından değerlendirilmesi için tartışma grupları oluştururum. | 18 | 4,00% | 68 | 15,10% | 162 | 36,00% | 120 | 26,70% | 82 | 18,20% | 3,40 | 1,07 |
| 15 | Derslerimde; yazılı, görsel ve /veya işitsel medyada duygusal etki oluşturmak için kullanılan tekniklerin amaçladığı ve/veya doğurduğu etkiye dikkat çekerim. | 6 | 1,30% | 46 | 10,20% | 137 | 30,40% | 162 | 36,00% | 99 | 22,00% | 3,67 | 0,97 |
| 16 | Derslerimde öğrencilerin yazılı, görsel ve/veya işitsel medya içeriklerinde yer alan bilgileri doğrulamaları için teyit, ispat, sağlama vb. çalışmalar yapmalarını isterim. | 12 | 2,70% | 44 | 9,80% | 135 | 30,00% | 155 | 34,40% | 104 | 23,10% | 3,66 | 1,02 |
| 17 | Öğrencilerden işlenen konuyu ders dışı (kitap, gazete, dergi, blog, makale vb.) doğru bilgi kaynaklarından da (yazılı, görsel ve/veya işitsel) araştırmalarını isterim. | 3 | 0,70% | 24 | 5,30% | 105 | 23,30% | 170 | 37,80% | 148 | 32,90% | 3,97 | 0,91 |
| 18 | Öğrencilerin işlenen konuya yönelik kendi yazılı, görsel veya işitsel medya içeriklerini (gazete, | 12 | 2,70% | 49 | 10,90% | 191 | 42,40% | 114 | 25,30% | 84 | 18,70% | 3,46 | 1,00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | afiş, dergi, blog, sosyal medya, podcast vb.) hazırlamalarını isterim. | | | | | | | | | | | | |
| 19 | Yanıltıcı, uydurma, sahte görsel ve/veya işitsel medya içeriklerini öğrencilere sunarak öğrencilerin bu içeriklerdeki yanlış bilgiyi ayırt etmelerini isterim. | 21 | 4,70% | 62 | 13,80% | 141 | 31,30% | 133 | 29,60% | 93 | 20,70% | 3,48 | 1,11 |
| 20 | Derslerimde bilgiye erişme ve bilgiyi kullanma konusunda etik ve yasal konulara hassasiyet gösterilmesi gerektiğini vurgularım. | 2 | 0,40% | 18 | 4,00% | 76 | 16,90% | 180 | 40,00% | 174 | 38,70% | 4,12 | 0,86 |
| 21 | Derslerimde sürdürülebilirlik kavramını öğrencilerime açıklarım. | 5 | 1,10% | 24 | 5,30% | 115 | 25,60% | 169 | 37,60% | 137 | 30,40% | 3,91 | 0,93 |
| 22 | Derslerimde sürdürülebilirlik kavramına ilişkin eğitsel materyallerden yararlanırım. | 10 | 2,20% | 58 | 12,90% | 147 | 32,70% | 139 | 30,90% | 96 | 21,30% | 3,56 | 1,03 |
| 23 | Derslerimde; Birleşmiş Milletler Sürdürülebilir Kalkınma İçin Küresel Amaçlar'ının (neler olduğuna yer veririm. (Bkz: Görsel İçerik) | 37 | 8,20% | 87 | 19,30% | 159 | 35,30% | 103 | 22,90% | 64 | 14,20% | 3,16 | 1,14 |
| 24 | Derslerimde Sürdürülebilir Kalkınma İçin Küresel Amaçlar arasında yer alan 17 amaç arasındaki ilişkiye dikkat çekerim. | 40 | 8,90% | 95 | 21,10% | 162 | 36,00% | 103 | 22,90% | 50 | 11,10% | 3,06 | 1,11 |
| 25 | Derslerimde Sürdürülebilir Kalkınma İçin Küresel Amaçlar'a yönelik içeriklere, metinlere, örneklere, sorulara vb. yer veririm. | 34 | 7,60% | 95 | 21,10% | 164 | 36,40% | 103 | 22,90% | 54 | 12,00% | 3,11 | 1,10 |
| 26 | Derslerde; Sürdürülebilir Kalkınma İçin Küresel Amaçlar'a ilişkin sınıf içi tartışma, grup çalışması, rol | 38 | 8,40% | 110 | 24,40% | 160 | 35,60% | 94 | 20,90% | 48 | 10,70% | 3,01 | 1,10 |

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| | oynama gibi etkileşimli etkinliklere yer veririm. | | | | | | | | | | | | |
| 27 | Öğrencilerin sürdürülebilir kalkınma alanlarında yürütülen küresel ve/veya uluslararası çalışmaları incelemelerini sağlarım. | 31 | 6,90% | 97 | 21,60% | 179 | 39,80% | 96 | 21,30% | 47 | 10,40% | 3,07 | 1,06 |
| 28 | Derslerimde öğrencilerin; Sürdürülebilir Kalkınma İçin Küresel Amaçlar'da belirtilen sorun alanlarına yönelik çözüm önerileri geliştirebilecekleri disiplinler arası çalışmalar/projeler yürütmelerini isterim. | 34 | 7,60% | 110 | 24,40% | 157 | 34,90% | 92 | 20,40% | 57 | 12,70% | 3,06 | 1,12 |
| 29 | Öğrencilerin sürdürülebilirlik bağlamında kendi hayatlarında yapabilecekleri değişikliklere ilişkin farkındalık kazanmalarını sağlarım. | 9 | 2,00% | 42 | 9,30% | 143 | 31,80% | 160 | 35,60% | 96 | 21,30% | 3,65 | 0,98 |
| 30 | Derslerimde günlük yaşamda karşılaşılan ancak sürdürülebilir olmayan tutum ve davranışlara ilişkin örneklere yer veririm. | 5 | 1,10% | 38 | 8,40% | 135 | 30,00% | 175 | 38,90% | 97 | 21,60% | 3,71 | 0,93 |
| 31 | Öğrencilerin, sürdürülebilirliğe yönelik gerçekleştirdikleri olumlu eylemleri takdir ederim. | 3 | 0,70% | 18 | 4,00% | 67 | 14,90% | 178 | 39,60% | 184 | 40,90% | 4,16 | 0,87 |
| 32 | Öğrencileri, sürdürülebilir kalkınma alanlarında inisiyatif alarak sosyal sorumluluk projelerinde yer almaları için teşvik ederim. | 14 | 3,10% | 41 | 9,10% | 141 | 31,30% | 147 | 32,70% | 107 | 23,80% | 3,65 | 1,04 |
| 33 | Öğrencilerin farkındalık kazanmaları için finansal okuryazarlığa ilişkin temel terimlere (para, paranın değeri, | 32 | 7,10% | 86 | 19,10% | 139 | 30,90% | 109 | 24,20% | 84 | 18,70% | 3,28 | 1,18 |

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| | para yönetimi, parasal işlemler, tasarruf, harcama, kredi, borç, ödeme, risk vb.) derslerimde yer veririm. | | | | | | | | | | | | |
| 34 | Derslerimde; paranın farklı biçimleri (kağıt para, dijital para, altın/gümüş vb.) ile ilgili örneklere yer veririm. | 47 | 10,40% | 95 | 21,10% | 137 | 30,40% | 106 | 23,60% | 65 | 14,40% | 3,10 | 1,20 |
| 35 | Derslerimde finansal konulara dair materyallerden (örnek, soru, eğitsel / dijital oyun, görsel vb.) yararlanırım. | 43 | 9,60% | 116 | 25,80% | 121 | 26,90% | 109 | 24,20% | 61 | 13,60% | 3,06 | 1,19 |
| 36 | Derslerimde öğrencilerin işlenen konulara yönelik hazırlanan finansal grafikleri ve/veya diyagramları incelemelerini isterim. | 48 | 10,70% | 107 | 23,80% | 131 | 29,10% | 106 | 23,60% | 58 | 12,90% | 3,04 | 1,19 |
| 37 | Öğrencilerin harcamalarını planladıkları günlük hayatla ilişkili çalışmalar yaparım. | 52 | 11,60% | 93 | 20,70% | 123 | 27,30% | 109 | 24,20% | 73 | 16,20% | 3,13 | 1,24 |
| 38 | Öğrencilerin mevcuttaki ve gelecekteki tasarruflarını planlayabilecekleri çalışmalara yer veririm. | 50 | 11,10% | 95 | 21,10% | 135 | 30,00% | 107 | 23,80% | 63 | 14,00% | 3,08 | 1,20 |
| 39 | Derslerimde yatırım kavramına dikkat çekerim. | 69 | 15,30% | 116 | 25,80% | 133 | 29,60% | 81 | 18,00% | 51 | 11,30% | 2,84 | 1,22 |
| 40 | Derslerimde finansal bir araç olarak banka hizmetlerinin kullanımına dair örnek çalışmalara yer veririm. | 107 | 23,80% | 121 | 26,90% | 123 | 27,30% | 59 | 13,10% | 40 | 8,90% | 2,56 | 1,23 |
| 41 | Derslerimde borç ve kredi kavramları arasındaki benzerliklere ve farklılıklara dikkat çekerim. | 130 | 28,90% | 106 | 23,60% | 109 | 24,20% | 65 | 14,40% | 40 | 8,90% | 2,51 | 1,29 |

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| 42 | Derslerimde; kredi kartının akılcı ve planlı kullanımına ilişkin örnekler veririm. | 132 | 29,30% | 106 | 23,60% | 108 | 24,00% | 68 | 15,10% | 36 | 8,00% | 2,49 | 1,27 |
| 43 | Derslerimde faiz kavramına ve/veya faiz oranlarına ilişkin hesaplama çalışmalarına yer veririm | 167 | 37,10% | 83 | 18,40% | 103 | 22,90% | 65 | 14,40% | 32 | 7,10% | 2,36 | 1,30 |
| 44 | Öğrencilerden gerçekleştirecekleri ödevler ve/veya projeler için bütçe hazırlamalarını isterim. | 106 | 23,60% | 109 | 24,20% | 127 | 28,20% | 75 | 16,70% | 33 | 7,30% | 2,60 | 1,22 |
| 45 | Derslerimde tüketici haklarını ve sorumluluklarını vurgularım. | 23 | 5,10% | 67 | 14,90% | 122 | 27,10% | 135 | 30,00% | 103 | 22,90% | 3,51 | 1,15 |
| 46 | Derslerimde bilinçli tüketici olmayla ilgili çalışmalara/örneklere/eğitsel oyunlara yer veririm. | 33 | 7,30% | 80 | 17,80% | 134 | 29,80% | 111 | 24,70% | 92 | 20,40% | 3,33 | 1,20 |
| 47 | Derslerimde algoritmik düşünmeyi teşvik eden etkinliklere yer veririm. (Algoritmik düşünmeyi teşvik eden etkinlikler: Bir sorunu çözmek için izlenecek işlem basamaklarını doğru bir şekilde sıralamayı, gereksinimleri ve kısıtlamaları belirlemeyi, etkililik açısından doğru kararlar vermeyi gerektiren ve böylelikle çözüme ulaşmayı sağlayan etkinliklerdir.) | 21 | 4,70% | 51 | 11,30% | 137 | 30,40% | 144 | 32,00% | 97 | 21,60% | 3,54 | 1,09 |
| 48 | Dersimle ilgili konularda öğrenciler bir problemle karşılaştıklarında, bu problemin çözümüne yönelik adımları mantıklı ve etkili bir şekilde sıralamalarını isterim. | 5 | 1,10% | 20 | 4,40% | 76 | 16,90% | 191 | 42,40% | 158 | 35,10% | 4,06 | 0,89 |
| 49 | Derslerimde problem durumlarının çözümü için gerekli ve gereksiz | 4 | 0,90% | 24 | 5,30% | 76 | 16,90% | 183 | 40,70% | 163 | 36,20% | 4,06 | 0,91 |

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| | bilginin ayırt edilmesine yönelik çalışmalar yaparım. | | | | | | | | | | | | |
| 50 | Derslerimde öğrencileri problem durumları için farklı çözüm yolları geliştirmeleri yönünde teşvik ederim. | 1 | 0,20% | 14 | 3,10% | 65 | 14,40% | 172 | 38,20% | 198 | 44,00% | 4,23 | 0,82 |
| 51 | Derslerimde öğrencilerin, problem durumları için ürettikleri çözüm yollarını farklı problemler için de uyarlayabilecekleri çalışmalar yapmalarını isterim. | 2 | 0,40% | 28 | 6,20% | 86 | 19,10% | 168 | 37,30% | 166 | 36,90% | 4,04 | 0,92 |
| 52 | Derslerimde işlenen konu alanına göre veri ile bilgi arasındaki farka dikkat çekerim. | 7 | 1,60% | 32 | 7,10% | 102 | 22,70% | 165 | 36,70% | 144 | 32,00% | 3,90 | 0,98 |
| 53 | Öğrencilerden işlenen konuya özgü elde ettikleri verileri; tablo, grafik, şema gibi farklı şekillerde sunabilecekleri çalışmalar hazırlamalarını isterim. | 7 | 1,60% | 41 | 9,10% | 133 | 29,60% | 148 | 32,90% | 121 | 26,90% | 3,74 | 1,00 |
| 54 | Derslerimde işlenen konuya özgü bir problemin küçük parçalara bölündüğü ve her bir parça için alt çözümler üretilerek asıl problemin çözümüne ulaşılan örneklere yer veririm. | 6 | 1,30% | 36 | 8,00% | 117 | 26,00% | 176 | 39,10% | 115 | 25,60% | 3,80 | 0,96 |
| 55 | Derslerimde öğrencilerin yönerge takibi yapabilecekleri sistematik çalışmalara/eğitsel oyunlara vb. etkinliklere yer veririm. | 2 | 0,40% | 35 | 7,80% | 128 | 28,40% | 173 | 38,40% | 112 | 24,90% | 3,80 | 0,92 |
| 56 | Derslerimde bilişim dersi ile ortaklaşa disiplinler arası çalışmalar yürütürüm. | 22 | 4,90% | 90 | 20,00% | 144 | 32,00% | 122 | 27,10% | 72 | 16,00% | 3,29 | 1,11 |
| 57 | Derslerimde işlenen konuya göre simülasyon ve/veya bilgisayar | 15 | 3,30% | 69 | 15,30% | 137 | 30,40% | 137 | 30,40% | 92 | 20,40% | 3,49 | 1,08 |

