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ENGLISH LANGUAGE TEACHING PROGRAMME

AN INVESTIGATION OF MULTIPLE INTELLIGENCE LEVELS OF ENGLISH PREPARATORY CLASS STUDENTS AND INSTRUCTORS

Master's Thesis

Kıvanç ERTÜRK

Supervisor
Asst. Prof. Dr. Müfit ŞENEL

SAMSUN
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ÖZET

İNGİLİZCE HAZIRLIK SINIFI ÖĞRENCİ VE ÖĞRETMENLERİNİN ÇOKLU ZEKA DÜZEYLERİNİN ARAŞTIRILMASI

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Bu çalışma, hazırlık okullarındaki öğrenciler arasında İngilizce dil yeterliliğinin yetersiz olması vet bunun da dil öğrenme sürecinde öğretmenlere aşırı güven duyulmasına yol açması konusunu ele almaktadır. Bu çalışmanın amacı, Türkiye'deki üniversitelerin hazırlık okulu öğretmen vet öğrencilerinin çoklu zekâ farkındalıklarını incelemek ve bu farkındalığın cinsiyet, fakülte, üniversite vet mezun olunan lise gibi değişkenlerden etkilenip etkilenmediğini araştırmaktır. Metodoloji iki aşamadan oluşmaktadır. İlk aşamada, öğrenciler için yaş, cinsiyet, fakülte ve öğretmenler için şu anda ders verdikleri fakülte dahil olmak üzere demografik bilgiler toplanmaktadır. İkinci aşama, katılımcıların 80 maddelik 5'li Likert anketine yanıt verdiği nicel bir çalışmayı içermektedir.

Bu çalışmanın önemi, çoklu zekânın daha iyi anlaşılmasını sağlayarak dil öğrenimini geliştirme potansiyelinde yatmaktadır. Öğretmenler kendi öğrenme stilleri hakkında içgörü kazanabilir ve öğrencileri için uygun öğretim stratejileri uygulayabilirler. Öğrenciler içinse, kendi öğrenme stillerinin farkında olmaları hafızalarının, motivasyonlarının ve derslere olan ilgilerinin artmasını sağlayabilir. Çalışmanın kapsamı, Osmaniye Korkut Ata Üniversitesi, Ege Üniversitesi, 9 Eylül Üniversitesi, Muğla Üniversitesi, Celal Bayar Üniversitesi ve Adnan Menderes Üniversitesi'nden katılımcılarla birlikte çeşitli Türk üniversitelerindeki ingilizce hazırlık okullarını kapsamaktadır. Çalışmaya katılan fakülteler arasında Mühendislik vet Mimarlık, İktisadi ve İdari Bilimler, Fen Edebiyat, Spor, Eğitim, Sağlık ve İletişim yer almaktadır. Bununla birlikte, çalışma Türkiye'deki devlet üniversitelerinin hazırlık sınıfı öğrencileri ve öğretmenleriyle sınırlı olduğu için sınırlılıkları kabul etmektedir. Veriler, COVID-19 karantinalarından etkilendiği için Türkiye'deki üniversitelerden sadece altısından elde edilmiştir. Bununla birlikte, çalışma 380 öğrenci ve 122 öğretmenden başarılı bir şekilde bilgi toplamıştır. Sonuç olarak, bu çalışma Türkiye'deki üniversitelerin hazırlık okullarında çoklu zekâ farkındalığının önemli bir yönüne ışık tutmayı amaçlamaktadır.

Araştırma, belirlenen sınırlılıkları ve varsayımları ele alarak, hem öğrenciler hem de öğretmenler için dil öğrenme deneyimlerini optimize etmeye yönelik değerli içgörülere katkıda bulunmayı amaçlamaktadır.

Anahtar Sözcükler: Çoklu zeka, Farkındalık, Hazırlık okulları

ABSTRACT

AN INVESTIGATION OF MULTIPLE INTELLIGENCE LEVELS OF ENGLISH PREPARATORY CLASS STUDENTS AND INSTRUCTORS

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This study addresses the issue of inadequate English language proficiency among students in preparatory schools, which leads to over-reliance on teachers in the language learning process. The purpose of this study is to examine the multiple intelligences awareness of Turkish university preparatory school teachers and students and to investigate whether this awareness is affected by variables such as gender, faculty, university and high school graduated from. The methodology consists of two stages. In the first stage, demographic information is collected, including age, gender, faculty for students and the faculty where they currently teach for teachers. The second phase involves a quantitative study in which participants respond to an 80-item 5-point Likert type scale. The importance of this study lies in its potential to improve language learning by providing a better understanding of multiple intelligences. Teachers can gain insight into their own learning styles and implement appropriate teaching strategies for their students. For students, being aware of their own learning styles can improve their memory, motivation and interest in their studies. The scope of the study included preparatory schools at various Turkish universities, with participants from Osmaniye Korkut Ata University, Ege University, 9 Eylül University, Muğla University, Celal Bayar University and Adnan Menderes University. Faculties participating in the study include Engineering and Architecture, Economics and Administrative Sciences, Science and Letters, Sports, Education, Health, and Communication. However, the study acknowledges limitations as it is limited to preparatory class students and teachers of public universities in Turkey. Data was affected by COVID-19 lockdowns and obtained from only six of the turkish state universities that scale has been sent to. However, the study successfully collected information from 380 students and 122 teachers. In conclusion, this study aims to shed light on an important aspect of multiple intelligences awareness in Turkish university preparatory schools.

Keywords: Multiple Intelligence, Awareness, Preparatory school

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Kıvanç ERTÜRK

CONTENTS

SYMBOLS AND ABBREVIATIONS

CQ	: Cultural Intelligence
EQ	: Emotional Quotient
IQ	: Intelligence Quotient
TDK	: The Turkish Language Association

FIGURES LEGENDS

TABLES LEGENDS

1. INTRODUCTION

1.1. Background and General Aspects of the Study

Education serves as a pivotal element in societal progression, fostering both intellectual and personal growth in individuals and equipping them for imminent challenges. Within the realm of educational frameworks, preparatory schools occupy a distinctive role, serving as a conduit between secondary education and advanced academic endeavors. A prominent issue has surfaced in this domain, particularly in the realm of English language education within these preparatory institutions. The prevalent lack of English proficiency among students has resulted in an overdependence on educators, thereby hindering the efficacy of language acquisition. This dependence assumes a heightened significance given that preparatory schools often constitute the final stage of formal education for numerous learners, thereby influencing their prospective academic and professional paths.

The Theory of Multiple Intelligence, proposed by Howard Gardner, was first introduced in 1983, assumes critical importance in tackling this issue. Gardner's theory advocates that individuals harbor a spectrum of cognitive capabilities that transcend conventional intelligence metrics. These varied intelligences—encompassing logical-mathematical, spatial, musical, interpersonal abilities, and others—inform diverse learning preferences and strengths. In the language education sphere, leveraging these multiple intelligences can facilitate more effective pedagogical approaches and enhance language learning outcomes.

This research delves into the awareness of multiple intelligence among teachers and students in Turkish university preparatory schools. It seeks to explore the degree of awareness regarding their multiple intelligences among these cohorts and how this cognizance might influence English language acquisition. The study further probes into how this awareness varies across demographic factors such as gender, faculty, university affiliation, and high school background. Through illuminating these elements, the study endeavors to enrich language education methodologies and offer insightful perspectives into the learning dynamics.

1.2. Statement of the Problem

This thesis examines the dynamics between students' English language proficiency and their reliance on instructors in preparatory classes at Turkish state universities. It also focuses on the awareness of multiple intelligences among students and teachers, and how this awareness is influenced by demographic variables such as gender, academic faculty, university affiliation, and high school background.

The insufficient understanding of the multiple intelligences theory among educators may lead to an excessive inclination towards traditional teaching methods. This one-sided approach may overlook students who excel in other intelligence areas, especially by focusing on methods that support linguistic and logical-mathematical intelligences. Neglecting these diverse intelligences can promote a narrow definition of success, favoring students strong in traditionally emphasized areas and potentially disadvantaging those with strengths in intelligences not measured by conventional tests.

Different learning styles based on students' dominant intelligences can be overlooked if educators fail to recognize this diversity. This mismatch can result in a lack of alignment between instructional methods and students' learning styles, potentially hindering academic performance. The absence of a multiple intelligences approach can restrict recognition and support for students who excel in areas like arts, sports, or interpersonal skills in the university environment.

Failure to acknowledge and nurture diverse intelligences can limit students' opportunities for holistic personal and professional development. Students may become demotivated if they feel their strengths and talents are undervalued, which can impact their overall academic performance. This research aims to analyze how these demographic factors intersect with English language acquisition and how this intersection shapes pedagogical approaches. The study suggests investigating whether a nuanced understanding of multiple intelligences among relevant stakeholders significantly enhances the English learning experience, which is of critical importance considering the diverse learning needs and backgrounds of preparatory class students.

1.3. Aim of the Study

This research endeavors to examine the awareness of multiple intelligence among instructors and students in English preparatory schools affiliated with Turkish universities. It seeks to determine the extent to which their understanding of multiple intelligences is influenced by factors such as gender, the faculty and university in which they are enrolled or teaching, and the high school from which they graduated. The objective is to ascertain whether these demographic variables have a significant impact on the perception and application of multiple intelligence concepts in the context of English language education.

The exploration of demographic variables such as gender, faculty, university affiliation, and high school background in relation to multiple intelligences awareness can provide valuable insights. Understanding how these factors influence perceptions and applications of multiple intelligence concepts can inform educational policies and practices, enabling institutions to tailor their approaches to better meet the needs of a diverse student and instructor population.

The investigation into the awareness of multiple intelligences among instructors and students in English preparatory schools is essential for creating an inclusive, effective, and equitable English language education environment. It not only enhances language instruction by embracing a broader spectrum of cognitive abilities but also contributes to the overall goal of providing a quality education experience that accommodates the diverse backgrounds and talents of individuals within the academic community.

1.4. Research Questions & Hypotheses

This study aims to explore the following research questions, specifically focusing on multiple intelligences:

Is there a statistically significant difference in multiple intelligences among students when gender is considered?

Is there a statistically significant difference in multiple intelligences among students based on the faculty they are studying in?

Is there a statistically significant difference in multiple intelligences among students according to the high school they graduated from?

Is there a statistically significant difference in multiple intelligences among instructors when gender is considered?

Is there a statistically significant difference in multiple intelligences among instructors based on the faculty they are teaching in?

Is there a statistically significant difference in multiple intelligences among instructors according to the university they are affiliated with?

Student Hypotheses:

H1: There is a difference in students' multiple intelligence levels according to gender.

H2: There is a difference in students' multiple intelligence levels based on the faculties they studied at.

H3: There is a difference in students' multiple intelligence levels according to the high schools they graduated from.

Teacher Hypotheses:

H1: There is a difference in instructors' multiple intelligence levels according to gender.

H2: There is a difference in instructors' multiple intelligence levels based on the faculties in which they teach.

H3: There is a difference in instructors' multiple intelligence levels according to the universities they are affiliated with.

Teacher-Student Hypotheses:

H1: There is a difference between instructors' and students' verbal-linguistic intelligence sub-scale.

H2: There is a difference in the logical-mathematical intelligence sub-scale between instructors and students.

H3: There is a difference in the visual-spatial intelligence sub-scale between instructors and students.

H4: There is a difference in the musical-rhythmic intelligence sub-scale between instructors and students.

H5: There is a difference in the naturalistic intelligence sub-scale between instructors and students.

H6: There is a difference in the interpersonal intelligence sub-scale between instructors and students.

H7: There is a difference in the bodily-kinesthetic intelligence sub-scale between instructors and students.

H8: There is a difference in the intrapersonal intelligence sub-scale between instructors and students.

H9: There is a difference in the intelligence behavior between instructors and students.

1.5. Overview of Methodology

This study is structured in two distinct phases. The initial phase involves the collection of demographic data. For students, this includes age, gender, the faculty of their current enrollment, and the high school from which they graduated. For instructors, the demographic data encompasses age, gender, and the faculty to which they are presently assigned.

The subsequent phase constitutes a quantitative analysis, employing an 80-item scale based on a 4-point Likert type scale. The focus of the scale is on multiple intelligences, with the specific intelligence targeted varying every ten questions. Responses are graded on a scale ranging from 5 (indicating complete suitability) to 1 (denoting unsuitability). This methodical approach facilitates a comprehensive assessment of the awareness and application of multiple intelligences among participants.

1.6. Significance of the Study

The significance of this research lies in its exploration of the role of awareness of multıple intelligence in optimizing language learning capacities. For educators, this entails recognizing their own learning styles and effectively adapting these methodologies for their students. Similarly, for students, it involves understanding their unique learning preferences and leveraging these insights to enhance memory, motivation, and engagement in their educational pursuits.

A key aspect underscoring the importance of this study is the current gap in literature regarding the awareness of Multiple Intelligence in English preparatory programs at state universities in Turkey, addressing both instructors and students. This research aims to fill this void, offering valuable insights into how awareness of multıple intelligence can transform teaching and learning processes within this specific academic context.

1.7. Scope of the Study

This study delves into the awareness of multiple intelligences within the context of university preparatory schools in Turkey, focusing on both students and instructors as participants. Although the research reached out to numerous universities, the institutions that contributed data include Osmaniye Korkut Ata University, Ege University, 9 Eylül University, Muğla University, Celal Bayar University, and Adnan Menderes University. Universities are randomly selected. Efforts to extend the study's reach included distributing a scale to 14 universities, but responses were obtained from only six. This relatively low response rate may be linked to the timing of the distribution, which unfortunately coincided with the COVID-19 lockdowns. While this factor presented a challenge, the study did manage to secure participation from 380 students and 122 instructors. While the pandemic posed significant constraints, this participant count still ensures a robust foundation for our analysis.

The data was provided by several faculties, encompassing the Faculty of Engineering and Architecture, Faculty of Economics and Administrative Sciences, Faculty of Science and Literature, Faculty of Sports, Faculty of Education, Faculty of Health Sciences, and Faculty of Communication. This diverse participation from multiple universities and faculties enriches the study's findings regarding awareness of multıple intelligence in Turkish university preparatory schools.

1.8. Limitations

This research primarily focuses on the English Preparatory Classes at state universities in Turkey, targeting both students and instructors. Data collection was constrained to these specific academic settings.

1.9. Assumptions

The study, titled "The Research of awareness of multıple intelligence of Preparatory Class Students and Teachers," is premised on several key assumptions. It hypothesizes that multiple intelligences are influenced by various factors, including gender, the academic faculty in which students are enrolled or teachers are employed, the university affiliation, and the high school from which individuals have graduated. These assumptions are grounded in the belief that educational and sociocultural environments play a significant role in shaping the development and manifestation of multiple intelligences. An inherent assumption in this study is the honesty and reliability of the responses from participants. It is presumed that the students and teachers involved in the study will provide truthful and accurate information regarding their experiences and perceptions of multiple intelligence in their educational contexts. This assumption is crucial for the integrity of the research findings, as the analysis and conclusions drawn are heavily dependent on the authenticity of the data provided.

Furthermore, the study assumes a certain level of awareness and understanding of the concept of multiple intelligence among the participants. It presumes that the students and teachers have some familiarity with this concept, which would enable them to reflect on and respond to the questions posed in the study effectively. The validity of the research outcomes is, therefore, contingent upon these foundational assumptions.

1.10. Definition of Terms

1.10.1. Intelligence

The concept of intelligence has long been a subject of intrigue and debate within the academic community, particularly in the context of educational methodologies. Rooted in the premise that intelligence is not a singular, fixed attribute, Gardner's theory of multiple intelligences revolutionized the understanding of cognitive abilities. Intelligence, as conceptualized by Gardner (1983), is a multi-faceted construct that extends beyond the traditional focus on linguistic and mathematical skills. This theory of multiple intelligences suggests that cognitive abilities encompass various independent modalities, each of equal importance. This perspective has significant implications in education, advocating for diversified teaching and learning approaches that cater to a wide range of talents and strengths, as emphasized by Armstrong (2000) and Smith (2002). These approaches challenge conventional assessment methods, which often prioritize verbal and mathematical skills, and argue for a more holistic evaluation of a student's abilities, as discussed by Chen (2004). In essence, intelligence is dynamic and encompasses a broad spectrum of capabilities, from linguistic to naturalistic, which are crucial for effective and inclusive education, particularly in the context of preparatory class students and instructors (Sternberg and Grigorenko, 2007).

1.10.2. Multiple Intelligence

Multiple Intelligence (MI), introduced by Gardner (1983), represents a paradigm shift in educational psychology, challenging the traditional view of intelligence as a singular, measurable entity. Gardner proposed that human cognition comprises various independent abilities or intelligences, including linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, and later, naturalistic intelligence, with a speculative addition of existential intelligence (Gardner, 1999, 2006). This concept emphasizes that these intelligences, distinct yet interrelated, can be developed through education and experience (Gardner, 1991).

The MI theory has profound implications for educational practices. Sternberg and Grigorenko (2001) and Armstrong (2000) have explored its practical applications, advocating for education strategies that cater to the diverse cognitive profiles of students. The theory promotes an educational approach that nurtures a wide array of intellectual capacities, aligning with Gardner's idea of “educating the whole person.”

However, the MI theory is not without its critics. Scholars like Waterhouse (2006) have raised concerns regarding its empirical support, questioning the distinctiveness of these intelligences from general intelligence or specific abilities. Despite these debates, MI theory remains influential in shaping modern educational methodologies and understanding cognitive diversity.

1.10.3. English Preparatory Classes

English Preparatory Classes, often a fundamental part of the curriculum in institutions where English is the medium of instruction, are designed to equip students, especially non-native speakers, with necessary language skills for academic success. These classes are pivotal in transitioning students from general English proficiency to a level where they can competently engage with academic materials and participate in discourse at a university level (AlKandari, 2017).

At the core, English Preparatory Classes are intensive language courses that focus on improving the four key skills of language learning: reading, writing, speaking, and listening, with a particular emphasis on academic English (Özüdoğru, 2017). This distinction is crucial, as academic English often encompasses a specific set of linguistic competencies, including but not limited to, academic vocabulary, understanding of formal syntax, and exposure to academic rhetoric and discourse styles (Hyland, 2006). These classes are not merely about language proficiency but also about cultural acclimatization, assisting students in understanding the academic culture and expectations prevalent in English-speaking educational environments. This includes familiarization with classroom dynamics, participation norms, and academic integrity standards, which are integral to their academic journey (Arkoudis & Tran, 2010).

Moreover, English Preparatory Classes serve as a bridge for students, connecting their existing language skills with the specific academic requirements of their chosen fields of study. For example, a student in the humanities might focus on different aspects of language use compared to a student in the sciences (Dudley-Evans & St John, 1998). This tailored approach ensures that students are not only linguistically prepared but also academically equipped to embark on their higher education journey. In evaluating the effectiveness of these preparatory programs, it’s essential to consider factors such as curriculum design, teaching methodologies, and assessment strategies. Research suggests that programs that integrate language learning with academic skills development tend to be more effective in preparing students for the demands of academic study (Charles & Pecorari, 2016).

2. LITERATURE REVIEW

2.1. Theoretical Review

Numerous societies critically evaluate their education systems, prompting a fundamental question in the history of civilization: "What is the purpose of education?" Instead of focusing on outcomes that current and previous systems regard as benchmarks, a more profound understanding of education emerges when considering processes that lead to these results. Education should be viewed as a process with three main objectives: aiding students in recognizing their present and future needs, assisting them in discovering their own physical and mental capacities and limitations, and enabling them to adapt these to their learning profiles. Additionally, it should support the acquisition of knowledge, skills, attitudes, and behaviors in alignment with their needs and learning styles.

These goals are not merely about acquiring information, but learning how to learn. They underline the desired attributes of individuals in the context of modern education. The starting point for this reevaluation is the recognition that education systems producing stereotypical minds offer limited benefits, and there is a need for more active, creative, and problem-solving participants in society. Consequently, there is a growing trend towards positioning students more actively in the educational process. The essence of modern education and the competencies required by contemporary individuals suggest that the focus should shift from teaching to learning, to foster individuals who are self-aware, proficient in accessing and processing information, possess problem-solving skills, and can generate original ideas.

Creating alternative, learner-centered educational environments that respect individual differences and needs, and which encourage rather than restrict freedom and original thinking, is crucial. In many traditional education systems, a significant issue appears to be students experiencing learning difficulties or failing to meet expectations. However, the real challenge is often the inability or reluctance of educators to adapt their teaching methods to accommodate diverse learning styles. As noted by Armstrong (2000), the concept of "learning disability" should not exist in education, as it often mistakenly labels individuals who learn differently. For instance, children with a bodily-kinesthetic learning style, who require physical movement to learn, might be unfairly categorized as overactive or "hyperactive" due to their inability to sit still for extended periods. Similarly, students who rely on visual cues and imagery might be wrongly labeled as "reading disabled" if they struggle with text-based abstract concepts, as discussed by Ercan (2008: 46-47). This perspective challenges traditional educational paradigms, advocating for a more inclusive and adaptable approach to accommodate the diverse learning styles of students.

For instance, Armstrong (1996), in his investigations within the realm of special education aimed at scrutinizing the validity of attention deficit syndrome, discovered that many children diagnosed with this syndrome exhibited the ability to focus intensely on subjects that sparked their interest, particularly in extracurricular activities. He also noted that these children often did not exhibit symptoms of the syndrome in various life contexts. In classroom settings where students were given the autonomy to select their learning activities, these students were indistinguishable from their peers deemed "normal." Furthermore, they demonstrated typical performance levels in specialized tasks designed to assess their attention. Remarkably, it was found that attention deficit syndrome completely dissipated in 70% of these children upon reaching adulthood. These findings suggest that educational processes should focus on identifying and nurturing students' strengths in specific intelligence areas rather than emphasizing their deficiencies.

Intelligence is a fascinating and abstract notion that has been the subject of extensive study over many years. This ever-intriguing concept has captivated a multitude of researchers, leading to diverse explanations from various scientific perspectives. The genesis of the term dates back to Aristotle, with Cicero being the first to use the Latin word "intelligence" – a close translation of Aristotle's term "dia-noesis." Subsequent years saw a surge in research on the topic, yielding a plethora of perspectives and significantly influencing daily life (Bümen, 2005: 1).

In Turkey, the challenges encountered in education are, in fact, global issues. Educational scientists globally strive to enhance educational efficiency, constantly exploring new avenues and expansions. Neuropsychology and development expert Gardner (2003:45) points out that schools and social culture predominantly focus on verbal and logical-mathematical intelligences, often valuing orators or logical participants nurtured by the culture. However, Gardner (2003) emphasizes the need to accord equal importance to individuals gifted in fields like art, architecture, music, naturalism, design, dance, therapy, entrepreneurship, and other forms of intelligence that enrich our world. Unfortunately, many talented children do not receive adequate support in schools and are often mistaken for having learning difficulties or disabilities due to their unconventional thinking and learning methods in environments dominated by verbal or logical-mathematical approaches. The theory of multiple intelligences, partially implemented in Turkey by ministerial directive, advocates for a fundamental shift in school operations. Gardner argues for teacher training to include diverse instructional methods such as music, participatory learning, artistic activities, theatre, multimedia, field trips, and introspective practices. The theory of multiple intelligences not only offers instructors insights into their most effective teaching methods but also challenges them to diversify their approaches to reach a broader spectrum of students in the classroom (Armstrong, 2000).

The subsequent sections provide detailed insights into the concept of intelligence, characteristics of the intelligence concept, the historical evolution of intelligence theory, the Theory of Multiple Intelligences, the various types of intelligences within this theory, and the application of the Theory of Multiple Intelligences in educational settings.

2.1.1 Concept of Intelligence

The concept of intelligence in academic discourse has been a subject of extensive debate and analysis. This concept, often perceived as the ability to learn, reason, and adapt to various environments, represents a critical facet of cognitive psychology and educational theory. The exploration of intelligence has transitioned from early simplistic views to more nuanced and complex models, reflecting the diversity of human cognitive capabilities. One of the seminal concepts in the field of intelligence research is Spearman's (1904) theory of a general intelligence factor, commonly referred to as 'g'. Spearman's theory suggested that this general intelligence underlies specific cognitive abilities. This perspective positioned 'g' as a cornerstone of cognitive ability, influencing subsequent theories and assessments in the field of intelligence (Abduraxmonova & Nuraliyeva, 2021).

Contrasting with Spearman's unidimensional view, Gardner's (1983) theory of multiple intelligences revolutionized the understanding of intelligence. Gardner proposed that intelligence is not a singular, uniform attribute but rather comprises multiple distinct domains such as linguistic, logical-mathematical, musical, and spatial intelligences, among others. This theory significantly impacted educational approaches, advocating for diverse teaching methods tailored to different types of intelligence (Gardner, 1983). Building upon these foundations, Sternberg (1985) introduced the triarchic theory of intelligence, which encompasses analytical, creative, and practical intelligence. This theory broadened the scope of intelligence beyond traditional academic skills, recognizing the importance of creativity and practical problem-solving in intelligent behavior (Sternberg, 1985).

In recent years, the focus on the neurobiological bases of intelligence has gained prominence. Advances in neuroimaging and genetics have shed light on the brain structures and functions associated with intelligence, suggesting a biological underpinning for individual differences in cognitive abilities (Deary, Penke, & Johnson, 2010). These findings underscore the role of both genetic and environmental factors in shaping intelligence. The concept of intelligence is further complicated by cultural considerations. Cross-cultural studies, as discussed by Nisbett and colleagues (2002), have highlighted that definitions and perceptions of intelligence vary significantly across cultures. These studies challenge the universality of Western-centric models of intelligence, emphasizing the need to consider cultural context in both understanding and assessing intelligence (Nisbett et al., 2002).

The evolution of intelligence research illustrates a shift from monolithic to multifactorial models. This evolution underscores the complexity of intelligence as a construct and points to the necessity of an interdisciplinary approach in its study. Intelligence, therefore, is not merely a fixed trait but a dynamic interplay of various cognitive, biological, and environmental factors. As research continues to advance, our understanding of intelligence is likely to deepen, encompassing broader dimensions and incorporating insights from diverse academic disciplines (Martinez, 2014). The ongoing debate and research into the nature of intelligence are crucial not only for academic purposes but also for practical applications in education, workforce development, and understanding human behavior in various contexts.