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| | destekli oyunlaştırma etkinliklerine yer veririm. | | | | | | | | | | | | |
| 58 | Derslerimde işlenen konu doğrultusunda LEGO Mindstorms NXT, SCRATCH, App Inventor vb. bilgisayar destekli ve/veya desteksiz programlama araçları kullanırım. | 108 | 24,00% | 121 | 26,90% | 127 | 28,20% | 59 | 13,10% | 35 | 7,80% | 2,54 | 1,21 |
| 59 | Derslerimde, gerçek hayat problemlerine benzer örnekler kullanarak probleme dayalı öğrenme yöntemi doğrultusunda etkinlikler gerçekleştiririm. | 5 | 1,10% | 24 | 5,30% | 90 | 20,00% | 173 | 38,40% | 158 | 35,10% | 4,01 | 0,93 |
| 60 | Derslerimde öğrencilerin mevcut problem durumlarına ilişkin yenilikçi fikirler geliştirebilecekleri proje tabanlı çalışmalara yer veririm. | 12 | 2,70% | 44 | 9,80% | 141 | 31,30% | 149 | 33,10% | 104 | 23,10% | 3,64 | 1,02 |
| 61 | Proje ve/veya ödevlerde öğrencilerin bir fikre yönelik iş planı hazırlamalarını ve bu planı uygulamalarını isterim. | 11 | 2, 40% | 44 | 9,80% | 142 | 31,60% | 158 | 35,10% | 95 | 21,10% | 3,63 | 1,00 |
| 62 | Öğrencilerin geliştirdikleri yenilikçi projeler için alan uzmanlarından mentor desteği alabilecekleri fırsatlar yaratırım. | 24 | 5,30% | 69 | 15,30% | 149 | 33,10% | 127 | 28,20% | 81 | 18,00% | 3,38 | 1,11 |
| 63 | Öğrencilerden ortaya koydukları fikirlere yönelik ürün tasarımında bulunmalarını isterim. | 7 | 1,60% | 55 | 12,20% | 142 | 31,60% | 161 | 35,80% | 85 | 18,90% | 3,58 | 0,98 |
| 64 | Öğrencilerden bir problem durumunun çözümüne ilişkin tasarladıkları ürünleri tanıtabilecekleri kısa sunumlar hazırlamalarını isterim. | 7 | 1,60% | 50 | 11,10% | 174 | 38,70% | 139 | 30,90% | 80 | 17,80% | 3,52 | 0,96 |

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| 65 | Derslerimde kapsam ve içerik açısından farklı girişimcilik türlerine (sosyal girişimcilik, ticari girişimcilik vb.) dikkat çekerim. | 37 | 8,20% | 80 | 17,80% | 155 | 34,40% | 116 | 25,80% | 62 | 13,80% | 3,19 | 1,13 |
| 66 | Derslerimde öğrencilerin farklı girişimcilerin yaşam öykülerini ve/veya başarı hikayelerini incelemelerini sağlarım. | 17 | 3,80% | 70 | 15,60% | 148 | 32,90% | 128 | 28,40% | 87 | 19,30% | 3,44 | 1,08 |
| 67 | İşlenen konular göre öğrencilerin sektörden kişiler ile iletişim kurmalarını sağlayan çalışmalar gerçekleştiririm. | 42 | 9,30% | 94 | 20,90% | 157 | 34,90% | 101 | 22,40% | 56 | 12,40% | 3,08 | 1,14 |
| 68 | İşlenen konular doğrultusunda öğrencilerin girişimcilik ekosistemini tanıyabilecekleri fuar/konferans/seminer/panel gibi etkinliklere katılmalarını teşvik ederim. | 24 | 5,30% | 78 | 17,30% | 145 | 32,20% | 129 | 28,70% | 74 | 16,40% | 3,34 | 1,11 |

## E. INFORMED CONSENT FORM: INTERVIEW PARTICIPATION

### ARAŞTIRMAYA GÖNÜLLÜ KATILIM FORMU

Bu araştırma, ODTÜ Eğitim Bilimleri, Eğitim Programları ve Öğretim Programı doktora öğrencisi Begüm Erikçi tarafından Prof. Dr. Cennet Engin danışmanlığındaki doktora tezi kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

**Çalışmanın amacı nedir?**
Araştırmada; OECD E2030 kapsamında geleceğin becerileri olarak tanımlanan "bileşik yetkinliklerin" öğretimi ile ilgili olarak amaçlanan ve uygulanan MEB ortaokul öğretim programları arasındaki uyumun ve karşılaşılan zorlukların / fırsatların belirlenmesini amaçlanmaktadır.

**Bize nasıl yardımcı olmanızı isteyeceğiz?**
Araştırmayı kabul ederseniz sizinle çevrim içi ortamda yarı yapılandırılmış görüşmeler gerçekleştirilecektir. Araştırmada sizinle yapacağımız görüşmelerde; öğrencilerin bileşik yetkinliklerini destekleme süreciniz hakkında detaylı bilgi almak amacıyla öğretim stratejileriniz, yürüttüğünüz çalışmalar, karşılaştığınız zorluklar ve bu süreçte elde ettiğiniz sonuçlar hakkında sorular sorulacaktır. Çevrim içi görüşmenin 55-60 dakika sürmesi planlanmaktadır. Daha sonra içerik analizi ile değerlendirilmek üzere çevrim içi görüşmeler kayıt altına alınacaktır.

**Sizden topladığımız bilgileri nasıl kullanacağız?**
Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Cevaplarınız tamamıyla gizli tutulacak, sadece araştırmacı tarafından değerlendirilecektir. Katılımcılardan elde edilecek bilgiler toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır. Sağladığınız veriler gönüllü katılım formlarında toplanan kimlik bilgileri ile eşleştirilmeyecektir.

**Katılımınızla ilgili bilmeniz gerekenler:**
Görüşmeler genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz görüşmeyi yarıda bırakarak görüşmeden ayrılmak istediğinizi söylemeniz yeterli olacaktır.

**Araştırmayla ilgili daha fazla bilgi almak isterseniz:**
Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Eğitim Programları ve Öğretim Programı doktora öğrencisi Begüm Erikçi (e-posta: ) ile iletişim kurabilirsiniz.

***Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.***
(Formu doldurup imzaladıktan sonra uygulayıcıya iletiniz).

**İsim Soyad** **Tarih** **İmza**

## F. SEMI-STRUCTURED TEACHER INTERVIEW QUESTIONS

### Yarı Yapılandırılmış Öğretmen Görüşme Soruları

**Amaç:** Araştırmaya gönüllü katılımınız için çok teşekkür ederim. Bu araştırma; mevcutta ortaokul kademesinde (Türkçe, Matematik, Fen Bilimleri ve Sosyal Bilgiler branşlarında) uygulanan MEB öğretim programları içeriği ile OECD 2030 Eğitim Vizyonunda geleceğin becerileri olarak tanımlanan bileşik yetkinliklerin (küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma için okuryazarlık, bilgi işlemsel düşünme, finansal okuryazarlık ve girişimcilik) öğretiminin ne ölçüde uyumlu olduğunu ortaya koymayı amaçlamaktadır. Yapacağımız görüşmede bu yetkinliklerin / okuryazarlıkların gelişimine yönelik sizlerin kullandığı yöntemlere veya bu yetkinliklerin / okuryazarlıkların gelişiminde karşılaştığınız fırsatlara / zorluklara ilişkin görüşlerinizi ve deneyimlerinizi öğrenmek istiyorum.

**Kişisel Bilgiler:**

- Mezun olduğunuz kurum/fakülte/bölüm:
- Eğitim durumunuz:
- Kaç yıldır öğretmenlik yapıyorsunuz?
- Kaç yıldır bu kurumda öğretmenlik yapıyorsunuz?
- Şu an kullanılmakta olan öğretim programları süresince ortaokul kademesinde hangi sınıf seviyelerini okuttunuz?

**Görüşme Soruları:**

1. OECD E2030 Bileşik Yetkinlikleri: 2030 yılında bireysel, sosyal ve çevresel refah için gerekli olan bilgi, beceri, tutum ve değerleri kapsayan yetkinliklerdir. OECD Öğrenme Pusulası 2030, öğrencilerin gelecekteki belirsiz ve sürekli değişen dünyada başarılı olmaları için gerekli becerileri kazanmalarının önemini vurgulamaktadır. Bu doğrultuda, 6 adet bileşik yetkinlik ön plana çıkmış olup bu araştırma kapsamında bu yetkinlikler/okuryazarlıklar üzerine konuşacağız. Öncelikli olarak OECD tarafından tanımlanan "Bileşik Yetkinlikler" kavramı sizin için ne ifade ediyor?

**Bilgilendirme:** Her bir yetkinliğe / okuryazarlığa ilişkin, daha önce yalnızca ortaokul düzeyinde fen bilimleri, matematik, Türkçe ve sosyal bilgiler öğretmenlerine yönelik hazırladığım öğretmen anketinden elde ettiğim veriler mevcuttur. Bu görüşmede, branşınız öğretmenlerinin ankette **sıklıkla** ya da **nadiren** gerçekleştirdiklerini belirttikleri uygulamaları sizlerle paylaşacağım. Paylaştığım bu uygulamalar doğrultusunda, kendi branşınız açısından görüşlerinizi öğrenmek istiyorum.

2. "Küresel Yetkinlik" sizin için ne ifade ediyor? Genel hatlarıyla bu yetkinliği kazandırmaya yönelik yaptığınız çalışmalar nelerdir?

a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki küresel yetkinlik uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

3. "Medya Okuryazarlığı" sizin için ne ifade ediyor? Genel hatlarıyla bu beceriyi kazandırmaya yönelik yaptığınız çalışmalar nelerdir?
   a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki medya okuryazarlığı uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

4. Birleşmiş Milletlerin "Sürdürülebilir Kalkınma için Küresel Amaçları" sizin için ne ifade ediyor? Genel hatlarıyla bu yetkinliği kazandırmaya yönelik yaptığınız çalışmalar nelerdir?
   a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki sürdürülebilir kalkınma için okuryazarlık uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

5. "Bilgi-İşlemsel Düşünme" sizin için ne ifade ediyor? Genel hatlarıyla bu yetkinliği kazandırmaya yönelik yaptığınız çalışmalar nelerdir?
   a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki bilgi işlemsel düşünme becerilerine yönelik uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

6. "Finansal Okuryazarlık" sizin için ne ifade ediyor? Genel hatlarıyla bu yetkinliği kazandırmaya yönelik yaptığınız çalışmalar nelerdir?
   a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki finansal okuryazarlığı uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

7. "Girişimcilik" sizin için ne ifade ediyor? Genel hatlarıyla bu yetkinliği kazandırmaya yönelik yaptığınız çalışmalar nelerdir?
   a. Anket sonuçlarında, sizin branşınızın öğretmenleri derslerindeki girişimcilik uygulamalarının …… *boyutlarını sıklıkla teşvik ettiklerini*

*belirtirken; …… boyutlarını ise nadiren ya da daha az gerçekleştirebildiklerini* ifade etmektedirler. Bu durumla ilgili düşünceleriniz ve deneyimleriniz nelerdir? Sizce bu farklılıklar ne gibi nedenlerden kaynaklanıyor olabilir?

8. Bu bileşik yetkinlikleri kazandırırken ne gibi imkanlarla / zorluklarla karşılaşıyorsunuz?

9. Bileşik yetkinlikleri branşınıza ait öğretim programının kazanımlarıyla ilişkilendirebiliyor musunuz? Evet ise nasıl? Hayır ise neden?

10. Ortaokul kademesinde bir kademe boyunca bu yetkinliklerin gelişimine / sürekliliğine dair planlamalarınız nelerdir?
    a. Bu yetkinliklerin geliştirilmesine yönelik stratejileriniz / hedeflerinizi var mıdır, varsa nasıl belirliyorsunuz?
    b. Bu konuda yürüttüğünüz zümre çalışmaları nelerdir?

11. Bir öğretmen olarak; bu yetkinlikler hakkında nerelerden, nasıl bilgi sahibi oluyorsunuz?
    a. Bilgi kaynaklarınız nelerdir ve siz kendiniz bu bilgileri edinmek için nelerden faydalanıyorsunuz?
    b. Öğrencilerinizde bu yetkinlerin gelişimi için hangi kaynaklardan faydalanıyorsunuz ya da faydalanmak isterdiniz?
    c. Peki sizce branşınızın MEB ders kitabı bu yetkinliklerin geliştirilmesi için yeterli midir? Açıklayınız.