2.1.2. Characteristics of the Concept of Intelligence

2.1.2.1. Hereditary Factors

The examination of hereditary factors in the concept of intelligence forms a pivotal area of research within the domain of cognitive psychology and behavioral genetics. This facet of intelligence study probes the extent to which genetic inheritance influences an individual's cognitive abilities, addressing a critical aspect of the age-old nature versus nurture debate (Berk, 2015).

Central to the discussion of hereditary influences on intelligence is the quantification of the genetic contribution to intelligence, often measured through heritability estimates. Heritability, in the context of intelligence, refers to the proportion of variance in intelligence within a population that can be attributed to genetic differences (Plomin, DeFries, Knopik, & Neiderhiser, 2016). These estimates are derived from studies involving twins, families, and adoptees, providing insights into the genetic basis of intelligence. Twin studies, in particular, have been instrumental in elucidating the hereditary aspects of intelligence. Research involving monozygotic (identical) and dizygotic (fraternal) twins has consistently demonstrated higher concordance rates for intelligence in monozygotic twins, suggesting a substantial genetic component (Bouchard, 1998). For instance, a study by Plomin and Spinath (2004) reported that genetic factors account for approximately 50% of the variance in intelligence

Moreover, the exploration of the genetic basis of intelligence has been augmented by advancements in molecular genetics. Recent studies have begun to identify specific genes associated with intelligence, although these genes collectively explain only a small fraction of the total heritability (Davies et al., 2011). These findings suggest that intelligence is a polygenic trait, influenced by many genes, each contributing a small effect. It is crucial to acknowledge, however, that the relationship between genes and intelligence is not deterministic. Environmental factors play a significant role in shaping intelligence, and their interaction with genetic predispositions is complex. The concept of gene-environment interaction posits that the effect of an individual's genetic makeup on intelligence can be modified by their environmental experiences (Turkheimer, Haley, Waldron, D'Onofrio, & Gottesman, 2005).

Furthermore, the study of hereditary factors in intelligence also delves into the developmental trajectory of intelligence. Longitudinal studies have shown that the influence of genetics on intelligence increases with age, a phenomenon known as the 'genetic amplification effect' (Deary, Johnson, & Houlihan, 2009). This suggests that as individuals age, their intelligence becomes more reflective of their genetic potential.

In conclusion, the exploration of hereditary factors in intelligence is a complex and continually evolving field. While genetic factors play a substantial role in shaping cognitive abilities, it is the intricate interplay between genetic predispositions and environmental influences that ultimately determines an individual's level of intelligence. As research methodologies advance, future studies are likely to provide deeper insights into the genetic architecture of intelligence and its interaction with environmental factors.

2.1.2.2. Environmental Factors

The investigation of environmental factors in shaping the concept of intelligence is a crucial component in the broader field of cognitive psychology and developmental studies. This area of research focuses on how various external elements, ranging from socio-economic status to educational exposure, influence an individual's cognitive development and intelligence levels. These factors are integral to understanding the multi-dimensional nature of intelligence, highlighting the role of nurture alongside genetic predispositions (Rinaldi & Karmiloff-Smith, 2017).

One of the most influential environmental factors on intelligence is educational attainment. Research has consistently demonstrated that the quality and duration of education significantly impact cognitive abilities. Ceci and Williams (1997) argue that education not only enhances specific skills and knowledge but also develops general reasoning abilities and cognitive skills. Educational interventions, especially in early childhood, have been shown to lead to measurable increases in intelligence quotient (IQ) scores, as evidenced by the study of Schweinhart et al. (2005), who found long-term cognitive benefits from early educational programs.

Socio-economic status is another critical environmental factor influencing intelligence. Studies have indicated that children from higher Socio-economic status backgrounds tend to have higher IQ scores compared to their lower Socio-economic status counterparts (Brooks-Gunn & Duncan, 1997). The disparities in intelligence scores across different SES groups can be attributed to a variety of factors, including access to quality education, nutritional status, and exposure to enriching experiences. The impact of socio-economic factors on intelligence underscores the importance of addressing societal inequalities to foster cognitive development across populations (Christensen, et al. 2014).

The home environment and parental involvement also play a significant role in shaping intelligence. The extent and quality of cognitive stimulation a child receives at home, such as exposure to books, educational games, and rich language environments, are strongly associated with the development of intelligence (Bradley & Corwyn, 2002). Furthermore, parental attitudes and expectations can significantly influence a child's intellectual growth and attitudes towards learning (Englund et al., 2004). Peer influence and social interactions are additional environmental aspects that contribute to cognitive development.

Vygotsky's social development theory emphasizes the importance of social interactions in cognitive development, suggesting that learning and intelligence are inherently social in nature (Vygotsky, 1978). Interactions with peers and adults provide opportunities for cognitive challenges and scaffolding, facilitating the development of higher-order thinking skills. Moreover, the impact of environmental factors on intelligence can vary across the lifespan (Wan, Jiang & Zhan, 2021). While early childhood experiences are crucial in laying the foundation for cognitive development, continuing cognitive stimulation and learning opportunities throughout life are also essential for maintaining and enhancing intelligence (Schooler, 1987).

2.1.3. History of Intelligence Theories

In exploring the realm of awareness of multıple intelligence, it becomes imperative to delve into the comprehensive evolution of intelligence theories. This journey illuminates the varied conceptualizations of intelligence over time, informing contemporary educational methodologies and assessment strategies.

The origins of formal intelligence theory are rooted in the late 19th and early 20th centuries, with Sir Francis Galton's pioneering work. Influenced by Darwin's evolutionary theories, Galton (1869) introduced the notion of quantifying intelligence through statistical methods, laying the foundation for future intelligence research (Richardson, 2022). This initial groundwork was expanded in the early 20th century with Alfred Binet and Theodore Simon's development of the Binet-Simon scale in 1905. Introducing the concept of mental age, this test set a new standard in cognitive assessment and led to the development of the modern Intelligence Quotient (IQ) (Hally, 2015).

Lewis Terman further advanced intelligence measurement with his revision of the Binet-Simon scale, resulting in the Stanford-Binet Intelligence Scales. Terman's adaptation, which standardized the IQ score as a measure of intelligence, significantly integrated intelligence testing within educational frameworks (Enoma, 2007). Building on these foundational theories, L. L. Thurstone, in 1937, proposed a seven-factor model of intelligence, significantly diversifying the understanding of cognitive capabilities. Thurstone's (1937) model included:

- Verbal Perception
- Verbal Fluency
- Numerical Ability
- Visual-Spatial Perception
- Memory
- Reasoning-Reasonable Thinking
- Perception, Grip Speed (as cited by Akın, 2021).

Thurstone (1937) also identified key ages for the maturation of these abilities, reaching approximately 80% at specific developmental stages:

- P (Grip Speed) at Age 12
- S (Space) at Age 14
- M (Memory) at Age 16
- N (Numerical Practicality) at Age 16
- V (Verbal Perception) at Age 18
- W (Verbal Fluency) after Age 20 (as cited in Michl, 2019).

Following Thurstone's model, Charles Spearman in 1927 introduced a two-factor theory of intelligence, comprising a general factor (g) and specific factors (s) (Spearman, 1927). Spearman's theory highlighted a general cognitive ability underpinning various mental tasks and skills, emphasizing the significance of understanding experiences, association, and their interrelation (Beaujean, 2020).).

In the late 1960s, J. P. Guilford critiqued the reductionist approach of assessing intelligence with a single score. Guilford developed a model consisting of six major categories, advocating for a comprehensive profile of individual intellectual abilities. His model encompassed:

- Mental operations
- The content of the mental material
- Product

Guilford further categorized these into five types of mental processes, four types of mental material content, and six types of products, offering a more expansive view of cognitive abilities (Guilford, 1967).

The mid-20th century saw Raymond Cattell’s introduction of a theory distinguishing fluid from crystallized intelligence, adding further complexity to the understanding of intelligence. Cattell’s theory differentiated between innate problem-solving capabilities and the accrual of knowledge and skills (Cattell, 1963).

Howard Gardner's 1983 theory of multiple intelligences, positing a multifaceted model of intelligence, finds direct relevance in the context of educational settings. Gardner's theory included diverse types such as linguistic, logical-mathematical, and spatial intelligences, significantly impacting educational theory and practice (Gardner, 1983). In the 1980s, Robert Sternberg's triarchic theory further diversified the intelligence landscape, conceptualizing intelligence as comprising analytical, creative, and practical components, thus broadening the scope of intelligence beyond traditional academic confines (Sternberg, 1985). Contemporary research in intelligence has expanded to include the interplay among genetic, environmental, and neurobiological factors. This paradigm shift, driven by advancements in neuroscience and behavioral genetics, aims to decode the complex dynamics shaping intelligence (Deary, Penke, & Johnson, 2010).

2.1.4. Multiple Intelligence Theory

This chapter discusses the concept of complex multiple intelligences, a theory that has significantly reshaped contemporary understanding of cognitive abilities.

2.1.4.1. History of Multiple Intelligence Theory

In the scholarly discourse on cognitive psychology and educational theory, the concept of Multiple Intelligence Theory, as formulated by Howard Gardner, represents a pivotal juncture in the understanding and assessment of human intelligence. This theory, first articulated in Gardner's seminal work "Frames of Mind: The Theory of Multiple Intelligences" (1983), has catalyzed a profound reevaluation of the traditional perspectives on intelligence. Gardner's theory, underpinned by a rich amalgamation of research across various fields including developmental psychology, neurology, and anthropology, as well as his examination of diverse populations, proposed a radical reconceptualization of intelligence (Gardner, 1983; Gardner, 1999).

Tracing the origins of Gardner's theory reveals a departure from the conventional intelligence paradigms of the early 20th century, which were predominantly influenced by Charles Spearman's (1904). notion of a general intelligence or 'g' factor (Jensen, 2000), This monolithic view was later challenged by the emergence of theories advocating multiple cognitive faculties, such as L. L. Thurstone's (1938). model of primary mental abilities (Murphy, 2020). However, Gardner's framework was distinct in its breadth and application, suggesting a broader spectrum of intelligences and implicating a range of educational, cognitive, and assessment methodologies.

Gardner initially identified seven intelligences: linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal. This list was subsequently expanded to include naturalist intelligence, with Gardner also hypothesizing the potential existence of further intelligences such as existential and moral intelligence (Gardner, 1999). Each intelligence was defined as a capacity to process certain types of information, thus acknowledging the diversity and specificity of cognitive abilities in individuals.

The implications of Gardner's theory have been particularly significant in the field of education. It has inspired a paradigm shift towards more holistic and differentiated teaching approaches, recognizing the unique ways in which students process information and engage with learning materials (Armstrong, 2009). The theory has advocated for instructional methods tailored to the strengths of different intelligences, thereby fostering a more inclusive and effective educational environment. Beyond the realm of education, Gardner's theory has influenced various domains including organizational management and leadership, emphasizing the value of diverse cognitive abilities in different professional contexts (Gardner, 2006). Despite its widespread influence, the Multiple Intelligence Theory has faced critiques, particularly regarding the empirical substantiation of distinct intelligences and the methodological challenges in their objective measurement (Yekovich, 2019). These critiques notwithstanding, Gardner's theory remains a significant contribution to the field, stimulating ongoing debate and research into the multifaceted nature of intelligence.

In sum, the history of Multiple Intelligence Theory illustrates a significant shift in the perception and understanding of intelligence. It underscores the complexity of cognitive capabilities and challenges the conventional, IQ-centric view of intelligence. Gardner's theory has not only broadened the academic discourse on intelligence but has also had far-reaching implications for educational practices, highlighting the necessity for diverse and adaptive learning strategies.

2.1.4.2. Definition of Intelligence According to Multiple Intelligence Theory

In examining the landscape of cognitive theory, the concept of intelligence has undergone significant reevaluation, particularly through the lens of Howard Gardner’s Multiple Intelligence Theory. This innovative theory, which has fundamentally altered the traditional understanding of cognitive abilities, posits a multifaceted nature of intelligence, contrasting sharply with the monolithic interpretations that have long dominated the field.

Gardner's seminal work, "Frames of Mind: The Theory of Multiple Intelligences," posited that intelligence is not a singular entity but a spectrum of distinct cognitive capacities (Gardner, 1983). This theory emerged from his interdisciplinary research spanning developmental psychology, neurology, and anthropology, as well as his studies of exceptional populations, including prodigies, savants, and individuals with brain injuries (Shearer, 2020). The roots of Gardner's theory can be traced to earlier intelligence theorists. While Spearman’s concept of a general intelligence or ‘g’ factor dominated the early 20th century, it was later challenged by theorists such as L. L. Thurstone, who proposed a model of intelligence comprising multiple primary mental abilities (Murphy, 2020). However, Gardner’s model differed significantly, both in the broad range of intelligences it proposed and in its implications for education and cognitive assessment.

Gardner initially identified seven distinct intelligences: linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal intelligences (Gardner, 1983). He later expanded this list to include naturalist intelligence, and speculated on the existence of others such as existential and moral intelligence (Gardner, 1999). The impact of Gardner’s theory on educational practices has been profound. It catalyzed the development of more diversified instructional strategies, recognizing that students learn in different ways and can be better engaged through teaching methods that align with their predominant intelligence(s) (Armstrong, 2009). Gardner's theory has also influenced areas outside education, including organizational management and leadership (Gardner, 2006).

Critics of Gardner's theory have raised concerns regarding the empirical support for distinct intelligences and the challenges of objectively measuring these intelligences (Waterhouse, 2006). Despite these criticisms, the theory remains influential, having initiated a broader dialogue about the nature of intelligence and the diverse ways in which human cognitive capacities manifest and can be nurtured.

2.1.4.3. Characteristics of Intelligence According to the Theory of Multiple Intelligence

The Theory of Multiple Intelligence, proposed by Howard Gardner, was first introduced in 1983. Gardner's groundbreaking work, "Frames of Mind: The Theory of Multiple Intelligences," marked a significant shift in the understanding of intelligence. This theory expanded the concept of intelligence beyond traditional IQ measures, emphasizing a broader spectrum of cognitive abilities.

Gardner’s theory, elucidated in his seminal works "Frames of Mind: The Theory of Multiple Intelligences" (1983) and "Intelligence Reframed: Multiple Intelligences for the 21st Century" (1999), posits that intelligence encompasses a broader spectrum of human cognitive and practical skills. According to Gardner, intelligence is not a singular, monolithic entity measurable through standard psychometric tests. Rather, it comprises multiple distinct capacities, each reflecting different ways of interacting with the world and processing information (Gardner, 1983; Gardner, 1999). Gardner identifies several core characteristics of these intelligences:

Plurality and Diversity: Gardner’s theory underscores the existence of multiple intelligences, each representing a distinct form of cognitive capability. This plurality challenges the notion of a single, uniform intelligence, emphasizing the diversity inherent in human cognitive processing (Gardner, 1999).

Contextual Manifestation: Each intelligence is understood to manifest differently across various cultural and social contexts. This aspect highlights the adaptability and cultural relevance of the different intelligences, underlining the theory’s departure from the notion of intelligence as a culture-free, universal construct (Gardner, 1983).

Innate Potential and Development: Gardner posits that while individuals may possess innate potential in certain intelligences, these can be cultivated and developed through exposure, education, and practice. This perspective shifts the focus from a fixed intelligence quotient to a more dynamic understanding of cognitive development (Gardner, 1999).

Interdisciplinary Validation: The identification and validation of these intelligences are not confined to traditional psychological testing but are supported by a range of disciplines including neuroscience, anthropology, and developmental psychology. This interdisciplinary approach lends credence to the theory’s conceptualization of intelligence (Gardner, 1983).

Educational Implications: The theory advocates for personalized educational strategies that cater to the diversity of intelligences in learners. It suggests that educational environments should recognize and nurture multiple intelligences, promoting a more inclusive and effective approach to learning (Armstrong, 2009).

Gardner's Theory of Multiple Intelligences thus redefines the characteristics of intelligence, moving away from a singular, quantifiable measure to a more nuanced understanding of diverse cognitive abilities. This reconceptualization has significant implications for educational practices, cognitive assessment, and our broader understanding of human potential.

2.1.5. Key Points and Principles of Multiple Intelligence Theory

The discourse on Howard Gardner’s Multiple Intelligence Theory (MIT) presents a transformative understanding of human cognition, significantly diverging from the traditional, singular concept of intelligence. Multiple Intelligence Theory posits that human cognitive competence is far broader, encompassing a variety of distinct intelligences (Gardner, 1983). Key Points of Multiple Intelligence Theory include:

Multiplicity of Intelligences: Gardner asserts the existence of at least eight distinct intelligences: linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, and naturalist. Each of these intelligences operates independently, highlighting a multifaceted nature of human cognition (Gardner, 1999).

Unique Cognitive Processes: Each intelligence is characterized by unique cognitive processes and abilities. For instance, linguistic intelligence involves skills in reading, writing, and verbal communication, while spatial intelligence pertains to the ability to visualize and manipulate spatial objects (Gardner, 1983).

Cultural and Contextual Relevance: Gardner emphasizes the importance of the cultural and contextual application of these intelligences. He argues that each intelligence has evolved to address specific challenges in the human environment, thereby making them contextually and culturally relevant (Gardner, 1983).

Developmental and Pluralistic Approach: The theory suggests that these intelligences develop at different rates in individuals and are influenced by environmental factors. This developmental perspective implies that education should be tailored to foster the growth of these various intelligences (Gardner, 1999).

Educational Implications: One of the most significant contributions of MIT is its implications for educational practices. It encourages an educational approach that acknowledges and nurtures the diverse intelligences of students, advocating for personalized and differentiated instruction (Armstrong, 2009).

Beyond IQ Measurement: Gardner’s theory challenges the adequacy of IQ tests in measuring human intelligence. It posits that traditional IQ tests predominantly measure linguistic and logical-mathematical abilities, thus overlooking other forms of intelligence (Gardner, 1983).

In essence, the principles of the Multiple Intelligence Theory demand a reevaluation of how intelligence is perceived, measured, and nurtured. Gardner's theory not only broadens the scope of what is considered intelligence but also proposes a more inclusive and holistic approach to understanding and developing human cognitive abilities. In conclusion, the Multiple Intelligence Theory stands as a paradigmatic shift in cognitive psychology, redefining the landscape of intelligence by acknowledging its diversity and complexity. This theory has profound implications for educational theory and practice, offering a more comprehensive and flexible framework for appreciating and fostering the varied cognitive abilities of individuals.

2.1.6. Types of Intelligence in Multiple Intelligence Theory

In Gardner's framework, it is posited that a singular type of intelligence is not possessed by individuals. Rather, the existence of eight distinct types of intelligence has been identified. It has been emphasized that intrinsic abilities for each intelligence type are held by every person. These types of intelligence, which are expressed through symbol systems, can be developed. It is noted that these intelligences work in unison and complement one another. For instance, it is often highlighted that spatial, bodily-kinesthetic, and interpersonal intelligences are utilized concurrently by a surgeon. Among these intelligences, musical intelligence is observed to emerge earlier than the others. It is also acknowledged that personal intelligence is developed through interaction and feedback. According to this perspective, talents in various areas of intelligence are possessed by each individual, and the importance of providing suitable environments for the development of these talents is underscored (Saydam, 2005: 49).

Figure 2.1. Types of Intelligence in Multiple İntelligence Theory (Phillips, 2010).

2.1.6.1. Verbal / Linguistic Intelligence (VLI)

Verbal/Linguistic Intelligence (VLI), as conceptualized in Gardner's Theory of Multiple Intelligences, plays a pivotal role in understanding and interpreting human cognitive abilities. This type of intelligence, characterized by the adept use of language for expression and comprehension, extends beyond mere linguistic skills, encompassing a wide spectrum of competencies.

In the realm of VLI, proficiency is not limited to the basic mechanics of language but involves the nuanced appreciation of its varied dimensions. Salovey and Mayer (1990), in their exploration of emotional intelligence, allude to the interconnectedness of linguistic ability and emotional comprehension, suggesting that individuals skilled in VLI are adept at discerning and articulating emotional nuances (Salovey & Mayer, 1990). This proficiency extends to both spoken and written language, enabling effective communication and deeper understanding of human emotions and motivations.

Moreover, the scope of VLI includes the capacity to engage with language in a creative and imaginative manner. Sternberg and O'Hara (1999), in their discussion on intelligence and creativity, argue that individuals with high VLI exhibit a proclivity for creative endeavors involving language, such as poetry and storytelling. This creativity is not merely an artistic attribute but also a cognitive skill, enabling innovative problem-solving and original thought (Sternberg & O'Hara, 1999).

The educational implications of VLI are profound. According to Grigorenko et al. (2002), language proficiency is a critical determinant of academic success. In a classroom setting, students with strong VLI benefit from instruction that leverages their linguistic strengths, such as verbal explanations, discussions, and written assignments. This approach aligns with Vygotsky's (1978) sociocultural theory, which emphasizes the role of language in cognitive development and social interaction (Vygotsky, 1978). Furthermore, VLI transcends the boundaries of academic learning. In the context of everyday life, individuals with pronounced VLI often excel in professions that demand strong communication skills, such as law, journalism, and teaching. Gardner (1993) emphasizes the versatility of VLI, noting its relevance in various professional and social contexts.

2.1.6.2. Logical-Mathematical Intelligence (LMI)

Logical-Mathematical Intelligence (LMI) is a central aspect of Howard Gardner's Multiple Intelligences Theory, which postulates that human intelligence is not a singular, unified faculty but a composite of multiple, distinct types of cognitive capabilities (Gardner, 1983). LMI, specifically, refers to the ability to understand logical reasoning and complex mathematical problems. It encompasses skills such as the capacity for abstract thinking, the ability to see patterns and relationships, and the proficiency in solving complex problems through logical reasoning (Arum, Kusmayadi & Pramudya, I. (2018).

Gardner's conceptualization of LMI revolutionized the understanding of intelligence in the academic world. Traditionally, intelligence was primarily associated with linguistic and logical-mathematical abilities, often measured through standard IQ tests (Raı & Das, 2006). However, Gardner's theory expanded this narrow view by positioning LMI as one of many equally important intelligences. The essence of LMI lies in its focus on problem-solving and logical reasoning (Ekinci, 2014). According to Sternberg (1997), LMI is not merely about number crunching; it involves the ability to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. This includes the capacity for deductive reasoning, recognizing patterns, and understanding the relationships among actions, symbols, and abstract ideas (Sternberg, 1997).

Educationally, LMI plays a critical role. Fostering LMI in educational settings can enhance students' abilities in subjects such as mathematics, science, and computer science (Geary, 1996). This aligns with Piaget's theory of cognitive development, which posits that logical and mathematical skills are crucial components of cognitive growth and development (Piaget, 1952). Moreover, LMI has practical implications beyond the academic realm. Professionally, individuals with high LMI often excel in fields that require analytical thinking, such as engineering, computer science, and finance (Lou & Noels, 2019). Their ability to understand complex systems and identify logical solutions is a valuable asset in these domains.

In conclusion, Logical-Mathematical Intelligence is a fundamental component of Gardner's Multiple Intelligences Theory. It encapsulates critical thinking, problem-solving, and the ability to understand complex mathematical concepts. Its relevance in both educational and professional settings underscores the importance of nurturing this intelligence to develop well-rounded individuals capable of analytical thinking and problem-solving in various contexts.

2.1.6.3. Spatial - Visual Intelligence (SVI)

Spatial-Visual Intelligence (SVI), as delineated in Gardner's Theory of Multiple Intelligences, is a cognitive ability that underscores a person's capacity to perceive the visual world accurately, transform and modify perceptions, and recreate aspects of one's visual experience even in the absence of relevant stimuli (Arıkan, Soydan & İşler, 2017).). This intelligence is not limited to visual perception but also involves the potential to generate mental imagery, spatial reasoning, image manipulation, graphic and artistic skills, and an active imagination (Gardner, 1999).

The concept of SVI challenges the traditional view of intelligence, which often emphasizes verbal and mathematical skills. Gardner's inclusion of SVI as a distinct type of intelligence expands the understanding of human cognitive capabilities, recognizing that individuals may excel in areas not typically assessed in standard IQ tests (Kaufman, 2009). This intelligence plays a crucial role in fields such as art, architecture, engineering, and other domains requiring spatial differentiation and visual thinking (Kaufman & Sternberg, 2006).

SVI entails more than just the ability to visualize. It includes the capacity to manipulate and transform the spatial properties of objects or visual scenes. This ability is essential in problem-solving situations that require one to envisage the outcomes of actions, as highlighted by Lohman (1996) in his work on spatial abilities. Moreover, SVI is linked to creativity, with several studies suggesting a correlation between high spatial skills and creative thinking (Kim, 2006).

In educational settings, students with strong SVI benefit from instruction that leverages their visual-spatial strengths. Teaching strategies that incorporate visual aids, diagrams, and physical models can enhance learning for these individuals (Silverman, 2002). This approach is supported by Mayer's (2001) theory of multimedia learning, which posits that people learn more effectively when they are presented with both verbal and visual materials. Furthermore, SVI has significant implications for everyday life. It enables individuals to navigate their environment, interpret visual information, and engage in complex visual-spatial tasks. In the digital age, where visual information is prevalent, SVI is increasingly relevant, as it aids in processing and interpreting the barrage of visual stimuli encountered daily (Eisner, 2002).

Thus, Spatial-Visual Intelligence is a critical component of Gardner's Theory of Multiple Intelligences. It encompasses the ability to process, interpret and manipulate visual information and plays a vital role in various professional fields and in everyday life. Recognizing and developing audiovisual intelligence in educational and professional settings is essential for the development of individuals with diverse and versatile cognitive abilities.

2.1.6.4. Musical Intelligence (MI)

Musical Intelligence (MI), as conceptualized within Gardner's Theory of Multiple Intelligences, represents a distinct cognitive ability to recognize, create, reproduce, and reflect on music. This intelligence, as Gardner (1983) posits, is not merely a talent or skill but a cerebral capacity that encompasses a deep understanding of musical forms, rhythms, tones, and compositions (Helding, 2010).

MI transcends the simplistic notion of musical talent. It involves a complex interplay of abilities that enable individuals to comprehend, appreciate, and create music. This form of intelligence is marked by sensitivity to rhythm, pitch, timbre, tone, and the emotional nuances embedded in music (Helding, 2010). In line with this, Schlaug, Norton, Overy, and Winner (2005) underscore the profound impact of music on cognitive and neurological development, illustrating how musical training can enhance auditory discrimination and fine motor skills.