12. Okulunuzda sizi bu yetkinlikler hakkında bilgilendirmek için şu ana kadar neler yapıldı, neler yapılmaktadır? Varsa;
    a. Bu bilgilendirme süreçlerinin etkinliğini değerlendiriniz

13. Bu yetkinliklerin kazandırılmasının öğrencilerin akademik performansına etkileri sizce nelerdir?
    a. Bu yetkinliklerin öğrencilerin okul başarısına katkıda bulunduğuna dair somut örnekler verebilir misiniz?

14. Öğrencilerinizde bu becerilerin gelişimini nasıl / hangi ölçme değerlendirme yöntem ve teknikler ile değerlendirirsiniz?

15. Bu becerilerin daha nitelikli bir şekilde kazandırılması için görüşleriniz ve önerileriniz nelerdir?

Not: Öğretmenlerden çalışmaları ile ilgili örneklendirme yapmaları istenir.

## G. CURRICULUM VITAE

**PERSONAL INFORMATION**

Surname, Name: Erikçi, Begüm

**EDUCATION**

| Degree | Institution | Year of Graduation |
|---|---|---|
| MSc | Ankara University, Educational Psychology, Ankara, Türkiye | 2016 |
| BS | Uludağ University, Elementary School Teacher Education | 2009 |
| High School | Çınar Anatolian High School, Bursa, Türkiye | 2005 |

**WORK EXPERIENCE**

| Year | Place | Enrollment |
|---|---|---|
| 2017 - Present | Turkish Education Association, Ankara | Educational Specialist in School Development Directorate |
| 2013 - 2017 | MEV Ankara College (Private Primary School), Ankara | Elementary School Teacher |
| 2012 | Universidad Autonoma de Madrid, Spain | Research Assistant (Received Erasmus Internship) |
| 2011 - 2012 | Milli Eğitim Vakfı Public Primary School, Ankara | Elementary School Teacher |
| 2009 - 2010 | CEIP Jose Saramago (Public Primary School), Madrid | Comenius Assistant in Elementary School |

**CERTIFICATES & TRAINNING PROGRAMS**

| Year | Institution | Program |
|---|---|---|
| 2024 | Harvard Graduate School of Education, Online | *Leading Change* Online Course within the Certificate in School Management and Leadership |
| 2022 | Harvard Graduate School of Education, Online | *Leading Learning* Online Course within the Certificate in School Management and Leadership |
| 2021 | Harvard Graduate School of Education, Online | *Leading School Strategy and Innovation* Online Course within the Certificate in School Management and Leadership |
| 2008 | Hogeschool Edith Stein/OCT, Hengelo, The Netherlands | Erasmus Programme, *Minor in European and International Orientation Certificate* |

**FOREIGN LANGUAGES**

Advanced English, Intermediate Spanish

**MSc THESIS**

The relation of cognitive flexibility level and problem-solving skills with humor comprehension on adolescents (2016). Unpublished Master Thesis. Ankara University, Ankara, Türkiye

**PUBLICATIONS**

Avcı, N., Erikçi, B., & Ok, A. (2021). The evaluation of the secondary education basic mathematics curriculum through Stake's Responsive Evaluation Model. *Journal of Qualitative Research in Education*, *27*, 1–25. https://doi.org/10.14689/enad.27.2

**CONFERENCE PAPER PRESENTATIONS**

Ereyi, B., & Akar, H. (2019, June). *A systematic review of effective instructional methods for children with dyscalculia in primary schools* [Paper presentation]. Eurasian Journal of Educational Research Congress (EJER2019), Ankara, Türkiye.

Avcı, N., Ereyi, B., & Ok, A. (2019, April). *The evaluation of the secondary education 11th grade basic maths curriculum of a vocational high school through Stake's Responsive Evaluation Model* [Paper presentation]. 28th International Conference on Educational Sciences (ICES-UEBK 2019), Ankara, Türkiye.

Ereyi, B., & Topcu, E. (2018, March). *Ben Sorun Çözebilirim programının ilkokul öğrencilerinin kişilerarası sorun çözme becerilerine etkisi* [Paper presentation]. International Congress on Science and Education (ICSE2018), Afyonkarahisar, Türkiye. https://www.researchgate.net/publication/325544753_Ben_Sorun_Cozebilirim_Programinin_Ilkokul_Ogrencilerinin_Kisilerarasi_Sorun_Cozme_Becerilerine_Etkisi#fullTextFileContent

Artar, M., & Ereyi, B. (2018, March). *The relation of cognitive flexibility level and problem solving skills with humour comprehension on adolescents* [Paper presentation]. International Congress on Science and Education (ICSE2018), Afyonkarahisar, Türkiye.

**CONFERENCE PROCEEDINGS**

Ereyi, B., & Topcu, E. (2017). The effects of interpersonal cognitive problem-solving programme on Turkish preschool children. *New Trends and Issues Proceedings on Humanities and Social Sciences,* *4*(6), 47–50. https://un-pub.eu/ojs/index.php/pntsbs/article/view/2911/3089

**ACADEMIC POSTER PRESENTATION WITH AWARD**

Ereyi, B., & Topcu, E. (2017, May). *The effects of interpersonal cognitive problem-solving programme on Turkish preschool children* [Poster presentation]. 6th International Conference on Education (IC-ED2017), Zagreb, Croatia. *(Best Poster Award)*

# H. TURKISH SUMMARY / TÜRKÇE ÖZET

# OECD E2030 BİLEŞİK YETKİNLİKLERİ BAĞLAMINDA ORTAOKUL ÖĞRETİM PROGRAMLARININ İNCELENMESİ: KARMA YÖNTEM ARAŞTIRMASI

## 1. GİRİŞ

### 1.1. Araştırma Problemi

Küresel ölçekte hızla değişen toplumsal, teknolojik ve ekonomik dinamikler doğrultusunda öğretim programı anlayışı önemli bir dönüşüm geçirmiştir. Geleneksel olarak bilgi aktarımına dayalı, sabit ve içerik odaklı program yapıların yerini; beceriler, değerler ve tutumlarla bütünleşik, öğrenen merkezli yaklaşımlar almaktadır (OECD, 2020b; Kress, 2000; Ornstein ve Hunkins, 2004). Bu bağlamda öğretim programı, yalnızca yazılı bir belge olmanın ötesine geçerek amaçlanan, uygulanan ve kazanılan program olmak üzere tüm öğrenme ve öğretme süreçlerini kapsayan çok boyutlu bir yapı olarak değerlendirilmektedir (OECD, 2020b; van den Akker, 2003).

Bu doğrultuda OECD, Eğitimin ve Becerilerin Geleceği 2030 Projesi kapsamında, bireylerin belirsizliklerle dolu ve karmaşık bir gelecekte başarılı olabilmeleri için gerekli olan bilgi, beceri, tutum ve değerleri tanımlayan bütüncül bir çerçeve geliştirmiştir. OECD Öğrenme Pusulası 2030 (Learning Compass 2030) olarak sunulan bu model, bireylerin yaşam boyu öğrenme süreçlerinde etkin ve sorumlu katılımcılar olmalarını hedeflemektedir. Bu çerçevede tanımlanan yetkinliklerin ulusal öğretim programlarına nasıl yansıtıldığını incelemek amacıyla OECD, katılımcı ülkelerde belge temelli bir analiz olan Öğretim Programı İçerik Haritalama (Curriculum Content Mapping – CCM) çalışmasını yürütmüştür (OECD, 2020a). Bu çalışmada öne çıkan altı bileşik yetkinlik, bilişsel, sosyal ve duyuşsal boyutları birleştiren, çok boyutlu ve bağlama özgü beceriler olarak tanımlanmıştır.

Bileşik yetkinlikler, bireyin bilgiyi, beceriyi, tutumları ve değerleri bütüncül biçimde harmanlayarak gerçek yaşamda etkili ve sorumlu biçimde kullanabilme kapasitesini ifade eder ve 21. yüzyılın karmaşık problemlerine çözüm geliştirmede temel bir rol üstlenir (OECD, 2020a). Bu bileşik yetkinlik şunlardır: küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma okuryazarlığı, finansal okuryazarlık, bilgi işlemsel düşünme ve girişimcilik.

Bu yetkinliklerin gelişimi yalnızca sınıf içi öğretimle sınırlı değildir. OECD'nin, Bronfenbrenner’ın Ekolojik Sistemler Kuramı’ndan uyarladığı Eğitim 2030 Ekosistemi yaklaşımı, öğretim programlarının uygulanmasının öğrenci, öğretmen, okul, aile ve politika yapıcılar arasındaki çok katmanlı etkileşimlerle şekillendiğini ortaya koyar (OECD, 2020b). Mikro, mezo, ekzo, makro ve krono sistem düzeylerini içeren bu model, bu araştırmada ortaokul düzeyindeki dört temel öğretim programının ve sınıf içi uygulamaların, yetkinlik gelişimini destekleyen ve sınırlayan faktörler doğrultusunda bütüncül biçimde analiz edilmesinde temel alınmıştır.

Sonuç olarak, alanyazın incelendiğinde konu ve içerik odaklı geleneksel program modellerinden, esnek ve yetkinlik temelli öğretim programlarına geçiş olduğu görülmektedir (Marope vd., 2017). Bu dönüşümde OECD Öğrenme Pusulası 2030 bileşik yetkinliklerin geliştirilmesi için yol gösterici bir çerçeve sunmaktadır. Bu doğrultuda çalışma, Türkiye'de Türkçe, matematik, fen bilimleri ve sosyal bilgiler derslerinin hem amaçlanan hem de uygulanan öğretim programı boyutlarında bileşik yetkinlik gelişimini ne ölçüde desteklediğini incelemiştir. Elde edilen bulgular, çalışmadan elde edilen bulgular, Türkiye'de gelecekte yapılabilecek yetkinlik temelli eğitim değişimi için temel veri teşkil edecektir.

## 1.2. Araştırmanın Amacı

Bu çalışma; öğrencilerin 2030 yılında başarılı bireyler olabilmeleri için gerekli görülen bileşik yetkinliklerin (bilgi-işlemsel düşünme, finansal okuryazarlık, girişimcilik, medya okuryazarlığı, küresel yetkinlik ve sürdürülebilir kalkınma okuryazarlığı) ortaokul kademesindeki dört temel ders alanı (Türkçe, matematik, fen bilimleri ve sosyal bilgiler) üzerinden ne ölçüde geliştirilebildiğini incelemeyi amaçlamaktadır. Bu amaçla, söz konusu bileşik yetkinliklerin geliştirilmesine yönelik olarak öğretim programlarının kazanımlar ile okul içi uygulamalar arasındaki uyum düzeyi ve yetkinlik gelişimine yönelik destekleyici ve sınırlayıcı etkenler karşılaşılan ele alınmıştır.

### 1.3. Araştırma Soruları

1. Ortaokul öğretim programları öğrencilerde bileşik yetkinlik gelişimini ne ölçüde teşvik etmektedir?
2. Öğretmenler, ortaokul öğrencilerinde bileşik yetkinliklerin gelişimini ne ölçüde teşvik etmektedir?
    2.1. Farklı branşlardaki öğretmenler ortaokul öğrencilerinde bileşik yetkinliklerin gelişimini ne ölçüde teşvik etmektedir?
3. Uygulamada bileşik yetkinliklerin gelişimini teşvik eden veya engelleyen faktörler nelerdir?

## 2. YÖNTEM

### 2.1. Araştırma Deseni

Bu araştırmada, nitel ve nicel verilerin bir arada kullanıldığı sıralı açıklayıcı desen karma yöntem yaklaşımı benimsenmiştir (Creswell, 2014; Creswell ve Plano Clark, 2018). Bu karma yöntem deseni, araştırma problemini daha bütüncül bir şekilde ele almayı ve farklı veri türlerinin güçlü yönlerinden yararlanarak elde edilen bulguların geçerlilik ve güvenirliğini artırmayı amaçlamaktadır. Araştırmanın ilk aşamasında, öğretim programlarının doküman analizi ve öğretmen anketleriyle nicel veriler toplanmış; ardından, bu bulguları derinlemesine yorumlamak amacıyla öğretmenlerle yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Doküman analizi, bileşik yetkinliklerin öğretim programlarındaki yerini ortaya koyarken; anketler, öğretmenlerin bu yetkinlikleri sınıf içi, ders dışı ve sosyal etkinliklerde nasıl geliştirdiklerini göstermiştir. Görüşmeler ile uygulamada karşılaşılan güçlüklerin ve destekleyici unsurları ayrıntılı şekilde anlaşılması amaçlanmıştır.

Araştırma, bileşik yetkinliklerin geliştirilmesini incelemek amacıyla Türkiye genelinde faaliyet gösteren bir sivil toplum kuruluşuna bağlı özel okul ağı içerisinde yürütülmüştür. Bu özel okul ağı; çok sayıda şehirde kampüsleri bulunan, çok yönlü öğrenci gelişimini ve küresel vatandaşlık bilincini öncelikleyen çağdaş bir eğitim vizyonuna sahiptir. Yenilikçi öğretim yaklaşımları ile zenginleştirilmiş bir ortam sunan bu kurum, araştırmanın amacına uygun zengin veri elde etme potansiyeli nedeniyle tercih edilmiştir. Bu okullarda Millî Eğitim Bakanlığı'nın öğretim programları esas olarak uygulanmakta olup ulusal programlara ek olarak zenginleştirme çalışmaları gerçekleştirilmektedir. Araştırma ortamı, zengin veri sağlama potansiyeline göre amaçlı örnekleme ile belirlenmiştir. Bu doğrultuda, özel bir okul ağına bağlı 45 okulda görev yapan 479 ortaokul öğretmenine anket uygulanmış; uygun bulunan 450 öğretmenin verileri analize dâhil edilmiştir. Okullar, elde edilen verilere göre bileşik yetkinlikleri geliştirme düzeylerine göre yüksek, orta ve düşük olarak üç kategoriye ayrılmış; her kategoriden bir okul seçilerek, bu okullardaki deneyimli öğretmenlerle yarı yapılandırılmış görüşmeler gerçekleştirilmiştir.