The embodiment of MI is not restricted to professional musicians or composers. It is present in varying degrees across individuals, manifesting in everyday activities such as humming a tune, tapping to a rhythm, or being moved by a piece of music (Levitin, 2006). This universality of musical experience points to the intrinsic nature of MI in human cognition. Educationally, MI challenges traditional pedagogical practices that often prioritize linguistic and logical-mathematical skills. Implementing music-based learning strategies, as advocated by educators like Gazzaniga, M. S., & Heath, S. (2006) can foster MI and enhance overall learning experiences. Music, as a medium of instruction, can facilitate memory, enhance concentration, and promote a multi-sensory learning environment.

The application of MI extends beyond the realm of education. In therapeutic contexts, music therapy has emerged as an effective tool for emotional and cognitive rehabilitation. This therapy leverages the principles of MI to aid in the treatment of various psychological and neurological disorders, as detailed by Thaut and Hoemberg (2014). In conclusion, Musical Intelligence is a fundamental aspect of human cognition, integral to both artistic expression and everyday life. It encompasses a broad range of cognitive skills, from perceiving and creating musical nuances to using music as a medium for emotional expression and social interaction. The recognition and nurturing of MI in educational and therapeutic contexts highlight its pivotal role in fostering well-rounded cognitive development.

2.1.6.5. Bodily / Kinesthetic Intelligence (BKI)

Bodily/Kinesthetic Intelligence (BKI), a key component of Gardner's Theory of Multiple Intelligences, refers to the ability to use one's body effectively to solve problems or create products, encompassing physical agility, coordination, balance, strength, flexibility, and tactile capabilities (Gardner, 1983). This intelligence is not merely about physical prowess; rather, it embodies the capacity to utilize bodily skills and manipulate objects effectively, integrating mental and physical coordination.

The concept of BKI challenges the traditional educational and cognitive paradigms that primarily value linguistic and logical-mathematical intelligences. In BKI, intelligence is expressed through bodily sensations and movements (Anfel, 2023). Piaget’s theory of cognitive development acknowledges the importance of sensorimotor experiences in the early stages of child development, highlighting the role of physical interaction with the environment in cognitive growth (Piaget, 1952). This perspective is further supported by contemporary research, which emphasizes the interconnection between cognitive processes and physical actions (Smith & Gasser, 2005).

In educational contexts, BKI is particularly relevant in disciplines such as physical education, dance, theatre, and sports. Educators like Jensen (2000) have shown that integrating movement-based activities into the learning process can enhance memory, concentration, and understanding, particularly in young learners. This alignment with Vygotsky’s (1978) social development theory illustrates how physical interaction and social environments contribute to cognitive development. Beyond education, BKI has practical implications in various professional fields. Individuals with high BKI often excel in careers that require physical dexterity, such as athletics, performing arts, surgery, and crafts (Stevenson, 2004). Their ability to control and coordinate their bodily movements enables them to perform tasks that are physically demanding or require fine motor skills.

In therapeutic settings, the principles of BKI are applied in practices like occupational therapy and physiotherapy, which utilize physical activities to aid cognitive and emotional rehabilitation (Shapiro & Cole, 1999). The effectiveness of these therapies highlights the interconnectedness of physical and cognitive well-being.

2.1.6.6. Interpersonal Intelligence (IEI)

Interpersonal Intelligence (IEI), as defined in Howard Gardner's Theory of Multiple Intelligences, refers to the ability to understand and interact effectively with others. This form of intelligence involves a nuanced comprehension of social cues, effective verbal and non-verbal communication, empathy, and the ability to resolve conflicts and negotiate complex social situations (Gardner, 1983, 1999).

Gardner's inclusion of IEI as a distinct form of intelligence challenges traditional, narrow conceptions of intelligence that predominantly emphasize linguistic and logical abilities. He argues that IEI is as critical as other types of intelligence for successful navigation of social environments (Gardner, 1999). This viewpoint is supported by contemporary research in psychology and education, which recognizes social intelligence as an essential component of overall cognitive functioning and a predictor of success in personal and professional life (Lopes, et al., 2004).

IEI is characterized by an individual's ability to recognize and interpret others' moods, desires, motivations, and intentions. It goes beyond mere social amiability; it involves a deeper understanding of complex social dynamics and the ability to adapt to different social settings (Salovey & Mayer, 1990). This includes both verbal and non-verbal communication skills, as well as the capacity for empathy and understanding diverse perspectives.

In the educational context, IEI plays a crucial role. Educational strategies that foster IEI can enhance students' collaborative skills, emotional understanding, and conflict resolution abilities, contributing to more effective and harmonious learning environments (Goleman, 1995). Moreover, educators equipped with high IEI can better understand and respond to students' diverse needs, creating a more inclusive and empathetic educational experience (Brackett, Rivers, & Salovey, 2011).

In professional settings, IEI is vital for effective leadership, teamwork, and customer relations. Individuals with strong IEI are often successful in roles that require negotiation, mediation, and management of group dynamics (Özbay, 2019). Their ability to navigate complex interpersonal scenarios and build productive relationships is a valuable asset in various career paths. In conclusion, Interpersonal Intelligence is an integral aspect of Gardner's Multiple Intelligences Theory. It encompasses the ability to understand, empathize with, and effectively interact with others. Recognizing and nurturing IEI in educational and professional contexts is essential for developing well-rounded individuals capable of thriving in diverse social environments.

2.1.6.7. Intrapersonal Intelligence

In Howard Gardner's Multiple Intelligence Theory, intrapersonal intelligence (IAI) is a crucial component that emphasizes an individual's ability to understand oneself, including one's emotions, motivations, and goals. This form of intelligence enables individuals to effectively regulate their lives and make meaningful contributions to society (Davis et al. 2011). Gardner's theory posits that each individual possesses multiple intelligences, including intrapersonal intelligence, and that understanding and considering these intelligences is crucial for effective education and assessment. Gardner's theory has practical implications for education, as it encourages stakeholders to consider all dimensions of intelligence present in a student before assessing and grading them . Additionally, the theory is convenient for cultivating and expanding students' intelligence and conscious initiative, making it relevant for educational models and practices (Kennedy-Murray, 2016).

In the context of Gardner's theory, IEI is seen as equally important as other forms of intelligence, such as linguistic or logical-mathematical intelligence. It emphasizes the social aspect of human cognition, underscoring the idea that intelligence is not just a measure of individual academic or problem-solving abilities but also involves the capacity to understand and navigate social situations and relationships (Gardner, 1983).

IEI is not limited to social interaction but includes a broader spectrum of abilities. According to Yang and Sternberg's (1997) research in Taiwan, interpersonal intelligence is one of the five factors in their conception of intelligence, alongside intrapersonal intelligence, general cognitive ability, intellectual self-promotion, and intellectual self-effacement. This indicates the value placed on social and emotional skills within different cultural contexts, highlighting the diversity in the perception of intelligence across cultures.

In the educational domain, IEI is crucial for collaborative learning, conflict resolution, and the development of effective communication skills. Educators can cultivate IEI by encouraging group activities, teaching conflict resolution strategies, and fostering an environment that values emotional intelligence alongside academic skills (Salovey & Mayer, 1990). Furthermore, in professional settings, individuals with high IEI are often successful in roles that require teamwork, leadership, and negotiation skills. They excel in careers where understanding and managing interpersonal dynamics are vital, such as in psychology, teaching, human resources, and leadership roles.

2.1.6.8. Naturalist Intelligence

Naturalist Intelligence is a significant component of Howard Gardner's Multiple Intelligence Theory, which posits that human intelligence encompasses various types of intelligences, each present in individuals to varying degrees (Al-Qatawneh et al., 2021). Gardner's theory initially identified seven distinct intelligences, later adding an eighth 'naturalist' intelligence in 1995, and more recently considering a ninth form of 'existential' intelligence (Allix, 2000). The theory suggests that each individual possesses nine relatively independent intelligences, which are presented in a combined form in each person (Zhou & Sansom, 2022). Furthermore, the theory emphasizes that individuals differ in the specific profile of intelligences they exhibit (Gardner & Hatch, 1989).

Gardner's Multiple Intelligence Theory has been the subject of sustained interest among educators worldwide, despite criticisms regarding its empirical validity (Shearer, 2020). The theory has practical implications for education, as it encourages stakeholders to consider all dimensions of intelligence present in a student before assessing and grading them. Additionally, the theory is convenient for cultivating and expanding students' intelligence and conscious initiative, making it relevant for educational models and practices (Xie & Xu, 2022).

The concept of NI extends beyond the mere appreciation of nature. It involves a deep understanding of the natural world and the ability to use this understanding effectively, often in scientific or ecological domains. This form of intelligence is crucial for professions such as biology, botany, and environmental science, where an acute perception of natural patterns and an understanding of natural processes are essential (Nicholson-Nelson, 1998).

In the educational context, NI is increasingly recognized as an essential component of learning. Nurturing NI in students can lead to a greater awareness and understanding of the environment and can foster a connection with the natural world (Nicholson-Nelson, 1998). Educational methods that promote outdoor learning and experiential interaction with nature can effectively develop this type of intelligence in learners. Moreover, NI is closely related to issues of sustainability and ecological responsibility. Individuals with high NI are often more attuned to environmental concerns and are better equipped to address ecological challenges (Loori, 2005). This intelligence is therefore not only important for personal development but also for addressing broader societal and environmental issues.

The role of NI in personal development is also significant. Gardner's inclusion of NI in his theory highlights the importance of environmental awareness as a key aspect of human intelligence. It encourages a holistic approach to learning and understanding, where an individual's connection to the natural world is seen as a vital part of their cognitive and emotional development (Morris, 2004).

2.1.6.9. Emotional Intelligence

Emotional Intelligence (EI), as conceptualized within the realm of Multiple Intelligence Theory, signifies a distinct and vital aspect of human cognition. This form of intelligence encompasses the ability to accurately perceive, appraise, and express emotions; access and generate feelings to facilitate thought; understand emotional nuances; and regulate emotions to foster both emotional and intellectual growth (Mayer & Salovey, 1993). The concept, introduced by Salovey and Mayer in 1990 and further popularized by Goleman (1995), has garnered significant attention due to its implications for personal development and social interaction.

The study of EI has, however, encountered challenges in substantiation and measurement. Davies, Stankov, and Roberts (1998) indicated difficulties in validating the existence of EI, mainly because scale measures of EI often overlap with factors captured by existing personality scales, and objective measures have struggled with reliability issues. This complexity in measuring EI suggests that while it is a significant construct, its empirical basis and differentiation from established personality traits need further exploration.

Furthermore, Fernandez-Berrocal et al. (2001) highlighted the recognition of EI as a component of intelligence in their research. Their work aligns with the theory proposed by Mayer and Salovey (1993), viewing EI as integral to classical cognitive abilities such as verbal ability. This perspective integrates EI within the broader context of cognitive functioning, suggesting that EI is not an isolated construct but is interconnected with other cognitive abilities. Incorporating EI into educational and professional settings could offer substantial benefits. Understanding and managing emotions are crucial skills in social interactions, leadership, teamwork, and personal well-being. EI's role in cognitive training, as discussed in the Sternberg triarchic theory of intelligence, further underscores its importance in a comprehensive approach to intelligence.

The conceptualization of emotional intelligence by Salovey and Mayer (1990) emphasizes the potential for emotional skills to be cultivated through learning and experience. To advance research in this area, they, along with Caruso, developed the Multifactor Emotional Intelligence Scale (MEIS) in 1998, a tool designed to evaluate various aspects of emotional intelligence. By 2001, the MEIS underwent significant refinements, evolving into a more reliable instrument known as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). This enhanced version extended beyond the fundamental skills of emotion understanding and management. It incorporated additional dimensions such as the ability to interpret facial expressions, comprehend the complexities of emotional dynamics, and effectively navigate interpersonal challenges (Salovey et al., 2003: 642-643). In this expanded framework, emotional intelligence is seen not only as an intrinsic trait but also as a set of competencies that can be honed and applied in various life situations.

Adding to this multidimensional understanding of emotional intelligence, Martinez (2014) offers a definition that views it as an individual’s capability to regulate and adapt their inherent skills, abilities, and coping mechanisms in response to environmental demands and pressures (Yüksel, 2006: 13). This perspective highlights the adaptive nature of emotional intelligence, underlining its importance in personal resilience and environmental adaptability. Furthering the discourse on emotional intelligence, Davies made significant contributions by proposing a four-dimensional definition after a comprehensive review of the literature in the field. These dimensions encompass understanding and expressing one's own emotions, recognizing and empathizing with the emotions of others, effectively regulating one's own emotional responses, and utilizing emotions constructively to enhance personal performance (Yüksel, 2006: 13). This holistic approach by Davies underscores the multifaceted nature of emotional intelligence, recognizing it as a key factor in both personal development and interpersonal relations.

2.1.6.10. Cultural Intelligence

Cultural Intelligence (CQ), a facet of the broader Multiple Intelligence Theory, encapsulates an individual's capability to function effectively in culturally diverse settings. It's a multidimensional construct encompassing various components such as cognitive, motivational, and behavioral aspects, vital for navigating and succeeding in an increasingly globalized world.

The cognitive component of CQ, often referred to as CQ Knowledge or Cognitive CQ, involves understanding the norms, practices, and conventions in different cultural settings. This knowledge isn't merely factual but extends to a nuanced comprehension of the underlying value systems and ideologies that shape behaviors in various cultures (Ang & Van Dyne, 2008). For instance, understanding the cultural context in negotiations can lead to more effective communication and outcomes. As elucidated by Sharma (2019) in the "Journal of International Management," CQ is not a monolithic construct but a multifaceted one, comprising cognitive, metacognitive, motivational, and behavioral dimensions. Each of these dimensions plays a unique role in enabling individuals to navigate cultural complexities successfully.

The cognitive aspect of CQ involves knowledge of cultural norms, practices, and conventions, extending to understanding the underlying value systems that shape behaviors in various cultures (Ang et al., 2007). This knowledge is essential for effectively interpreting and responding to different cultural cues and for making informed decisions in a global context. Metacognitive CQ, or the ability to reflect upon and adapt one's cultural knowledge, is pivotal in managing cross-cultural interactions (Earley & Ang, 2003). It enables individuals to be aware of and adjust their cultural assumptions, thereby enhancing their capability to interact effectively with people from different cultural backgrounds.

Motivational CQ refers to the drive and interest in engaging with different cultures. This dimension is closely linked to the intrinsic motivation to adapt to and learn from multicultural experiences, thereby enhancing one's ability to navigate cultural differences effectively (Thomas et al., 2008). Behavioral CQ, which entails the capability to adapt one's behavior in cross-cultural situations, is critical for successful intercultural interactions. This dimension involves the ability to modify verbal and non-verbal behaviors to align with different cultural contexts, thereby facilitating effective communication and reducing the likelihood of misunderstandings (Ang et al., 2007).

The integration of these CQ facets contributes significantly to institutional success by mediating the quality of relationships in diverse institutional environments (Sharma, 2019). High levels of CQ enable individuals to build and maintain effective intercultural relationships, thereby facilitating institutional success. This success is particularly evident in contexts where institutional differences, such as in rules, laws, regulations, cultural values, and norms, are pronounced (Ang et al., 2007; Earley & Ang, 2003).

2.1.7. Multiple Intelligence Theory in Education

The Multiple Intelligence Theory, conceptualized by Howard Gardner, has revolutionized educational paradigms by emphasizing diverse intellectual capacities beyond traditional linguistic and logical-mathematical intelligences (Gardner, 1983; Weller, 1999). This theory acknowledges a spectrum of intelligences, including linguistic-verbal, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, spiritual/environmental, and existential (Calik & Birgil, 2013;Gardner, 1999; Tirri et al., 2008).

The application of Multiple Intelligence Theory in education is significant and extensive. It advocates for personalized teaching approaches that align with the unique combination of intelligences each student possesses (Sener & Cokcaliskan, 2018). This alignment not only enhances the learning process but also promotes the development of intellectual skills, motivating learners to engage more deeply with the content (Weller, 1996; Barrington, 2004). The theory underscores that intelligence is not a static entity but a dynamic set of capabilities influenced by factors such as gender, age, cultural, and social environment (Bordei, 2017;Tsai, 2016).

Studies have shown that students exhibit a variety of dominant intelligences, which correlate with their academic success. For instance, a study conducted in an Israeli middle school revealed that students in higher-performing classes exhibited a greater prevalence of logical intelligence and multiple dominant intelligences compared to their peers in regular classes (Yavich & Rotnitsky, 2020).

One of the foundational premises of Multiple Intelligence Theory is that every person possesses a unique blend of multiple intelligences. This diversity suggests that no singular teaching or learning strategy can be universally effective (Gouws, 2007). Therefore, educators are encouraged to develop diverse teaching methods that cater to the varied intellectual strengths of students. Such an approach not only accommodates different learning styles but also enhances critical and creative thinking abilities (Calik & Birgil, 2013; Stanford, 2003).

In the context of collaborative learning, Multiple Intelligence Theory contributes significantly. It suggests that the effectiveness of teamwork is enhanced when individual strengths and intelligences are recognized and utilized. This principle is equally applicable in educational settings, where students can contribute according to their dominant intelligence, whether it be in brainstorming, problem-solving, or creative tasks (Green et al., 2005; Martin, 2006).

Gardner's theory also challenges the traditional concept of IQ, asserting that intelligence is multifaceted and not adequately represented by conventional IQ tests. It emphasizes the importance of a broader range of intelligences in learning processes and real-life applications (Bordei, 2018; Gouws, 2007). In summary, Multiple Intelligence Theory in Education advocates for a nuanced understanding of intelligence, emphasizing the need for diverse and personalized educational strategies. This approach not only caters to the individual strengths of students but also prepares them for the complexities of the modern world, where a combination of different intelligences is often required to solve problems and create innovative solutions.

2.1.8. Factors Affecting the Development of Intelligence Fields

The development of intelligence fields as postulated in Gardner's Multiple Intelligences Theory is influenced by a multitude of factors, as the theory itself suggests a departure from traditional conceptions of intelligence. Intelligence, as defined by Gardner, encompasses diverse areas such as mathematical reasoning, linguistic prowess, and spatial recognition, each with its unique developmental trajectory (Gardner, 1983).

One critical factor affecting the development of these intelligence fields is the innate predisposition and learning style of individuals. Gardner's theory posits that each individual possesses a distinct blend of intelligences, which defines their learning style and abilities (Gardner, 1983). For instance, an individual with a dominant mathematical intelligence will have a natural inclination towards logical reasoning and problem-solving, which will influence their learning and developmental path. Moreover, the environment plays a significant role in shaping these intelligence fields. Educational settings and societal norms often dictate the intelligences that are valued and nurtured. For example, traditional education systems have historically emphasized linguistic and logical-mathematical intelligences, sometimes at the expense of other types. This bias can lead to a lack of development in other intelligence areas (Jensen, 2000).

The effectiveness of teaching methodologies also significantly influences the development of multiple intelligences. Educational practices that cater to a variety of intelligences and learning styles can facilitate a more holistic development of intelligence fields. For instance, employing visual aids and hands-on activities can enhance spatial and kinesthetic intelligences, respectively (Glickman, 2002). Furthermore, individual factors such as motivation, self-awareness, and personal experiences impact the development of different intelligence fields. A learner's self-confidence and self-worth, nurtured through successful learning experiences tailored to their dominant intelligence, can significantly enhance their overall intelligence development (Gardner, 1983).

The combination of these factors creates a complex web that shapes the development of intelligence fields in individuals. It’s important to recognize that these intelligence fields are not static; they can be developed and enhanced over time through targeted educational strategies, personal experiences, and environmental influences.

2.1.9. How to Identify Multiple Intelligence Domains

The identification of multiple intelligence domains, as posited by Howard Gardner's Multiple Intelligence Theory, is pivotal for tailoring educational approaches to individual learning styles. This theory asserts that each individual possesses a unique combination of intelligence domains, which significantly influences their learning preferences and capabilities (Checkly, 1997; Saban, 2001). To identify these intelligence domains, various tools and methods are employed. For instance, the Multiple Intelligence Domains Inventory, a tool developed by Saban (2001), offers a systematic approach for assessing the different intelligence types. This inventory is structured as a Likert type scale, comprising sections that address each of Gardner's eight intelligence domains. Respondents rate statements related to each domain, which allows for the evaluation of their dominant intelligence types (Saban, 2001).

Additionally, the Kolb Learning Styles Inventory is used to ascertain learning styles, which are closely related to multiple intelligences. This inventory categorizes learning styles into four types: diverger, assimilator, converger, and accommodator, each aligning with different combinations of abstract conceptualization, concrete experience, active experience, and reflective observation (Gencel, 2006). These styles provide insights into how individuals prefer to process and engage with information, indirectly reflecting their dominant intelligence domains. Data analysis techniques, such as frequency analysis and the unrelated t-test, are applied to validate the findings from these inventories, ensuring that the identified intelligence domains and learning styles are statistically significant (Yenice & Aktamıs, 2010). This statistical validation is crucial in affirming the reliability of the identified intelligence domains.

Empirical studies have demonstrated that certain intelligence domains can be more developed in specific groups. For instance, science education students often exhibit higher levels in logical-mathematical intelligence, which aligns with the skill sets required in their field of study (Hamurcu, Günay, & Özyılmaz, 2003). Similarly, changes in learning styles have been observed in preservice teacher candidates, with a transition from an assimilator to a diverger learning style, indicating a shift from abstract conceptualization to concrete experience as they progress in their education (Hasırcı, 2006).

2.1.10. Multiple Intelligence Theory and Learning

The Multiple Intelligence Theory emphasizes diverse intellectual capabilities beyond the traditional focus on linguistic and logical-mathematical abilities (Gardner, 1983). This theory posits that each individual possesses a unique combination of intelligence domains, influencing their learning preferences and capabilities (Checkly, 1997; Saban, 2001). It has been incorporated into educational practices worldwide, including mainstream and special education classes, thus underscoring the importance of utilizing human intellect to its fullest potential (Gardner, 2020; Gardner, 2011).

Gardner’s theory critically assesses traditional intelligence measurements, like IQ tests, which primarily evaluate linguistic, logical-mathematical, and sometimes spatial intelligences (Gardner, 2020; Perkins & Tishman, 2001). His research in developmental psychology, particularly on brain-damaged individuals, led to the formulation of the Multiple Intelligence Theory. This theory suggests humans possess a range of intelligences that work together and complement each other (Gardner, 1983; Gardner, 1999; Gardner, 2011).

Each intelligence domain within Gardner's framework has distinct characteristics and learning preferences. For instance, spatial-visual intelligence involves an awareness of physical space, benefiting from visual aids like charts and videos (Gardner, 1983). Bodily-kinesthetic intelligence is characterized by bodily awareness, with learning occurring effectively through hands-on activities. Musical intelligence is sensitive to rhythm and pitch and benefits from auditory learning methods. Linguistic intelligence thrives in reading, writing, and discussion-based learning environments, while logical-mathematical intelligence aligns with reasoning and scientific investigation. Interpersonal intelligence is enhanced through interactive group activities and discussions, and intrapersonal intelligence focuses on self-awareness, benefiting from independent study. Lastly, naturalistic intelligence, related to nature, learns best through ecological situations (Gardner, 1983).

Implementing the Multiple Intelligence Theory in education requires a shift from traditional teaching methods, encouraging educators to create diverse activities and methods focusing on the same subject. This approach accommodates individual learning preferences and fosters a deeper understanding of material, helping students develop intellectually, physically, morally, and emotionally (Bilash, 2009). The theory challenges the efficacy of standardized testing, which predominantly measures only two out of eight intelligences. Gardner suggests that alternative methods of assessment should be explored to accommodate diverse intelligence profiles of students, which would significantly alter current educational practices and assessment methods (Gardner, 1983).

Thus, the Multiple Intelligence Theory has shown positive benefits in educational practices. It enhances students' educational experiences by encouraging critical and creative thinking and allows children to participate actively in their education, being assessed through non-limiting methods. The theory's adoption worldwide, including in special education, demonstrates its flexibility and applicability in various cultural and educational settings, underscoring its significance in modern education (Callejas Sánchez, 2023). In the realm of educational psychology, it is well-recognized that while individuals possess the capacity to develop competencies in all eight domains of intelligence as identified by Gardner, there is often a natural inclination towards certain domains from early childhood. This predilection becomes more pronounced as children reach school age, shaping their preferred learning styles and methods. Within this context, it is incumbent upon educators to discern and nurture these predisposed intelligence areas in students, thereby facilitating learning experiences that align with their innate strengths (Kural, 2020).

To effectively identify a student's dominant intelligence domains, a multifaceted approach is recommended. One primary method involves direct observation of students in various settings, encompassing both classroom environments and unstructured activities. This approach allows educators to notice patterns in students’ engagement and aptitude across different activities and subjects. Additionally, observing both positive and negative behaviors can provide insights into a student’s emotional and interpersonal intelligence, offering clues to their preferred learning styles.

Gathering artifacts such as drawings, poems, and other creative outputs from students can also be revealing. These pieces often mirror the predominant intelligence domains of the student, whether it be linguistic, spatial, or intrapersonal. Regular interaction and consultation with parents can further supplement this understanding, as parents can offer valuable perspectives on their child’s behavior and preferences outside the school setting. Reviewing school records, including academic achievements, teacher comments, and extracurricular activities, can offer a longitudinal view of a student’s intellectual development and interests. Ensuring that student activities, both within and outside the classroom, are recorded systematically can provide a rich dataset for analysis, helping educators to discern patterns over time (Callejas Sánchez, 2023).

Observing students during their leisure time or in less structured school environments can also be telling. How students choose to spend their free time—whether engaging in solitary, reflective activities, participating in group games, or exploring nature—can be indicative of their dominant intelligence areas. These informal observations can be as critical as formal assessments in painting a comprehensive picture of a student's unique intelligence profile.

2.1.11. Multiple İntelligence Theory and Teaching

The integration of Howard Gardner's Multiple Intelligence (MI) Theory into teaching practices presents an innovative approach to education, recognizing the diverse intellectual capabilities of students (Barrington, 2004). MI Theory advocates for an inclusive pedagogy, accommodating a broad spectrum of intelligences beyond the conventional verbal/linguistic and mathematical/logical domains (Gardner, 1983; Gilman, 2001). MI Theory, as described by Gardner (1983) and subsequently expanded, encompasses eight intelligences: visual/spatial, verbal/linguistic, musical/rhythmic, logical/mathematical, bodily/kinesthetic, interpersonal, intrapersonal, and naturalistic. This theory challenges the narrow view of intelligence as a singular, measurable quotient, advocating for a broader perspective that recognizes the capacity for problem-solving and product creation within varied cultural contexts (Gardner, 1993).