## 2.2. Öğretim Programlarının Analizi

Araştırmanın nicel aşamasında, MEB'in 2019 5–8. Sınıf Türkçe Dersi Öğretim Programı, 2018 5–8. Sınıf Matematik Dersi Öğretim Programı, 5–8. Sınıf Fen Bilimleri Dersi Öğretim Programı ve 5–7. Sınıf Sosyal Bilgiler Dersi Öğretim Programı içerik analiziyle incelenmiştir (MoNE, 2018; 2019). Bu dersler, haftalık saat yükleri ve yetkinlik gelişimine katkı potansiyelleri nedeniyle seçilmiştir. Araştırmada amaçlanan öğretim programı (intended curriculum) olarak bu dört öğretim programı belgesinin kazanımları analiz edilmiş olup kazanımların bileşik yetkinlikleri ne ölçüde geliştirmeyi hedeflediğini belirlemek amacıyla araştırmacı tarafından geliştirilen üç düzeyli bir derecelendirme ölçeği kullanılmıştır. Bu doğrultuda kazanımlar, bileşik yetkinliklerin gelişimini hedefleme düzeylerine göre "hedeflenmeyen", "kısmen hedeflenen" ve "açık şekilde hedeflenen" olmak üzere üç kategoriye ayrılmıştır.

Kodlama sürecinde, yorum gerektirme oranı düşük (low inference) bir yaklaşım benimsenmiştir; bu doğrultuda kazanımlarda açıkça, doğrudan gözlenebilir ve ölçülebilir yetkinlik gelişimi ifadeleri dikkate alınarak nesnel bir analiz yapılmıştır. (Kaplan, 1964; Sandelowski, 2000). Her öğretim programı için %25 oranında kritik kazanımlar, temsilî örneklem yoluyla belirlenmiş ve dört branş öğretmeni tarafından derecelendirilmiştir (Miles ve Huberman, 1994; Neuendorf, 2002). Kodlayıcılar ile araştırmacı arasında yüksek düzeyde uyum (%85'in üzerinde) sağlanmıştır (Creswell, 2014). Bu analiz, öğretim programlarının bileşik yetkinlik gelişimini ne ölçüde hedeflediğini sistematik ve nesnel biçimde ortaya koymayı amaçlamıştır.

### 2.3. Betimsel Anket Analizi

Araştırmanın nicel aşamasında; öğretmenlerin okul içi uygulamalarında (implimented curriculum) bileşik yetkinlikleri ne ölçüde geliştirdiklerini belirlemek amacıyla betimsel bir anket uygulanmıştır (Fraenkel vd., 2012). Araştırmacı tarafından alanyazın doğrultusunda hazırlanan anket; küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma okuryazarlığı, finansal okuryazarlık, bilgi-işlemsel düşünme ve girişimcilik olmak üzere altı bileşenden oluşan toplam 68 maddeden meydana gelmiştir. 5li-Likert tipi ölçekle yapılandırılan anketin geçerliği ve güvenirliği ön test, pilot uygulama ve uzman görüşleriyle sağlanmış olup anket uygulamasının ardından anket yanıtlarının güvenirliğinde Cronbach's Alpha değeri .970 olarak hesaplanmıştır (Nunnally ve Bernstein, 1994). Anket, araştırmanın yürütüldüğü özel okul ağının 45 kampüsünde görev alan Türkçe, matematik, sosyal bilgiler ve fen bilimleri branşlarındaki toplam 479 ortaokul öğretmenine uygulanmıştır. Anketin ardından, 450 öğretmenin verisi analize dahil edilmiştir. Verilerin yorumlanabilirliğini artırmak amacıyla, 5'li Likert tipinden elde edilen veriler 3'lü Likert tipine dönüştürülmüştür (Chakrabartty, 2023; Chakrabartty ve Gupta, 2016; Matell ve Jacoby, 1971). Bu doğrultuda, ankette yer alan "her zaman" ve "sıklıkla" seçenekleri bir grup; "ara sıra" seçeneği ayrı bir grup; "nadiren" ve "hiçbir zaman" seçenekleri ise başka bir grup olarak birleştirilerek 3'lü yapı oluşturulmuştur. Anket verileri yorumlanırken öğretmenlerin "sıklıkla ve her zaman" kategorilerinde birleştirilen yanıtları, derslerinde öncelik verdikleri yetkinlik gelişimi uygulamalarını yansıttığı için analiz sürecinde özellikle vurgulanmıştır (Field, 2018).

### 2.4. Görüşmelerin Analizi

Araştırmanın nitel aşamasında; anket sonuçları doğrultusunda bileşik yetkinlikleri geliştirme potansiyellerine göre; yüksek, orta ve düşük düzey olmak üzere üç kategoriye ayrılan okullardan Türkçe, matematik, fen bilimleri ve sosyal bilgiler alanlarında dörder öğretmen olmak üzere toplam 12 deneyimli öğretmen ile yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Öğretmen görüşmeleri tematik içerik analiziyle incelenmiş ve veriler kodlama, tema oluşturma, düzenleme ve yorumlama adımlarına göre analiz edilmiştir (Yıldırım ve Şimşek, 2016). Kodlama işlemi MAXQDA24 yazılımıyla yürütülmüş, verilerden türetilen kodlar kategorilere ayrılmış ve ardından bileşik yetkinlik gelişimini destekleyen ve sınırlayan faktörlere ilişkin temalar oluşturulmuştur (Strauss ve Corbin, 1990). İlk aşamada kodlamada güvenilirlik için aynı veri kümesi belirli bir süre sonra araştırmacı tarafından yeniden kodlanmış ve %87 oranında tutarlılık sağlanmıştır (Miles ve Huberman, 1994). Kodlamalar eğitim bilimleri alanında uzman bir akademisyenle gözden geçirilmiş ve nihai tema yapısı oluşturulmuştur (Lincoln ve Guba, 1985).

## 3. BULGULAR

Araştırmada açıklayıcı sıralı karma yöntem deseni kullanılmıştır (Creswell ve Plano Clark, 2018). Nicel veriler (öğretim programlarının analizi ve betimleyici anket analizi), nitel verilerle birlikte yorumlanmıştır. Bu süreçte veri çeşitlemesi ile bulguların geçerliliği artırılmıştır (Denzin, 2012). Araştırmada elde edilen nitel bulgular, nicel sonuçlarla örtüşen veya çelişen yönleriyle ele alınarak amaçlanan (intended) ve uygulanan (implimented) öğretim programlarının uyumuna ve yansımalarına ilişkin çok boyutlu bir analiz sunulmuştur (Tashakkori ve Teddlie, 2010). Bu doğrultuda araştırmanın nicel ve nitel bulguları aşağıda sunulmaktadır.

### 3.1. Ortaokul Öğretim Programlarında Bileşik Yetkinlikler

Bu çalışmanın birinci araştırma sorusu, "Ortaokul öğretim programları, bileşik yetkinliklerin geliştirilmesini ne ölçüde desteklemektedir?" sorusuna odaklanmaktadır. Bu doğrultuda gerçekleştirilen öğretim programları içerik analizi, söz konusu yetkinliklerin dersler arasında farklı düzeylerde ele alındığını ve programların bütüncül bir yapıdan yoksun olduğunu ortaya koymuştur. 2018 Matematik Dersi Öğretim Programı, bilgi-işlemsel düşünme yetkinliğinin gelişimini yüksek düzeyde hedeflemekte; ancak küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma ve finansal okuryazarlık yetkinliklerinin gelişimini ya hiç hedeflememekte ya da sınırlı düzeyde hedeflemektedir. 2019 Türkçe Dersi Öğretim Programı, medya okuryazarlığı yetkinliğinin gelişimini orta düzeyde hedeflerken; küresel yetkinlik, sürdürülebilir kalkınma ve finansal okuryazarlık yetkinliklerinin gelişimini hedeflemediği görülmüştür. Ayrıca, bilgi-işlemsel düşünme yetkinliği düşük düzeyde, girişimcilik yetkinliği ise sınırlı düzeyde hedeflenmektedir. 2018 Fen Bilimleri Dersi Öğretim Programı, bilgi-işlemsel düşünme yetkinliğinin gelişimini orta düzeyde, girişimcilik yetkinliğinin gelişimini ise düşük düzeyde hedeflemektedir. Bununla birlikte, küresel yetkinlik, medya okuryazarlığı, sürdürülebilir kalkınma ve finansal okuryazarlık yetkinliklerinin gelişimi oldukça sınırlı düzeyde hedeflenmektedir. Buna karşılık, 2018 Sosyal Bilgiler Dersi Öğretim Programı, küresel yetkinliğin gelişimini yüksek düzeyde, sürdürülebilir kalkınma okuryazarlığı yetkinliğinin gelişimini ise orta düzeyde hedeflemektedir. Medya okuryazarlığı, finansal okuryazarlık ve girişimcilik yetkinliklerinin gelişimi ise sınırlı düzeyde hedeflenmektedir.

### 3.2. Okul İçi Uygulamalarda Bileşik Yetkinliklerin Geliştirilmesi

Bu araştırmanın ikinci sorusu kapsamında, öğretmenlerin bileşik yetkinlikleri sınıf içi uygulamalarda ne düzeyde geliştirdiklerini ve bu durumun branşlara göre farklılıklarını ortaya koymak amacıyla yürütülen betimsel anket verileri, bazı yetkinliklerin öğretim programlarında açıkça hedeflenmemesine rağmen öğretmenler tarafından uygulamaya entegre edildiğini, bazı yetkinliklerde ise uygulama düzeyinin düşük kaldığını göstermiştir. Bu kapsamda; araştırma bulguları küresel yetkinlik açısından ele alındığında, 2018 Sosyal Bilgiler Dersi Öğretim Programı bu yetkinliğin gelişimini yüksek düzeyde hedeflemekte iken öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. Buna karşılık, 2019 Türkçe Dersi Öğretim Programı ve 2018 Fen Bilimleri Dersi Öğretim Programı, küresel yetkinlik gelişimini hedeflememekte; ancak öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde orta ila yüksek düzeyde uyguladıklarını belirtmişlerdir. 2018 Matematik Dersi Öğretim Programı ise küresel yetkinliği hedeflememekte ve öğretmenler bu yetkinliği düşük düzeyde derslerinde uyguladıklarını belirtmişlerdir.

Medya okuryazarlığı açısından, 2019 Türkçe Dersi Öğretim Programı bu yetkinliğin gelişimini orta düzeyde hedeflemekte iken öğretmenler medya okuryazarlığını geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. 2018 Sosyal Bilgiler Dersi Öğretim Programı ve 2018 Fen Bilimleri Dersi Öğretim Programı ise bu yetkinliği sınırlı düzeyde hedeflemekte; buna rağmen öğretmenler medya okuryazarlığına yönelik etkinlikleri derslerinde orta ila yüksek düzeyde uyguladıklarını ifade etmişlerdir. Matematik öğretmenleri ise hem programda hem uygulamada bu yetkinliği düşük düzeyde derslerine entegre ettiklerini belirtmişlerdir.

Sürdürülebilir kalkınma okuryazarlığı için 2018 Sosyal Bilgiler Dersi Öğretim Programı tarafından orta düzeyde hedeflenmekte; öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. 2019 Türkçe Dersi Öğretim Programı ve 2018 Matematik Dersi Öğretim Programı bu yetkinliği hedeflememekte ve öğretmenler bu yetkinliğe yönelik uygulamalarını düşük düzeyde gerçekleştirdiklerini ifade etmişlerdir. 2018 Fen Bilimleri Dersi Öğretim Programı ise sürdürülebilir kalkınma okuryazarlığına sınırlı düzeyde yer vermekte; öğretmenler bu yetkinliği derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. Finansal okuryazarlık açısından, tüm programlar sınırlı düzeyde hedefleme içermekte olup öğretmenler de genellikle bu yetkinliği derslerinde düşük düzeyde uyguladıklarını ifade etmişlerdir. Özellikle Sosyal Bilgiler öğretmenleri, bilinçli tüketici eğitimi ve tüketici haklarına yönelik etkinlikleri derslerinde daha sık kullandıklarını belirtmişlerdir. Matematik öğretmenleri ise temel düzeyde finansal kavramlara yer verdiklerini; ancak ileri düzey uygulamalarda eksiklik yaşadıklarını vurgulamışlardır. Türkçe ve Fen Bilimleri öğretmenleri bu yetkinliği derslerinde sınırlı düzeyde uyguladıklarını ifade etmişlerdir.

Bilgi-işlemsel düşünme becerileri, 2018 Matematik Dersi Öğretim Programı tarafından yüksek düzeyde, 2018 Fen Bilimleri Dersi Öğretim Programı tarafından ise orta düzeyde hedeflenmektedir. Matematik ve Fen Bilimleri öğretmenleri, problem çözme, mantıksal sıralama ve desen tanıma gibi alt becerileri derslerinde sık uyguladıklarını belirtmişlerdir. Bununla birlikte, kodlama ve programlama gibi bilgisayar temelli etkinliklerin derslerde oldukça sınırlı düzeyde yer aldığını ifade etmişlerdir.

Girişimcilik ise en çok 2018 Sosyal Bilgiler Dersi Öğretim Programı tarafından hedeflenmekte olup öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. 2019 Türkçe Dersi Öğretim Programı ve 2018 Matematik Dersi Öğretim Programı bu yetkinliği sınırlı düzeyde hedeflemekte iken öğretmenler bu yetkinliği derslerinde düşük düzeyde uyguladıklarını ifade etmişlerdir. 2018 Fen Bilimleri Dersi Öğretim Programı girişimciliği düşük düzeyde hedeflemekte olup fen bilimleri öğretmenleri bu yetkinliği yenilikçi fikirlerle ürün tasarlama gibi uygulamalarla orta düzeyde derslerine entegre ettiklerini belirtmişlerdir. Bu bulgular, öğretmenlerin bazı alanlarda öğretim programındaki sınırlılığı aşarak yetkinlik gelişimini desteklediklerini; bazı durumlarda ise hem programda hem uygulamada yetersizliklerin olduğunu göstermektedir.

### 3.3. Bileşik Yetkinliklerin Gelişimini Destekleyen ve Sınırlayan Etkenler

Araştırmanın üçüncü sorusu kapsamında, bileşik yetkinliklerin gelişimini destekleyen ve sınırlayan başlıca faktörleri belirlemeye yönelik olarak gerçekleştirilen öğretmen görüşmelerinden elde edilen bulgular beş ana tema altında ele alınmıştır: (1) hedeflenme durumu, (2) bireysel ve sosyal dinamiklerin rolü, (3) eğitim sisteminin rolü, (4) öğretmen yeterliklerinin rolü ve (5) öğretim stratejilerinin rolü. Hedefleme teması altında yetkinliklerin doğrudan ya da dolaylı olarak hedeflenip hedeflenmediği; bireysel ve sosyal dinamikler teması altında veli beklentileri ve öğrenci profili; eğitim sistemi teması altında millî eğitim politikaları, öğretim programı yapısı, sınav odaklı eğitim ve öğretmen iş yükü; öğretmen yeterlikleri teması altında öğretmen yeterlik düzeyleri, bilgi kaynaklarına erişim ve destekleyici okul mekanizmaları; öğretim stratejileri teması altında ise öğretim sürecinde entegrasyon ve ilişkilendirme, öğrenci merkezli yaklaşım, öğretim materyalleri ve ders dışı etkinlikler yer almaktadır.

**Tema 1. Yetkinlik Gelişiminde Hedeflemenin Rolü:** Araştırma bulguları, öğretmen ifadelerine dayalı olarak bileşik yetkinliklerin öğretim sürecinde ne ölçüde hedeflendiğine ilişkin farklılıklar olduğunu ortaya koymuştur. Bazı yetkinliklerin uygulamada açıkça hedeflenmediği görülmektedir. Bu durum, özellikle ortaokul düzeyinde yetkinliklere ilişkin belirgin ve yapılandırılmış öğrenme hedeflerinin bulunmaması, kasıtlı etkinliklerin yetersizliği, branş düzeyinde sınırlı odaklanma ve disiplinler arası iş birliğinin eksikliği gibi nedenlerle açıklanmaktadır. Ayrıca, öğretim programı sınırlılıkları, yapılandırılmış planlama eksikliği ve zaman kısıtları da bu yetkinliklerin sistematik ve anlamlı biçimde geliştirilmesini çoğu zaman engellemekte, dolayısıyla potansiyel uygulama fırsatlarının göz ardı edilmesine yol açmaktadır.

**Tema 2. Yetkinlik Gelişiminde Bireysel ve Sosyal Dinamiklerin Rolü:** Bireysel ve sosyal dinamikler, özellikle veli beklentileri ve öğrenci profilleri, bileşik yetkinliklerin gelişimini doğrudan etkileyen önemli etkenler arasında yer almaktadır. Öğretmen görüşlerine göre velilerin çoğunlukla sınav başarısını önceliklendirmesi, öğretmenlerin beceri ve yetkinlik temelli etkinliklere yeterli zaman ayırmasını zorlaştırmaktadır. Ayrıca, öğrencilerin yaş gruplarına göre gösterdiği ilgi ve katılım düzeyleri farklılık arz etmektedir. Daha küçük yaş gruplarında (5. ve 6. sınıflar) öğrenciler genellikle daha istekli ve meraklı bir öğrenme yaklaşımı sergilerken, 7. ve 8. sınıflarda sınav baskısının artmasıyla birlikte motivasyon düşmekte ve öğrencilerin katılımı azalmaktadır. Bu durum, yetkinlik gelişimini destekleyen ortamların oluşmasını sınırlamaktadır.

**Tema 3. Yetkinlik Gelişiminde Eğitim Sisteminin Rolü:** Eğitim sistemi, bileşik yetkinliklerin gelişimini sınırlayan başlıca yapısal etkenlerden biri olarak öne çıkmaktadır. Öğretmenlerin ifadelerine göre Millî Eğitim Bakanlığı politikalarının yeterince yapılandırılmamış olması, uygulamaya ilişkin ani düzenlemeler ve sistemin sınav odaklı yapısı, yetkinlik temelli öğretimi zorlaştırmaktadır. Özellikle 8. sınıfta yapılan lise giriş sınavı, öğretmenlerin önceliğini konu yetiştirme ve test çözme üzerine yoğunlaştırmakta; bu durum ise beceri temelli öğrenme süreçlerinin ikinci plana itilmesine yol açmaktadır. Ayrıca, öğretmenlerin artan iş yükü, ders dışı sorumluluklar ve sınırlı planlama/zaman yönetimi fırsatları, uygulamaların sürdürülebilirliğini azaltmakta ve sistematik yetkinlik gelişimini sınırlamaktadır.

**Tema 4. Yetkinlik Gelişiminde Öğretmen Yeterliklerinin Rolü:** Öğretmenlerin bilgi düzeyleri ve mesleki gelişim fırsatları, bileşik yetkinliklerin sınıf içi uygulamalarına doğrudan etki etmektedir. Görüşmelerden elde edilen bulgular, öğretmenlerin büyük çoğunluğunun bileşik yetkinlikler konusunda yeterli bilgiye sahip olmadığını ve bu doğrultuda yapılandırılmış hizmet içi eğitim fırsatlarının yetersiz kaldığını göstermektedir. Bununla birlikte, bazı öğretmenler bireysel çaba ile farklı kaynaklara ulaşarak (webinarlar, sosyal medya, akademik kaynaklar vb.) kendi bilgi düzeylerini artırma çabası göstermektedir. Okulun sunduğu destekleyici ortam, yönetsel yaklaşımlar, öğretmenler arası iş birliği kültürü ve alternatif programlar (örneğin Eco-Schools, Global Schools gibi) ise öğretmenlerin yetkinlik temelli öğretimi uygulamalarını destekleyen olumlu etkenler arasında yer almaktadır.

**Tema 5. Yetkinlik Gelişiminde Öğretim Stratejilerinin Rolü:** Eğretim stratejileri, bileşik yetkinliklerin gelişiminde belirleyici bir rol oynamaktadır. Öğrenci merkezli yaklaşımlar, özellikle proje tabanlı öğrenme, problem çözme, aktif öğrenme ve disiplinler arası ilişkilendirme gibi yöntemler, öğrencilerin yetkinlik temelli deneyimler edinmesini desteklemektedir. Ancak öğretmenlerin bu stratejileri uygulama düzeyleri değişkenlik göstermektedir. Katılımcılar, özellikle MEB tarafından sunulan ders kitaplarının yetkinlik gelişimi açısından yetersiz kaldığını, bu nedenle ek materyaller, dijital içerikler ve Web 2.0 araçlarını sıklıkla kullandıklarını ifade etmiştir. Bunun yanı sıra, öğrenci kulüpleri, yarışmalar, sosyal sorumluluk projeleri ve ders dışı etkinlikler öğrencilerin deneyim yoluyla yetkinlik kazanmalarına katkı sağlamaktadır. Ancak bu etkinliklerin öğretim programıyla bütüncül biçimde yapılandırılmaması, yetkinlik gelişiminin sistematik değil, çoğu zaman rastlantısal biçimde gerçekleşmesine neden olmaktadır.

## 4. TARTIŞMA VE ÖNERİLER

Bu çalışma, ortaokul düzeyindeki derslere özgü öğretim programları ile bu programların okul içi uygulamalarının, öğrencilerde bileşik yetkinliklerin gelişimini ne ölçüde desteklediğini incelemiştir. Açıklayıcı sıralı karma yöntem desenine dayanan araştırmada, nicel veriler öğretim programlarının içerik analizi ve betimleyici anket bulguları aracılığıyla temel bir çerçeve sunarken; nitel veriler öğretmen görüşmeleri yoluyla bu yetkinliklerin gelişimini destekleyen veya sınırlayan etkenlere ilişkin derinlemesine bilgiler sağlamıştır. Bu bölümde, araştırmadan elde edilen nitel ve nicel bulgulara dair derinlemesine bir tartışma sunulmakta olup bu bulguların eğitim uygulamaları ve gelecek araştırmalar için taşıdığı anlamlara yer verilmektedir.

## 4.1. Amaçlanan ve Uygulanan Öğretim Programlarında Bileşik Yetkinliklerin Geliştirilmesi

### 4.1.1. Öğretim Programında ve Uygulamada Küresel Yetkinlik

OECD (2020a), küresel yetkinliği bireylerin yerel, küresel ve kültürlerarası meseleleri inceleyebilme; farklı bakış açılarını anlayıp saygı gösterebilme; kültürel farklılıklara açık, etkili bir biçimde iletişim kurabilme ve toplum yararına iş birliği yapabilme yeterliği olarak tanımlar. Bu yetkinlik, bireyin hem bilişsel hem de sosyal-duygusal boyutta küresel farkındalık ve sorumluluk geliştirmesini amaçlamaktadır. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping - CCM) çalışmasına göre OECD ülkelerinde; küresel yetkinlik çoğunlukla sosyal bilgiler ve beşerî bilimlerde güçlü şekilde vurgulanırken, matematik ve fen bilimleri öğretim programlarında sınırlı düzeyde temsil edilmektedir (OECD, 2024). Örneğin British Columbia (Kanada), matematik öğretim programının %17'sini bu yetkinliğe ayırarak ön plana çıkarken; Kore, İsveç ve Kuzey İrlanda gibi ülkelerde sınırlı da olsa doğrudan entegrasyon görülmektedir.

Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı'nın küresel yetkinlik gelişimini hedeflemediğini ortaya koymuştur. Öğretmenlerin büyük çoğunluğu da bu yetkinliği derslerinde uygulamadıklarını belirtmiştir. Oysa küresel meseleleri matematiksel problem çözme bağlamında ele almak, öğrencilerin hem eleştirel düşünme hem de vatandaşlık bilinci geliştirmesine katkı sunabilir (Szabo vd., 2020; Zhao, 2010). Fen Bilimleri dersi için yapılan değerlendirmelerde ise 2018 Fen Bilimleri Dersi Öğretim Programı küresel yetkinlik gelişimini sınırlı düzeyde hedeflemekte; ancak öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. Özellikle çevresel sorunlar ve sürdürülebilirlik bağlamında fen eğitimiyle küresel farkındalık arasında bağ kurmak mümkündür (Bybee, 2010; OECD, 2024). 2019 Türkçe Dersi Öğretim

Programı küresel yetkinliği doğrudan hedeflememektedir. Ancak öğretmenler, metin seçimi, kültürel karşılaştırmalar ve tartışma etkinlikleri yoluyla bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını ifade etmişlerdir. Bu bulgu, öğretmenlerin öğretim programındaki eksiklikleri kendi öğretim yaklaşımlarıyla telafi etmeye çalıştığını göstermektedir (Urlaub, 2013; Ulutaş ve Kaya, 2019). 2018 Sosyal Bilgiler Dersi Öğretim Programı ise küresel yetkinlik gelişimini yüksek düzeyde hedeflemektedir. Küresel vatandaşlık, kültürel çeşitlilik ve toplumsal sorumluluk gibi temalar öğretim programına doğrudan entegre edilmiş olup, öğretmenler de bu yetkinliği derslerinde yüksek düzeyde uyguladıklarını belirtmiştir. Bu durum, Türkiye'nin sosyal bilgiler dersi bağlamında OECD ülkeleriyle benzer bir yaklaşım sergilediğini göstermektedir.

Sonuç olarak, Türkiye'de küresel yetkinlik gelişimi açısından öğretim programları arasında önemli farklılıklar gözlenmiştir. Sosyal Bilgiler öğretim programı bu yetkinliği sistemli biçimde hedeflerken; diğer derslerde ya sınırlı düzeyde hedeflenmekte ya da hiç yer verilmemektedir. Buna karşın, öğretmenler bazı derslerde öğretim programındaki boşlukları uygulama yoluyla telafi etmeye çalışmaktadır. Bu durum, küresel yetkinliğin öğretim programları genelinde disiplinler arası ve yapılandırılmış bir yaklaşımla ele alınması gerekliliğini ortaya koymaktadır.