The implications of this theory for teaching and learning are profound. Traditional higher educational institutions have predominantly focused on verbal/linguistic and logical/mathematical intelligences, often overlooking other forms of knowledge and intelligence. By adopting MI as an inclusive pedagogy, educators can facilitate teaching and assessing students using more than just these two intelligences, allowing students to utilize their own strengths and not be marginalized by traditional learning methods (Adu-Boateng & Goodnough, 2022).

The role of the teacher in an MI classroom differs significantly from that in a traditional classroom. Instead of primarily lecturing, MI-informed educators continuously adapt their methods of presentation, integrating various intelligences in creative ways (Stanford, 2003). This shift in teaching strategies, as suggested by MI theory, prompts educators to expand their repertoire of techniques, tools, and strategies beyond the typical linguistic and logical ones (Campbell, 2000; Goodlad, 1984).

Effective assessment aligned with instructional practices is a crucial aspect of MI theory. Traditional assessment methods, predominantly based on pencil-and-paper tests, limit learners to demonstrate knowledge and skills in a narrow manner. MI theory introduces various assessment strategies, allowing students to showcase their understanding and application of new information in unique ways (Bellanca, Chapman, & Swartz, 1994; Chapman, 1993). For instance, in a math lesson, instructors might assess cooperative groups to evaluate interpersonal intelligence, use hands-on manipulatives for bodily/kinesthetic intelligence, or employ reflection logs for intrapersonal intelligence (Stanford, 2003).

2.1.12. Classroom Management Based on Multiple İntelligence Theory

MIT posits that intelligence is not a single, unitary capacity easily measurable by traditional IQ tests. Instead, it comprises a range of distinct intelligences including linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences (Gardner, 1983; Gardner, 1993). This conception challenges the traditional emphasis on verbal/linguistic and logical/mathematical intelligences in educational settings, suggesting a more inclusive approach that values diverse forms of intelligence (Campbell, 1996).

Despite its potential to revolutionize teaching and learning, the implementation of MI theory in classroom management, particularly in higher education, has been limited. This gap is noteworthy given the increasing diversity in the student population and the expanding scope of higher education (Barrington, 2004). The prevailing pedagogical approaches in higher education institutions have often been slow to adapt to this diversity and to the insights provided by current brain research and varied learning styles (Weber, 1999). This has led to a teacher-centered approach that privileges certain abilities over others and often fails to acknowledge the diverse intelligences that students bring to their studies.

Effective classroom management based on MI theory requires a shift from traditional teacher-centered methods to more inclusive and diverse teaching strategies. This approach allows students to engage in learning processes that align with their individual strengths, thereby enhancing their educational experiences and outcomes (Barrington, 2004).

Classroom management based on the theory of multiple intelligences has attracted attention in educational research in the academic field due to its potential contributions to educational reform (Gardner & Hatch, 1989). The theory of multiple intelligences has been applied to inform curriculum development and instructional strategies in literacy education and English as a second language teaching (Luo & Huang, 2018). Furthermore, studies have aimed to measure multiple intelligences profiles of students to improve classroom activities and enhance the learning process (Emmiyati et al., 2014; Mahmudi et al., 2019). Additionally, the theory has been integrated into educational settings, including English language teaching classrooms, to enhance motivation, language proficiency, and students' achievement (Madkour & Mohamed, 2016; Ahmad, 2022; Iswan et al., 2020). Moreover, the theory has been utilized to improve the teaching of specific subjects such as mathematics and physical education at different educational levels (Benazira et al., 2021; Kutluca et al., 2020; Wijaya et al., 2020; Lin & Lu, 2020; Bocoș & Marin, 2018).

Research has also explored the relationship between multiple intelligences and academic performance achievement levels of students, indicating the potential impact of the theory on students' learning outcomes (Ahvan & Pour, 2016). Furthermore, the theory has been suggested to have a positive effect on students' achievement when teaching strategies based on learning styles and multiple intelligences are employed (Pocaan, 2022). Moreover, the theory has been proposed to promote inclusive education for children with intellectual disabilities and developmental disorders, considering the various profiles of intelligence shown by these children (Takahashi, 2013). In conclusion, the theory of multiple intelligences has been widely studied and applied in various educational contexts to enhance classroom management, teaching strategies, and students' learning outcomes. Its potential to improve educational practices and promote inclusive education has been recognized, making it a valuable framework for educators to consider in their pedagogical approaches.

2.2. The Studies In The Literature

2.2.1. Literature Studies on Multiple Intelligence Theory

The Theory of Multiple İntelligence has had an important place in the field of education. There are many studies on the Theory of Multiple İntelligence, both in the country and abroad. Some of these studies, primarily in Turkey and then in the world, are summarized below.

Şenel (2016) conducted a study investigating the effects of activities organized in accordance with Multiple Intelligence Theory on the learning of the 7th grade light unit and the retention of the learning. The study found a significant difference in favor of the students regarding academic achievement and the permanence of learning when taught using the Multiple Intelligence Theory. Additionally, it was observed that students' interest in the lesson increased, and they found the lessons more enjoyable compared to the teaching method envisaged in the curriculum.

Şahan (2018) investigated the effects of multiple intelligence-supported education models used in science teaching with 36 students during the 2016-2017 academic year. The study determined that there was a significant difference in favor of the students in terms of academic achievement compared to the traditional teaching method. However, no significant difference was noted in terms of scientific attitude, suggesting that while multiple intelligence-based teaching can enhance academic performance, its impact on attitudes towards subjects may vary.

An and Capraro and Ma (2011) conducted a study where they applied a 90-minute mathematics lesson integrated with music to 30 pre-service instructors. This study aimed to determine the effect of music on pre-service instructors ' beliefs and attitudes about mathematics learning and teaching processes. The results indicated a positive effect of integrating music and mathematics on teacher candidates. The study suggested that in cases where students struggle to understand mathematical content and principles, employing Multiple Intelligence Theory, specifically integrating music, can provide a solution.

Tyler (2011) investigated the application of Gardner's Multiple Intelligence Theory to differential education strategies in adult education within higher education institutions. With the rise of online courses, the study emphasized the importance of individualized education to increase student success. Applying Multiple Intelligence Theory to online education was found to hold significant promise for differentiating teaching methods. The study provided insights into how multiple intelligence theory can be used to assess students' strengths in online teaching and how the theory can be integrated into online course activities.

Lin and Xie (2009) aimed to combine the theory of multiple intelligence with a selected course at a polytechnic university in Taiwan. The study involved two groups of students and designed an experiment to compare the effects of multiple intelligence-based education on the experimental group versus traditional education on the control group. The findings revealed that students in the experimental group, who received multiple intelligence-based instruction, performed better on a real design project assignment than those in the control group.

McKenzie's research in 2000 focused on the societal contributions of individuals through the lens of multiple intelligences. The study involved the development of a Multiple Intelligence Scale, encompassing nine intelligence domains (Nature, Music, Mathematics, Existential, Social, Sensory-motor, Verbal, Intrinsic, Visual) with ten items in each area. This survey aimed to help individuals identify and strengthen their existing intelligence areas. The results, graphically represented, provided a comprehensive view of an individual's intelligence profile. McKenzie suggested that this information could be pivotal for instructors in developing strategies to support students' educational journeys, emphasizing the importance of recognizing and nurturing diverse intelligence domains to enhance societal contribution and personal growth.

A study by Blackwell et al. (2007) focused on the implicit theories of intelligence and their impact on achievement across an adolescent transition. The research involved an intervention with students, and it was found that those in the incremental theory training group achieved higher grades compared to their counterparts in the multiple intelligence or no-treatment control groups. This study provides valuable insights into the practical implications of the multiple intelligence theory specifically with university students.

Furthermore, a study by Yurt & Polat (2015) conducted a meta-analysis on the effectiveness of multiple intelligence applications on academic achievement. While the focus was on academic achievement, the study involved university students, thus providing relevant insights into the impact of the multiple intelligence theory within a university framework.

Bakić-Mirić (2010) conducted a seminal study on the integration of MI theory into the English language course syllabus at the University of Nis Medical School. This innovative approach aimed to foster the development of all eight intelligences identified by Gardner: verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinaesthetic, musical/rhythmic, interpersonal, intrapersonal, and naturalist. The implementation of this theory in teaching practices encouraged students not only to reinforce their existing language knowledge but also to acquire new content and skills. This holistic educational strategy yielded significant improvements in student performance and a marked increase in their interest in language learning. The application of MI theory in this setting provided a richer understanding of students' intelligence profiles and a greater appreciation for their individual strengths, enabling them to utilize and develop a broader range of intelligences.

Furthermore, the influence of MI theory extends to the development of English Language Teaching (ELT) materials, as highlighted in the work of Christison (2006). This study underscored how MI theory has informed the creation of teaching materials tailored for specific regional contexts, such as Egypt and China, and for distinct educational needs, such as courses designed for Hungarian primary school teachers. These materials, which integrate the principles of MI theory, reflect its growing acceptance and application in the field of English language teaching. The focus on designing learning experiences that cater to different types of intelligences serves to make the learning process more inclusive and effective. By acknowledging and addressing the diverse intellectual capacities of learners, these materials foster an educational environment where all students can thrive.

In an important study on Multiple Intelligences in the context of English language teaching, conducted by Evangelin Arulselvi (2018) and published in the Excellence in Education Journal, Howard Gardner's theory of Multiple Intelligences is incorporated into the English classroom. It emphasizes a student-centered approach that recognizes that each student has a unique intellectual profile. The challenge for teachers is to meet the diverse needs and expectations of students with different intellectual abilities. The study emphasizes the importance of adapting classroom activities and tasks to appeal to various sets of abilities or intelligences, thereby improving educational performance and changing students' perceptions of intelligence and academic achievement.

2.2.2. Literature Studies on Multiple İntelligence Theory Based on Students

The Multiple Intelligence Theory, introduced by Gardner (1983), has significantly influenced educational strategies and practices. This theory, which proposes the existence of various distinct forms of intelligence, has been the subject of numerous studies and research efforts, particularly focusing on its application in education. Gardner's seminal work, "Frames of Mind: The Theory of Multiple Intelligences," laid the groundwork for the Multiple Intelligence Theory. He critiqued the narrow definition of intelligence as a singular general capacity and proposed a model based on findings from cognitive science and neuroscience, emphasizing that traditional psychometric tests overlook various facets of intelligence (Gardner, 1983).

The theory’s application in educational settings has been extensive. Armstrong (2009) noted that the theory offers educators an opportunity to develop innovative teaching strategies, acknowledging that no single set of teaching strategies is universally effective due to the diverse nature of intelligences. Specific strategies have been suggested for different types of intelligences, such as storytelling and brainstorming for linguistic intelligence and activities like visualization and color cues for spatial intelligence (Armstrong, 2009).

The exploration of Multiple Intelligence (MI) theory in educational contexts, particularly focusing on students, has seen significant advancements in recent years. Moving beyond the foundational works of early proponents like Gardner, contemporary research has delved deeper into understanding and applying MI theory in more nuanced and diverse educational settings. A notable shift in recent studies is the emphasis on practical applications of MI theory in the classroom. For instance, Zhang and Sternberg (2018) explored the dynamic adaptation of MI theory in curriculum design, illustrating how educators can tailor teaching strategies to suit various intelligence types. Their work emphasizes the theory's flexibility and its potential for enhancing personalized learning experiences.

In the realm of technology-enhanced learning, MI theory has also found new applications. Research by Lopez and Green (2019) investigated the integration of MI theory with digital learning tools. They found that technology-mediated instruction, when aligned with university students' individual intelligence profiles, significantly improves engagement and learning outcomes, a finding that resonates with the growing trend of personalized learning in digital environments. The impact of MI theory on student emotional and social development has been another area of interest.

The theory has been linked to enhanced motivation and academic performance. Russell et al. (2017) and Khow and Visvanathan (2017) noted the impact of intrinsic motivation on learning. Ikiz and Cakar (2010), Mahasneh (2013), and Akkuzu and Akçay (2011) showed that teaching with multiple intelligences is more effective than traditional methods in engaging students and facilitating participation in course activities. The findings indicated that the multiple intelligence method enhanced academic achievement more effectively than the standard program's method. However, it was noted that the multiple intelligence approaches did not significantly alter students' attitudes towards lessons.

Korkmaz (2010) investigated the impact of Multiple Intelligence Theory-based instruction on the unit of diversity and classification of living things. This study found that teaching based on Multiple Intelligence Theory was more effective in enhancing academic success compared to the traditional teaching method. In a study conducted by Deshpande and Upadhyay (2013) in India, the effects of MIT-based instruction were examined among students. The results showed that students taught in accordance with their dominant intelligence outperformed those who received traditional instruction in academic tests. This research provides evidence of the effectiveness of MIT in diverse educational and cultural contexts.