### 4.1.2. Öğretim Programında ve Uygulamada Medya Okuryazarlığı

OECD (2020a) medya okuryazarlığını bireylerin dijital ve geleneksel medya ortamlarında karşılaştıkları bilgileri eleştirel bir bakışla değerlendirme, yanıltıcı içerikleri ayırt etme, etik yargılar geliştirme ve bilgi paylaşımında sorumluluk bilinci taşıma yeterliği olarak tanımlamaktadır. Bu okuryazarlık, bireyleri sadece bilgi tüketicisi değil, aynı zamanda bilinçli ve sorgulayıcı medya kullanıcıları olarak yetiştirmeyi amaçlamaktadır. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping - CCM) çalışmasına göre OECD ülkeleri arasında medya okuryazarlığı genellikle ulusal dil ve sosyal bilgiler öğretim programlarında orta-yüksek düzeyde yer bulurken, matematik ve fen bilimleri derslerinde oldukça sınırlı biçimde temsil edilmektedir (OECD, 2024). Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı medya okuryazarlığı yetkinliğinin gelişimini hedeflememektedir. Öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde düşük düzeyde uyguladıklarını belirtmişlerdir. Oysa araştırmalar, sayısal veri okuryazarlığı, istatistiksel analiz ve medya içeriklerinin değerlendirilmesinin matematik dersleriyle bütünleştirilebileceğini göstermektedir (Stein, 2009; OECD, 2024). 2019 Türkçe Dersi Öğretim Programı, medya okuryazarlığı yetkinliğinin gelişimini orta düzeyde hedeflemektedir. Öğretmenler ise bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. Araştırmalar, çok modlu metin incelemeleri, haber analizi ve medya karşılaştırmaları gibi uygulamalarla öğrencilerin medya mesajlarına eleştirel yaklaşmalarının desteklendiğini belirtmektedir (Tüzel, 2012; Potur, 2023). 2018 Sosyal Bilgiler Dersi Öğretim Programı medya okuryazarlığını sınırlı düzeyde hedeflemekte; ancak öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde orta ila yüksek düzeyde uyguladıklarını ifade etmişlerdir. Araştırmalar; belgesel analizleri, sosyal medya okuryazarlığı ve haber doğrulama etkinliklerinin medya okuryazarlığının gelişiminde başlıca uygulamalar arasında yer aldığını göstermektedir (Manfra ve Holmes, 2018; Sperry, 2012). 2018 Fen Bilimleri Dersi Öğretim Programı medya okuryazarlığı yetkinliğini hedeflememektedir. Ancak öğretmenler, bilimsel haberlerin güvenilirliğini değerlendirme, veri görselleştirme ve bilimsel iddiaların doğruluk analizleri gibi etkinliklerle bu yetkinliği derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. Bu durum, fen okuryazarlığı ile medya okuryazarlığı arasında bütünleyici bir bağ kurulabileceğini göstermektedir (Jenson ve Droumeva, 2016; Whitelegg vd., 2013). Genel olarak, Türkiye'de medya okuryazarlığı açısından öğretim programları sınırlı düzeyde hedefleme gösterirken, öğretmen uygulamaları bazı derslerde bu boşluğu telafi edecek şekilde daha ileri düzeydedir. Ancak bu uygulamaların sistematik ve sürdürülebilir hale gelmesi için medya okuryazarlığının tüm derslere disiplinler arası bir yaklaşımla entegre edilmesi önerilmektedir.

#### 4.1.3. Öğretim Programında ve Uygulamada Sürdürülebilir Kalkınma Okuryazarlığı

OECD (2020a), sürdürülebilir kalkınma okuryazarlığını bireylerin çevresel, sosyal ve ekonomik sistemler arasındaki ilişkiyi kavrayarak, bilinçli kararlar alma, adil yaşam biçimlerini destekleme ve gezegenin sürdürülebilirliğine katkı sağlama yeterliği olarak tanımlar. Bu yetkinlik, bireylerin karmaşık küresel sorunlara etik ve bütüncül bir bakışla yaklaşmasını hedeflemektedir. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping - CCM) çalışmasına göre OECD ülkeleri arasında sürdürülebilir kalkınma okuryazarlığı en çok fen bilimleri ve sosyal bilgiler öğretim programlarında vurgulanmakta; matematik ve ulusal dil gibi alanlarda ise daha sınırlı düzeyde temsil edilmektedir (OECD, 2024). Kuzey İrlanda, Japonya, Litvanya, Çin ve İsrail gibi ülkelerde bu yetkinlik sistematik olarak öğretim programlarına entegre edilmiştir.

Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı'nın sürdürülebilir kalkınma okuryazarlığı yetkinliğinin gelişimini hedeflemediğini ortaya koymuştur. Öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde çok düşük düzeyde uyguladıklarını belirtmişlerdir. Oysa istatistiksel analiz, veri okuryazarlığı ve matematiksel modelleme yoluyla çevresel konulara çözüm üretmek bu yetkinliği destekleyecek önemli stratejilerdendir (Gadzaova vd., 2017; Lafuente-Lechuga vd., 2020). 2019 Türkçe Dersi Öğretim Programı sürdürülebilir kalkınma okuryazarlığı yetkinliğinin gelişimini hedeflememektedir. Öğretmenler de bu yetkinliği sınıf içinde düşük düzeyde ele aldıklarını ifade etmişlerdir. Araştırmalar, uluslararası örneklerde bu yetkinliğin dil derslerine, metin analizi, hikâye anlatımı ve toplumsal meseleler üzerine tartışmalar yoluyla entegre edildiğini göstermektedir (Bulut ve Çakmak, 2018; Ölçer ve Öztürk, 2025).

2018 Sosyal Bilgiler Dersi Öğretim Programı ise sürdürülebilir kalkınma okuryazarlığı yetkinliğinin gelişimini orta düzeyde hedeflemektedir. Öğretmenler, bu yetkinliği geliştirecek etkinlikleri derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. Araştırmalar; senaryo analizinin, tartışma tekniklerinin ve problem çözme temelli öğrenme uygulamalarının bu alanda öne çıkan stratejiler olduğunu göstermektedir (Dere ve Ateş, 2022; Kaya ve Tomal, 2011). OECD ülkeleri arasında da sosyal bilgiler dersleri, bu yetkinliğin kazandırılmasında temel rol oynamaktadır. 2018 Fen Bilimleri Dersi Öğretim Programı sürdürülebilir kalkınma okuryazarlığı yetkinliğinin gelişimini sınırlı düzeyde hedeflemekte; buna karşın öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde orta düzeyde uyguladıklarını ifade etmişlerdir. Alanyazındaki araştırmalarda göstermektedir ki öğretmenler özellikle STEM projeleri, çevresel sorunlar üzerine yapılan deneyler ve bilimsel tartışmalar aracılığıyla sürdürülebilirlik konularını derslerine entegre etmeye çalışmaktadır (Dembereldorj vd., 2024; Yüzbaşıoğlu ve Kurnaz, 2022).

Genel olarak, Türkiye'de sürdürülebilir kalkınma okuryazarlığı, öğretim programlarında sınırlı düzeyde hedeflenmekte; öğretmenler ise bu boşluğu bireysel çabalarıyla belirli ölçüde telafi etmektedir. Ancak bu çabaların sistematik hale gelebilmesi için açık öğrenme hedefleri, disiplinler arası ilişkilendirme ve öğretim stratejilerinin çeşitlendirilmesi önerilmektedir (Su vd., 2023; UNESCO, 2017).

### 4.1.4. Öğretim Programında ve Uygulamada Bilgi-İşlemsel Düşünme

OECD (2020a), bilgi-işlemsel düşünmeyi, bireylerin problem çözmek, veri analiz etmek, algoritmalar oluşturmak ve dijital teknolojilerle etkili çözümler geliştirmek için sistematik düşünme becerilerini kullanma yetkinliği olarak tanımlamaktadır. Bu yetkinlik, bireylerin dijital çağın gerektirdiği bilişsel esneklik, mantıksal akıl yürütme ve algoritmik çözümleme becerilerini geliştirmeyi amaçlamaktadır. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping – CCM) verilerine göre OECD ülkeleri arasında bilgi-işlemsel düşünme en çok matematik ve fen bilimleri öğretim programlarında yer almakta; sosyal bilgiler ve ulusal dil programlarında ise oldukça sınırlı düzeyde temsil edilmektedir (OECD, 2024). Estonya, Kore ve İngiltere gibi ülkelerde bu yetkinlik temel STEM alanlarıyla entegre biçimde öğretilmekte; kodlama, algoritmik düşünme ve dijital problem çözme gibi beceriler müfredatın parçası hâline getirilmektedir.

Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı'nın bilgi-işlemsel düşünme yetkinliğinin gelişimini yüksek düzeyde hedeflediğini göstermektedir. Öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. Alanyazında, matematik derslerinde problem çözme, mantıksal sıralama, desen tanıma ve algoritmik görevlerin, öğrencilerde bilgi-işlemsel düşünme becerilerini geliştirdiği ortaya konmuştur (Guzdial, 2019; Weintrop vd., 2016). Ancak, araştırmalarda öğretmenlerin özellikle kodlama ve programlama gibi bilgisayar temelli uygulamalarda yeterince desteklenmediği ve bu alanların sınıf içinde sınırlı düzeyde işlendiği belirtilmiştir. Fen Bilimleri öğretim programı ise bilgi-işlemsel düşünme yetkinliğinin gelişimini orta düzeyde hedeflemektedir. Öğretmenler bu yetkinliği derslerinde orta düzeyde uyguladıklarını belirtmişlerdir. Çalışmalarda, bilimsel verilerin yorumlanması, veri toplama ve analiz etme gibi süreçlerin bilgi-işlemsel düşünmeyi desteklediği görülmüştür (Su vd., 2023; Wing, 2006). Ayrıca alanyazında; STEM projeleri, simülasyonlar ve sensör teknolojileri gibi uygulamaların öğrencilerin dijital düşünme becerilerini artırmada etkili olduğu belirtilmiştir (Capraro ve Slough, 2013; Meral ve Yalçın, 2022). 2019 Türkçe Dersi Öğretim Programı bilgi-işlemsel düşünme yetkinliğinin gelişimini düşük düzeyde hedeflemektedir. Öğretmenler bu yetkinliği derslerinde sınırlı düzeyde uyguladıklarını belirtmişlerdir. Araştırmalarda, bilgi-işlemsel düşünmenin özellikle çoklu ortam okuryazarlığı, dijital hikâye anlatımı, bilgi organizasyonu ve sistematik metin yapıları üzerinden Türkçe derslerinde de geliştirilebileceği ortaya konmuştur (Jacob ve Warschauer, 2018; Korkmaz ve Altun, 2021).

Alanyazında, özellikle metin çözümleme ve dijital kaynakları kullanarak anlam çıkarma gibi görevlerin bu yetkinlik ile örtüşen yönler taşıdığı görülmüştür. Ancak, bu alan henüz öğretim programında sistemli biçimde yer almamaktadır. 2018 Sosyal Bilgiler Dersi Öğretim Programı bilgi-işlemsel düşünme yetkinliğinin gelişimini hedeflememektedir; öğretmenler bu yetkinliği derslerinde düşük düzeyde uyguladıklarını belirtmişlerdir. Çalışmalarda, dijital harita okuma, veri tabanlı analizler, tarihsel karşılaştırmalar ve algoritmik yaklaşımların sosyal bilgiler derslerinde bilgi-işlemsel düşünme ile ilişkilendirilebileceği belirtilmiştir (Berson vd., 2008). Ancak alanyazında bu dersin bilgi-işlemsel düşünmeyi doğrudan desteklemekten çok dolaylı yollarla ilişkilendirdiği görülmüştür.

Genel olarak değerlendirildiğinde, Türkiye'de bilgi-işlemsel düşünme yetkinliği en fazla matematik ve fen bilimleri öğretim programlarında hedeflenmekte ve bu alanlarda öğretmenler tarafından daha yüksek düzeyde uygulanmaktadır. OECD ülkeleri arasında da benzer bir dağılım gözlemlenmekte; bu yetkinliğin kodlama ve algoritma temelli öğrenme yoluyla özellikle STEM alanlarında geliştirildiği görülmektedir (OECD, 2024). Ancak araştırmalarda, bu uygulamaların sürdürülebilirliği için öğretmenlerin dijital okuryazarlıklarının desteklenmesi gerektiği vurgulanmaktadır. Bu doğrultuda, alanyazında bilgi-işlemsel düşünmenin disiplinler arası yaklaşımlarla zenginleştirilmesi ve özellikle programlama dışı alanlara da yayılması gerektiği belirtilmektedir (Weintrop vd., 2016; Wing, 2006).

### 4.1.5. Öğretim Programında ve Uygulamada Finansal Okuryazarlık

OECD (2020a), finansal okuryazarlığı, bireylerin günlük hayatta karşılaştıkları finansal kararları bilinçli bir şekilde alabilmeleri için gerekli olan bilgi, beceri, motivasyon ve güvenin bir bileşimi olarak tanımlamaktadır. Bu yetkinlik, kişisel harcamaları yönetmekten tasarrufa, yatırım kararlarından borçlanma stratejilerine kadar geniş bir yelpazeyi kapsamaktadır. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping - CCM) çalışmasına göre OECD ülkeleri arasında finansal okuryazarlık yetkinliğinin öğretim programlarında entegrasyonu oldukça sınırlı kalmakta; bu yetkinlik en çok matematik ve sosyal bilgiler derslerinde yer bulmaktadır, ancak bu vurgu genellikle düşük düzeydedir (OECD, 2024).

Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı'nın finansal okuryazarlık yetkinliğinin gelişimini yalnızca temel kavramlar düzeyinde hedeflediğini göstermektedir. Öğretmenler, bu yetkinliği geliştirecek etkinlikleri derslerinde sınırlı ve genellikle yüzeysel düzeyde uyguladıklarını belirtmişlerdir. Alanyazındaki araştırmalarda, matematik ders kitaplarında finansal okuryazarlıkla ilgili içeriklerin ağırlıklı olarak "yüzdeler" ve "para işlemleri" gibi konularla sınırlı olduğu görülmüştür (Tural Sönmez ve Topcal, 2022). Çalışmalarda, bu içeriklerin çoğunlukla temel düzeyde bilgi uygulamalarına karşılık geldiği ortaya çıkmıştır.

2019 Türkçe Dersi Öğretim Programı finansal okuryazarlık yetkinliğinin gelişimini hedeflememektedir. Öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde uygulamadıklarını ifade etmişlerdir. Alanyazında, grafik ve tablo yorumlama, reklam metinlerinin çözümlenmesi, finansal haberlerin eleştirel değerlendirilmesi gibi yollarla bu yetkinliğin dil öğretimiyle bütünleştirilebileceği belirtilmiştir (Bahar, Büyükdoğan ve Şen, 2024). Ancak araştırmalarda, bu potansiyelin öğretim programında sistemli şekilde yer almadığı ve öğretmen uygulamalarında da yeterince kullanılmadığı ortaya çıkmıştır. 2018 Fen Bilimleri Dersi Öğretim Programı finansal okuryazarlık yetkinliğinin gelişimini hedeflememekte; öğretmenler de bu yetkinliği derslerinde uygulamadıklarını belirtmişlerdir. Alanyazında, STEM temelli projelerde kaynak planlaması, bütçeleme ve maliyet analizi gibi etkinliklerin, bu yetkinliğin gelişimini destekleyebileceği ifade edilmektedir (Capraro ve Slough, 2013; Gök vd., 2024). Çalışmalarda, bilimsel düşünme süreçlerinin ekonomik karar verme becerileriyle ilişkilendirilmesinin, öğrencilerde bütüncül düşünme yetisi geliştirdiği ortaya çıkmıştır. 2018 Sosyal Bilgiler Dersi Öğretim Programı, finansal okuryazarlık yetkinliğinin gelişimini sınırlı düzeyde hedeflemekte; öğretmenler ise bu yetkinliği derslerinde düşük düzeyde uyguladıklarını belirtmişlerdir. Araştırmalarda, bu dersin "Üretim, Dağıtım ve Tüketim" öğrenme alanında temel finansal kavramlara yer verdiği, ancak öğretmenlerin uygulamalarda çeşitli sınırlılıklarla karşılaştığı belirtilmektedir (Seyhan, 2020). Alanyazındaki bulgular, erken yaşlarda kazandırılan finansal okuryazarlığın uzun vadede etkili finansal davranışlara katkı sağladığını göstermektedir (Kasman vd., 2018).

Genel olarak değerlendirildiğinde, Türkiye'de finansal okuryazarlık yetkinliği hem öğretim programlarında sınırlı düzeyde hedeflenmekte hem de öğretmen uygulamalarında düşük düzeyde temsil edilmektedir. Bu bulgular, OECD ülkeleri arasında gözlemlenen genel eğilimle örtüşmektedir. Ancak alanyazındaki çalışmalarda, bu yetkinliğin disiplinler arası projeler, gerçek yaşam senaryoları, medya içerikleri ve görsel okuryazarlık etkinlikleri yoluyla daha etkili biçimde öğretilebileceği ortaya konmuştur (Gök vd., 2024; Zhu, 2021).

#### 4.1.6. Öğretim Programında ve Uygulamada Girişimcilik

OECD (2020a), girişimcilik becerisini, bireyin bir ihtiyacı ya da problemi fark ederek değer üretmesi, kaynakları organize etmesi ve fırsatları değerlendirmesi becerisi olarak tanımlamaktadır. Bu yetkinlik; yenilikçilik, karar alma, liderlik, risk alma ve stratejik planlama gibi becerileri içermektedir. OECD'nin Öğretim Programı İçerik Haritalaması (Curriculum Content Mapping - CCM) verilerine göre OECD ülkeleri arasında girişimcilik genellikle fen bilimleri ve sosyal bilgiler öğretim programlarında yer almakta; matematik ve ulusal dil gibi derslerde ise sınırlı ya da hiç yer verilmemektedir (OECD, 2024). Örneğin Japonya ve bazı Kanada eyaletlerinde (ör. Saskatchewan) bu yetkinlik bütüncül bir biçimde entegre edilirken, Estonya, İsveç ve Kore gibi ülkelerde daha sınırlı düzeyde ele alınmaktadır (OECD, 2024).

Bu araştırmada Türkiye için yapılan analizler ise 2018 Matematik Dersi Öğretim Programı'nın girişimcilik yetkinliğinin gelişimini hedeflemediğini göstermektedir. Öğretmenler de bu yetkinliği geliştirecek etkinlikleri derslerinde düşük düzeyde uyguladıklarını belirtmişlerdir. Alanyazında, matematik derslerinde girişimcilik becerilerinin oyunlaştırma (gamification), problem temelli öğrenme (PBL) ve senaryo destekli görevlerle desteklenebileceği belirtilmiştir (Çin vd., 2023; Palmér ve Johansson, 2018). Çalışmalarda, küçük ölçekli iş planı hazırlama ve bütçeleme gibi projelerin hem matematiksel kavrayışı hem de girişimcilik farkındalığını artırdığı görülmüştür. 2019 Türkçe Dersi Öğretim Programı, girişimcilik yetkinliğinin gelişimini sınırlı düzeyde hedeflemekte; öğretmenler bu yetkinliği derslerinde düşük düzeyde uyguladıklarını belirtmişlerdir. Araştırmalarda, anlatım becerileri, ikna edici yazma, hikâye kurgulama ve sunum yapma gibi etkinliklerin girişimcilik yetkinliğini desteklediği ortaya konmuştur (Demirkol ve Aytaş, 2023; Tarakcı vd., 2021). Alanyazında, bu tür etkinliklerin öğrencilerde stratejik iletişim becerileri ve özgüven gelişimi sağladığına dikkat çekilmiştir. Ancak bu potansiyelin öğretim programında açık bir şekilde tanımlanmadığı ve öğretmenler tarafından sistematik biçimde uygulanmadığı anlaşılmaktadır. 2018 Fen Bilimleri Dersi Öğretim Programı girişimcilik yetkinliğinin gelişimini düşük düzeyde hedeflemekte; öğretmenler bu yetkinliği orta düzeyde uyguladıklarını belirtmişlerdir. Alanyazındaki çalışmalarda, STEM temelli projelerin, tasarım odaklı düşünme ve yenilikçi ürün geliştirme gibi süreçlerin girişimcilik farkındalığını desteklediği ifade edilmektedir (Deveci ve Çepni, 2017; Meral ve Yalçın, 2022). Özellikle bilimsel buluşların toplumsal etkisini değerlendirme ve maliyet-yarar analizleri gibi uygulamaların öğrencilerde hem bilimsel hem girişimsel düşünmeyi geliştirdiği görülmüştür. 2018 Sosyal Bilgiler Dersi Öğretim Programı, girişimcilik yetkinliğini gelişim hedefleri arasında açık bir şekilde tanımlamakta; öğretmenler bu yetkinliği geliştirecek etkinlikleri derslerinde yüksek düzeyde uyguladıklarını belirtmişlerdir. Araştırmalarda, sosyal bilgiler derslerinde problem çözme, tartışma, rol oynama ve grup çalışması gibi aktif öğrenme stratejilerinin yaygın olarak kullanıldığı görülmüştür (Bayram ve Deveci, 2022; Eryılmaz vd., 2023). Alanyazında, bu dersin girişimcilik eğitimi için uygun bir zemin sunduğu, özellikle demokratik katılım, sosyal sorumluluk ve yenilikçilik temalarının bu bağlamda etkin şekilde işlendiği ifade edilmiştir. Ayrıca, sanal girişimler, e-öğrenme uygulamaları ve etkileşimli vaka analizleri gibi dijital öğrenme ortamlarının da bu yetkinliğin desteklenmesinde etkili olduğu belirtilmiştir (Kefis ve Xanthopoulou, 2015). Genel olarak değerlendirildiğinde, Türkiye'de girişimcilik en çok sosyal bilgiler ve sınırlı düzeyde fen bilimleri öğretim programlarında hedeflenmektedir. Matematik ve Türkçe öğretim programlarında ise bu yetkinlik oldukça sınırlı düzeyde yer almakta; öğretmen uygulamaları da düşük seviyede kalmaktadır. OECD ülkeleri arasında da benzer bir dağılım gözlenmekte; sadece bazı ülkelerde bu yetkinliğin sistematik ve disiplinler arası yaklaşımla öğretim programlarına entegre edildiği görülmektedir (OECD, 2024). Bu bağlamda, alanyazında girişimcilik yetkinliğinin geliştirilmesi için disiplinler arası öğrenme, problem temelli projeler ve yenilikçi öğretim stratejilerinin önemine vurgu yapılmaktadır (Johansen ve Schanke, 2013; Meral ve Yalçın, 2022).

## 4.2. Ekosistem Yaklaşımıyla Bileşik Yetkinliklerin Gelişimini Etkileyen Faktörlerin Tartışılması

Bu çalışmada bileşik yetkinliklerin geliştirilmesini etkileyen etkenler OECD'nin E2030 Ekosistem Yaklaşımı (OECD, 2020b) çerçevesinde değerlendirilmiştir. Bu yaklaşım, bireyin doğrudan deneyimlediği sınıf ortamından, eğitim politikalarına ve uzun vadeli yapısal değişimlere kadar uzanan çok katmanlı bir sistem anlayışı sunulmuştur. Böylece, yetkinlik odaklı eğitimin geliştirilmesinde etkili olan unsurlar bütüncül biçimde ele alınabilmiştir. Aşağıda, her bir ekosistem katmanı kapsamında yapılan tartışmalar yer almaktadır.

### 4.2.1. Mikrosistem Düzeyindeki Etkenler

Mikrosistem, öğrenciler ile doğrudan etkileşimde bulunan öğretmenler, akranlar ve ebeveynler gibi paydaşları kapsar ve bireyin günlük öğrenme deneyimlerinin şekillendiği en yakın çevreyi temsil eder (Bronfenbrenner, 1989; OECD, 2020b). Bu bağlamda, çalışmanın bulguları, öğrencinin bireysel özellikleri ve ebeveyn beklentilerinin, yetkinlik gelişimini hem destekleyen hem de engelleyen başlıca unsurlar olduğunu göstermektedir. Özellikle 5. ve 6. sınıf öğrencilerinin ilgi düzeyi, merak duygusu ve katılım isteği, yetkinlik temelli uygulamaları destekleyen bir ortam oluşturmuştur. Bu durum, öğrencilerin yaş gelişimi ve duyuşsal yeterlikleriyle uyumludur (Schweisfurth, 2013). Ancak 7. ve 8. sınıflarda öğrencilerin ilgisi azalmakta, sınav baskısı ve dışsal akademik talepler öne çıkmaktadır. Bu da bilişsel gelişim kadar, sistemin sınav odaklı yapısının da öğrencilerin yetkinlik gelişimini sınırladığını göstermektedir. Bununla birlikte, ebeveynlerin sınav başarısına odaklı beklentileri öğretmenlerin öğretim tercihlerini doğrudan etkilemektedir. Ebeveynler, yetkinlik kazandıran etkinliklerin sınav başarısına katkısı olmadığını düşündüğünde bu uygulamalara karşı olumsuz bir tutum sergileyebilmektedir (Demir ve Yılmaz, 2019; Eranıl ve Demirkasımoğlu, 2021).

Bu durum, öğretmenlerin uygulamalarında geleneksel ve içerik ağırlıklı yaklaşımlara yönelmesine neden olmaktadır. Sonuç olarak, mikrosistem düzeyinde öğrencinin gelişim özellikleri ve ilgisi, yetkinlik odaklı öğrenmeyi teşvik ederken; ebeveyn beklentileri ve sınav odaklı kültür bu süreci sınırlayan temel engellerden biri olarak öne çıkmaktadır.

### 4.2.2. Mezosistem Düzeyindeki Etkenler

Mezosistem, okul içi etkileşimleri, öğretmenler arası iş birliğini, okul liderliğini ve veli-okul ilişkilerini kapsamaktadır. Bu düzeydeki ilişkiler, öğrenme ortamlarının niteliğini ve öğretmenlerin yetkinlik temelli uygulamalara ne derece açık olduğunu belirler (OECD, 2020b). Bu çalışmanın bulgularına göre öğretmenlerin farkındalık düzeyi ve mesleki yeterliği, mezosistemdeki en belirleyici unsur olarak öne çıkmaktadır. Ancak öğretmenlerin çoğu, bileşik yetkinlik kavramına dair yüzeysel bilgiye sahip olmakta, bu da uygulamalarda tutarsızlık yaratmaktadır. Benzer biçimde, okulda var olan destekleyici yapılar, vizyoner liderlik, mesleki öğrenme toplulukları ve disiplinler arası iş birliği ortamı, yetkinlik uygulamalarının niteliğini doğrudan etkilemektedir (Polatcan ve Cansoy, 2018).

Öğretim stratejileri açısından, proje temelli öğrenme, sorgulama temelli yaklaşımlar ve STEM etkinlikleri gibi çağdaş yöntemlerin kullanımı yetkinlik gelişimini anlamlı biçimde desteklemektedir (Bybee, 2010; Kaya vd., 2018). Bu bağlamda, öğretmenlerin öğretim yöntemi tercihlerindeki yenilikçi yaklaşımlar, öğrencilerin bilişsel ve duyuşsal gelişimine olumlu katkılar sunmaktadır. Ancak bulgular, öğretmenlerin dışsal baskılar sebebiyle bu stratejilere her zaman sistemli şekilde yer veremediğini de göstermektedir. Özellikle ders dışı etkinliklerde yetkinliklerin gelişiminin genellikle planlı olmadığı ifade edilmiştir. Öğrenci kulüpleri, mesleki gözlem programları, kültürel değişim projeleri gibi etkinlikler, doğrudan yetkinlik gelişimini hedeflemese de bu becerilerin gelişmesini sağlayan potansiyele sahiptirler (Covay ve Carbonaro, 2010). Fakat bu süreçlerin stratejik planlama eksikliği, bileşik yetkinliklerin gelişimine yönelik faaliyetlerin etkinliğini sınırlamaktadır. Bu nedenle mezosistem düzeyinde, okul kültürünün, öğretmen iş birliğinin ve eğitsel yaklaşımların yapılandırılması; yetkinliklerin tutarlı ve etkili biçimde geliştirilmesi açısından kritik öneme sahiptir.

#### 4.2.3. Ekzosistem Düzeyindeki Etkenler

Ekzosistem, bireyin doğrudan etkileşimde bulunmadığı ancak dolaylı yoldan öğrenme ortamını şekillendiren eğitim politikaları, öğretim programları, sınav sistemleri, öğretim materyalleri ve profesyonel gelişim imkanları gibi unsurları kapsamaktadır (OECD, 2020b). Bu çalışmanın bulgularına göre Türkiye'de öğretim programları her ne kadar yetkinlik gelişimine dair kazanımlar içerse de disiplinler arası uyumun zayıf olması yetkinliklerin bütüncül olarak kazandırılmasını zorlaştırmaktadır. Örneğin, fen bilimleri dersinde öğrencilerin bazı konuları anlaması için gerekli olan matematiksel ön bilgiler henüz ilgili sınıf düzeyinde işlenmemiş olabilmektedir. Bu durum, beceri temelli öğrenme için gerekli olan programlar arası sürekliliği ve ön bilgi temelli öğrenmeyi sekteye uğratmaktadır (Oliveras-Ortiz, 2015; von der Embse, 2017). Ek olarak, öğretim programlarının içerik yoğunluğu ve haftalık ders saatlerinin sınırlılığı, öğretmenleri içerik yetiştirmeye yönlendirmekte; bu da yetkinlik temelli öğretimi ikinci plana itmektedir.

Yükseköğretime geçiş sınavlarının yarattığı baskı da bu durumu daha da pekiştirmektedir. Özellikle 8. sınıfta öğretmenler, sınav hazırlıklarına öncelik verdiğini, ders içi uygulamalarda yetkinliklere zaman ayıramadıklarını belirtmiştir. Bunun yanı sıra, öğretmenlerin ders materyallerine ve dijital kaynaklara erişimi ile mesleki gelişim olanakları oldukça sınırlıdır. MEB tarafından sağlanan kaynak kitapların yeterli olmaması, öğretmenleri Web 2.0 araçları ve alternatif kaynaklara yönlendirse de bu materyallerin kullanımı kişisel çabaya dayalı olup yetkinlik gelişiminde sistematik destekten yoksun olduğu görülmektedir (Çarkıt, 2019; Ramaila ve Molwele, 2022). Dolayısıyla ekzosistem düzeyinde, programların içeriği, sınav sisteminin baskısı, öğretmen yükü ve materyal yetersizliği, yetkinlik temelli eğitimin önünde temel yapısal engeller olarak karşımıza çıkmaktadır.

#### 4.2.4. Makrosistem Düzeyindeki Etkenler

Makrosistem, toplumun değerlerini, normlarını, kültürel eğilimlerini ve eğitim politikalarını içerir. Bu düzeydeki etkiler, doğrudan sınıf uygulamalarına yansımasa da sistemin genel yönelimini belirlemektedir (OECD, 2020b). Bu çalışmanın bulgularına göre yetkinliklerin öğretim programlarına entegrasyonu konusunda sistem genelinde net bir vizyon eksikliği mevcuttur. Politika belgelerinde yer alan genel hedefler, öğrenme çıktılarında ayrıntılı biçimde tanımlanmadığı için uygulamada tutarsızlık ve belirsizlikler ortaya çıkmaktadır. Ayrıca öğretmenler, sık sık değişen eğitim politikalarının sınıf içi planlamalarını olumsuz etkilediğini belirtmiştir. Bu durum, öğretmenlerin yeni çerçeveleri etkili şekilde uygulamalarını da engellemektedir (Tekalmaz, 2019).

OECD (2020b), politika sürdürülebilirliğinin ve sistem içi tutarlılığın yetkinlik gelişimi açısından hayati olduğunu vurgular. Nitekim bu çalışma da Türkiye özelinde, sistematik bir vizyon ve paydaş katılımı eksikliğinin uygulamayı zayıflattığını göstermiştir. Bu nedenle makrosistem düzeyinde ulusal ölçekte bütüncül bir yetkinlik politikası geliştirilmeli, öğrenme çıktıları netleştirilmeli, öğretmen eğitimiyle bu çerçeve desteklenmelidir. Ancak bu şekilde, sınıf düzeyinde kalıcı değişimler ve sürdürülebilir yetkinlik gelişimi sağlanabilir.

### 4.2.5. Kronosistem Düzeyindeki Etkenler

Kronosistem, zaman içinde meydana gelen yapısal, toplumsal ve politik değişimlerin eğitim üzerindeki etkilerini ele alır (Bronfenbrenner ve Morris, 2006). Bu bağlamda, OECD'nin E2030 vizyonu, eğitim sistemlerinin değişen dünya koşullarına uyum sağlayabilmesi için esnek, geleceğe dönük ve yetkinlik odaklı hale gelmesini önermektedir (OECD, 2020b). Ancak Türkiye'de bu dönüşüm süreci, politika düzeyindeki süreklilik eksikliği nedeniyle tam anlamıyla gerçekleşememektedir. Öğretim programlarında yapılan sık ve ani değişiklikler, planlı gelişim yerine parçalı reformlara neden olmaktadır. Öğretmenler, uzun vadeli planlama yapılamadığını ve sistemin sürekli değişmesinden kaynaklı olarak yeniliklerin kalıcı olamadığını vurgulamıştır (Eranıl ve Demirkasımoğlu, 2021). Araştırmalar, kalıcı ve etkili reformların ancak uzun vadeli bir strateji, paydaş katılımı ve tutarlı politika çerçevesi ile mümkün olduğunu belirtmektedir (Hamsi İmrol vd., 2021; Marope vd., 2017). Bu bağlamda, kronosistem düzeyinde, Türkiye'nin geleceğe yönelik bir yetkinlik vizyonu oluşturması ve bu vizyonun tüm sistem katmanlarına entegre edilmesi, yetkinlik gelişimi temelli eğitim anlayışı için temel oluşturmaktadır.

## 4.3. Teoriye ve Uygulamaya Yönelik Çıkarımlar

Bu çalışma, Türkiye'de ortaokul düzeyinde bileşik yetkinliklerin öğretim programlarında ve uygulamalarda ne ölçüde yer bulduğunu ortaya koymuş, aynı zamanda OECD Eğitim 2030 çerçevesiyle karşılaştırmalı bir bakış sunmuştur. Bulgular, öğretim programları ile sınıf içi uygulamalar arasında farklılıklar olduğunu ve bileşik yetkinliklerin sistemli biçimde kazandırılamadığını göstermiştir. Bu durum hem öğretim tasarımı hem de öğretmen uygulamaları açısından önemli yapısal iyileştirmelere ihtiyaç olduğunu ortaya koymaktadır.

Bulgular Türkiye'deki öğretim programlarının daha esnek, disiplinler arası ve yetkinlik temelli hale getirilmesi gerektiğine işaret etmektedir. Matematik ve Türkçe gibi derslerde alan bilgisine yönelik yoğun içerik merkezli bir yaklaşımın sürdüğünü bu durumun söz konusu derslerin günlük hayat ilişkilendirmelerinden uzak bir şekilde ele alındığı göstermektedir. Bunun yanı sıra disiplinler arası ilişkilerin kurulması ve bileşik yetkinliklerin gelişimi açısından sosyal bilgiler ve fen bilimlerinde daha dengeli ancak sınırlı bir yaklaşımın olduğu görülmüştür. Bu durum, öğretim programlarının 21. yüzyıl becerilerini kapsayacak şekilde bütüncül bir biçimde yeniden yapılandırılmasını gerekli kılmaktadır.

Uygulama düzeyinde öğretmenlerin bireysel çabalarla yetkinlikleri geliştirmeye çalıştığı ancak sistematik destekten yoksun olduğu görülmektedir. Okul yönetiminin desteği, profesyonel gelişim olanakları ve okul iklimi yetkinlik gelişimi için destekleyici rol oynarken; sınav odaklılık, müfredat yoğunluğu ve öğretmenlerin iş yükü önemli engeller olarak öne çıkmaktadır. Bu nedenle, öğretmenlerin yetkinlik temelli eğitim yaklaşımındaki belirleyici rolü göz önünde bulundurularak, bileşik yetkinlikleri sınıf içi uygulamalarına yansıtabilmeleri için yapılandırılmış öğretim yöntemleri, teknikleri ve disiplinler arası yaklaşımları etkili biçimde kullanmaları desteklenmelidir.

Mikrosistem düzeyinde, ebeveyn beklentileri ve sınav odaklı yönelimler yetkinlik gelişimini sınırlayıcı etmenler olarak öne çıkarken; öğrencilerin ilgisi, merakı ve aktif katılımı bu gelişimi destekleyen temel unsurlar arasında yer almaktadır. Mezosistemde öğretmen yeterliği, okulun vizyonu ve öğretim stratejileri belirleyici olurken; eksik iş birliği ve plansız etkinlikler bileşik yetkinliklerin derslerle ilişkilendirilmesini zorlaştırmaktadır. Ekzosistemde ise öğretim programı yoğunluğu, sınav sistemi ve yetersiz mesleki gelişim fırsatları öğretmenlerin yetkinlik temelli yaklaşımları sürdürmesini zorlaştırmaktadır. Makrosistem düzeyinde, yetkinlik gelişimine yönelik ulusal politika belgeleri ile 2018 ve 2019 öğretim programlarının yapısı yeterince net ve tutarlı biçimde tanımlanmamış olduğunda bu durum uygulamada bütüncül ve sistematik bir yaklaşımın oluşmasını zorlaştırmaktadır.

Son olarak, kronosistem düzeyinde, politika sürekliliğindeki eksiklikler, uzun vadeli ve tutarlı bir yetkinlik vizyonunun oluşmasını engellemekte; bu durum, geleceğin belirsizliğinde eğitim sisteminin bugünden stratejik ve bütüncül adımlar atmasını zorlaştırmaktadır. Sürekli değişen uygulamalar, hem öğretmenlerin sınıf içi planlama ve uygulamalarında belirsizlik yaratmakta hem de sistemin geleceğe uyum sağlama kapasitesini sınırlamaktadır. Bu nedenle, gelecek odaklı bir eğitim sistemi için esnek, sürdürülebilir ve yenilikçi bir yaklaşım benimsenmelidir. Türkiye'deki son program değişikliğiyle birlikte 2024 öğretim programları 1., 5. ve 9. sınıf düzeylerinde uygulamaya alınmıştır. Ancak, 2018 ve 2019 öğretim programlarının 2027–2028 eğitim öğretim yılına kadar yürürlükte kalacağı göz önünde bulundurulduğunda, OECD Eğitim 2030 vizyonu kapsamında yapılan analizlerde bu programların etkisi dikkate alınmalıdır. Bu bağlamda, bileşik yetkinliklerin etkili biçimde geliştirilmesi yalnızca öğretim programı değişiklikleriyle sınırlı kalmamakta; sistemin tüm katmanlarında eşgüdüm, tutarlılık ve süreklilik gerektirmektedir. Bu çalışma, söz konusu geçişin sağlanabilmesi için hem mevcut durumu hem de dönüşüm alanlarını bütüncül bir bakış açısıyla ortaya koyarak önemli bir temel sunmaktadır.

### 4.4. Gelecek Araştırmalar İçin Öneriler

Bu çalışma, Türkiye'deki ortaokul öğretim programlarının bileşik yetkinliklerin gelişimine yönelik yapısını ve sınıf içi uygulamalarını inceleyerek, program ve uygulama düzeyindeki önemli boşluklara işaret etmiştir. Ancak bulguların genellenebilirliğini artırmak ve daha bütüncül bir anlayış geliştirebilmek için ileri araştırmalar gereklidir. Çalışmanın özel okul bağlamında yürütülmesi, kamu okullarındaki uygulamaların farklılaşabileceğini düşündürmektedir. Devlet okullarında, farklı bölgesel ve sosyoekonomik koşullarda yetkinlik gelişimine ilişkin süreçler araştırılabilir. İkinci olarak, araştırma dört temel ders ile sınırlı tutulmuştur. Sanat, beden eğitimi, teknoloji ve tarih gibi diğer disiplinlerin de yetkinlik gelişimine katkısı ayrı çalışmalarla incelenebilir. Ayrıca, yalnızca öğretmen görüşlerine dayalı bulgular yerine, öğrenci, veli ve okul yöneticilerinin görüşlerini de içeren çok paydaşlı araştırmalar ile sınıf içi gözleme dayalı araştırmalar yapılabilir. Son olarak, Türkiye'de 2024 MEB öğretim programlarının bileşik yetkinlikler bağlamında sunduğu dönüşüm, yeni bir araştırma alanı olarak değerlendirilebilir. Zaman içinde bu programların etkisinin izlenmesine yönelik çalışmalar bu eğitsel reformların uygulamadaki karşılığını ortaya koyabilir.

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**Bölümü** / Department : Eğitim Bilimleri, Eğitim Programları ve Öğretim / Educational Sciences, Curriculum and Instruction

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