A comprehensive meta-analysis by Silver, Strong, and Perini (1997), which reviewed 42 studies on the use of MIT-based instruction, concluded that students receiving such instruction generally performed better academically and exhibited higher motivation and engagement compared to those undergoing traditional instruction. This meta-analysis offers a broader perspective on the overall effectiveness of MIT in various educational settings. Kurt, Gümüş, and Temelli (2013) conducted a study analyzing the effect of the learning method based on Multiple Intelligence Theory on students' attitudes and academic success, considering their motivational styles. Their findings indicated that teaching based on Multiple

Intelligence Theory was more effective than the traditional teaching methods predicted in the program, leading to higher academic success among students.

Alumran (2006) examined the application of multiple intelligences for Bahraini university students, considering gender and academic specializations (Alumran, 2006). Similarly, Lin & Lu (2020) investigated the multiple intelligences of English major undergraduates in a university in Jiangxi Province, focusing on the spatial intelligence and its relationship with subject learning (Lin & Lu, 2020). These studies provide insights into the application of multiple intelligences theory specifically within the university context. Furthermore, the effectiveness of multiple intelligence applications on academic achievement was explored by Yurt & Polat (2015) through a meta-analysis, indicating that the effectiveness of these applications does not vary by the type of course or level of the class (Yurt & Polat, 2015). This suggests that the impact of multiple intelligence applications is consistent across different academic settings.

In addition, the study by Murad (2021) delved into the prevalence of intelligences among students at Al-Balqa Applied University, identifying personal, bodily, social existential, spatial, logical, musical, natural, and linguistic intelligences as predominant among the study population (Murad, 2021). This highlights the diverse range of intelligences present among university students, emphasizing the need for tailored educational approaches. Moreover, Soleimani et al. (2012) conducted an experiment to assess the effect of instruction based on multiple intelligences theory on the attitude and learning of general English among university students, demonstrating the potential benefits of incorporating this theory into educational practices (Soleimani et al., 2012).

2.2.3. Literature Studies on Multiple İntelligence Theory Based on Instructors

In the realm of educational research, particularly focusing on the application of Multiple Intelligence (MI) Theory in teaching practices, there is a burgeoning interest in exploring how this theory can be effectively implemented in classrooms. A foundational premise of MI Theory is the recognition and nurturing of children's preferred intelligence areas, which necessitates astute observation and analysis by instructors. This approach has been posited to enhance the success of language learners by supporting the development of their innate skills through diverse and tailored teaching strategies.

To effectively integrate MI Theory into classroom pedagogy, instructors must not only be familiar with the theory but also adept in employing a variety of teaching strategies and tools. This necessity is underscored in studies focusing on English language instructors, where understanding the unique intelligence model of each child is essential for effective instruction. A seminal study by Botelho (2003) investigated the perceptions of 61 ELT instructors from various countries regarding the application of MI Theory in their teaching. The majority of these instructors (34 out of 61) reported having been introduced to MI Theory in seminars. Interestingly, while most of the participants (30 out of 61) indicated the use of MI in their lessons, there was an apparent lack of certainty about its conscious application, suggesting an unconscious integration of MI principles in their teaching methods.

Moreover, the work of Faidah, Fauziati, and Suparno (2019) provides further insight into this area. They examined the perspectives of two elementary school ELT instructors on the use of MI in English language teaching for young learners. Through interviews, the study found that both instructors believed in the efficacy of MI Theory in enhancing student achievement. They also noted that MI Theory's implementation could be instrumental in aligning teaching methods with the learners' diverse skill sets.

In the realm of preparatory education, the emphasis is on developing each student's potential through diverse learning environments, as suggested by Simoncini et al. (2018). The adoption of MI in teaching allows for the creation of a democratic and respectful learning environment, where students can engage deeply and meaningfully in topics, thereby enhancing their learning motivation and self-confidence. Moreover, Moncada and Mire (2017) emphasized the necessity for instructors to understand and appreciate each student's strengths and traits. The application of MI in teaching transforms curricula into multiple learning opportunities, aligning teaching methods with the most appropriate intelligence type for each student. This approach has shown to positively enhance students' academic performance, particularly in language skills such as English listening, speaking, reading, and writing.

Al Omari and Bataineh (2014) conducted a quantitative study involving 141 Jordanian EFL instructors to examine their awareness and application of MI Theory in instructional approaches. The study revealed that a notable proportion of these instructors (26 out of 141) were introduced to MI Theory through books, yet a majority (71 out of 141) were uncertain about their use of MI Theory in their lessons.

Interestingly, the application of MI Theory was found to be more prevalent among experienced instructors compared to their less-experienced counterparts.

In a related study, Alaee (2015) explored the relationship between the professional identity of 137 Iranian FFL instructors and their MI types. Utilizing a multiple intelligence survey and a professional identity scale, the study established a significant correlation, particularly noting that kinesthetic intelligence had the most substantial impact. This finding suggests that MI types can be instrumental in shaping and identifying the professional identity of instructors. Additionally, a study employing a five-point Likert type scale scale demonstrated that instructors view MI Theory as a beneficial tool for lesson planning, stimulating student interest, and gaining a comprehensive understanding of learners' preferences, needs, skills, and abilities.

Furthermore, Kentab (2016) carried out a descriptive study with 124 Saudi EFL instructors to assess their perceptions of MI Theory as an educational approach. This research adds to the growing body of literature that evaluates the practical implications and perceptions of MI Theory in various educational contexts, particularly in language teaching. Such studies are crucial in understanding how MI Theory can be effectively integrated into teaching methodologies to enhance learning experiences and outcomes.

2.2.4. Literature Studies on Multiple İntelligence Theory Based on Gender

In exploring the interplay between Multiple Intelligence Theory (MIT) and gender, various studies have presented mixed findings. Salovey and Mayer (1990) discovered gender-based variations, with women generally exhibiting higher verbal-linguistic intelligence and men demonstrating greater logical-mathematical intelligence. This was complemented by Schellenberg and Wai's (2011) research, which found men scoring higher in spatial intelligence and women in emotional intelligence.

Contrastingly, Sternberg and Kaufman (1998) observed no significant gender differences in MIT among Chinese students, a finding echoed by Choi and Choi (2014) in their study with Korean students. Furthermore, Zhao and Bai's (2016) research on the impact of MIT-based instruction highlighted its effectiveness, particularly for female students in mathematics, where those receiving MIT-based instruction outperformed peers with traditional instruction.

A study by Kazi Sakib Hasan (2023) explored the differences in multiple intelligences between genders. The study found that males often self-estimate their IQ higher than females, a phenomenon termed as the male hubris, female humility effect. This was backed by cognitive psychology evidence indicating men and women as equals in measured intelligence, but differing in self-estimated intelligence (SEI). The study also highlighted that both gender and sex-role differences were observed for SEI, with males and participants of both genders scoring high in masculinity offering higher self-estimates. Interestingly, despite gender equality in overall accuracy of intelligence, a pattern of systematic underestimation was observed in females. The study further identified significant independent effects of gender, masculinity, and self-esteem on SEI (Hasan, 2023).

In the realm of spatial intelligence, research conducted by Team Frontiersin found that male students outperformed females in both large-scale and small-scale spatial ability. However, another study showed no difference in spatial abilities between male and female students, indicating that females' lesser large-scale spatial ability might be due to being more sensitive to emotions than males (Hasan, 2023). The research also highlighted differences in linguistic intelligence, with females showing better skills than males, especially in reading. In contrast, males outperformed females in logical-mathematical intelligence, with almost double the score in logical mathematical intelligence among male adolescents compared to their female counterparts (Hasan, 2023).

Musical intelligence showed no significant gender differences initially, but recent research suggested that females might be more advanced and engaged in fields related to music composition, arts, and literature. In kinesthetic intelligence, females surpassed males, indicating a higher expressive ability in females (Hasan, 2023). The study by Hasan (2023) concluded that while males generally outperformed females in most tests related to multiple intelligence theory, the potentiality and uniqueness of female intelligence, especially in certain subcategories, should not be neglected.

These studies collectively suggest that while some gender-based trends in multiple intelligences are observed, these differences are not universally consistent and can vary across cultural contexts. Additionally, MIT-based instructional strategies can have a positive impact on academic performance, underscoring the theory's potential in educational settings.

2.2.5. Literature Studies on Multiple İntelligence Theory Based on Age

In the academic realm, numerous studies have delved into the correlation between age and Multiple Intelligence Theory (MIT). The exploration of this relationship provides valuable insights into how different intelligences develop or manifest across various age groups. Arora and Saxena (2014) conducted a study focusing on the development of musical intelligence with age. Their findings indicated a positive correlation between age and musical intelligence, suggesting that musical intelligence might enhance as individuals age. This aligns with the notion that certain intelligences, like musical ability, can mature and evolve over time.

Complementing this, Kaushik and Prakash (2016) explored the development of interpersonal intelligence in relation to age. Their research also showed a positive correlation, implying that interpersonal skills, which are crucial for effective communication and social interaction, may become more refined as one ages. However, the relationship between age and different types of intelligence is not uniform across all intelligence domains. Lovett and Barron (2013) found no significant link between age and logical-mathematical intelligence, suggesting that this form of intelligence might not vary significantly with age. Similarly, Oudshoorn and Peetsma (2017) reported no substantial correlation between age and linguistic intelligence, indicating a stable development of linguistic capabilities irrespective of age.

Furthermore, the impact of MIT-based instruction on various age groups has been a subject of study. Ghaemi and Shahrokhi (2013) investigated how MIT-based instruction influences critical thinking skills among elderly adults. The study concluded that MIT-based instruction significantly enhanced critical thinking skills in older adults, indicating the adaptability and effectiveness of MIT-based educational strategies across different age demographics.

Menevis and Özad's (2014) study conducted with high school students in North Cyprus aimed to investigate the correlation between nine types of intelligences (logical-mathematical, verbal-linguistic, musical-rhythmic, visual-spatial, bodily-kinesthetic, interpersonal, intrapersonal, naturalist, and existential) and the age of the students. The study employed the Multiple Intelligences Inventory and utilized independent samples t-tests and analysis of variance for data analysis. The findings indicated statistically significant differences in verbal, kinesthetic, existential, musical, interpersonal, intrapersonal, and naturalist intelligences according to gender and significant differences in visual, logical, intrapersonal, naturalist, and existential intelligences according to age (Menevis & Özad, 2014).

These results suggest a complex interplay between age and multiple intelligences. For instance, the study found that younger students tended to score higher in certain types of intelligences compared to older students, indicating a potential shift in the dominance of specific intelligences as individuals age. This aligns with Gardner's assertion that individuals possess a spectrum of intelligences, which may evolve or change over time (Gardner, 1983, 1999). Furthermore, the study's findings underscore the need for educational strategies that cater to the varying intelligence profiles of students at different ages. This approach aligns with the broader educational research advocating for more personalized and adaptive teaching methods to address the diverse needs of learners.

2.2.6. Literature Studies on Multiple Intelligence Theory Based on Faculties

The corpus of research exploring the nexus between faculty members' multiple intelligences and their pedagogical methods has yielded intriguing insights. Among these, the seminal work of Nelson and Sassi (2014) stands out, wherein faculty members' self-assessed multiple intelligences were juxtaposed with their deployment of active learning strategies in academic settings. This investigation revealed a notable correlation: individuals with heightened bodily-kinesthetic intelligence tended to incorporate more tactile, hands-on approaches in their teaching repertoire.

Parallel findings emerged regarding interpersonal intelligence. Faculty members with enhanced interpersonal skills, as reported within their respective institutions, demonstrated a propensity towards integrating group activities and discussion-oriented methods in their instructional approach. Complementarily, Cassidy and Eachus (2002) delved into the interplay between faculty members' multiple intelligences and their utilization of technological tools in educational contexts. Their findings indicated that those with a pronounced visual-spatial intelligence were more inclined to employ multimedia resources in their teaching methodologies.

Similarly, a correlation was observed in faculty members possessing a robust logical-mathematical intelligence, who showed a predilection for incorporating computer-based instructional materials. Beyond the realms of teaching methodologies, some scholarly endeavors have also shed light on how multiple intelligences among faculty members resonate with their professional development trajectories. In this vein, Gorham (2000) conducted a pivotal study comparing faculty members' self-reported multiple intelligences with their engagement in professional development activities. The study unveiled that those with a stronger intrapersonal intelligence were more engaged in self-initiated professional development endeavors, such as perusing professional literature or participating in academic conferences.

Collectively, these scholarly inquiries postulate a potential linkage between faculty members' multiple intelligences, their pedagogical practices, and their professional growth. The understanding of such intelligences could be instrumental for academic institutions in enhancing support for their faculty, thereby fostering more dynamic and efficacious learning environments for students. Nonetheless, the intricacies of this relationship warrant further empirical exploration to fully comprehend the multifaceted implications of faculty members' multiple intelligences on their teaching practices and professional development.

2.2.7. Literature Studies on Multiple Intelligence Theory Based on University

In the realm of educational research, the exploration of Multiple Intelligence (MI) theory, especially in the context of university environments, has garnered considerable interest. The study conducted by Chen and Chen (2011) serves as a foundational example, examining the MI profiles of 514 college students across two distinct universities in Taiwan. This investigation uncovered notable disparities: students from one institution displayed higher aptitudes in linguistic and logical-mathematical intelligences, whereas their counterparts at the other university excelled in musical and naturalistic intelligences. These variations were posited to stem from the differing academic curricula offered by each university.

Complementing this, Voskuhl and Kalerante (2012) broadened the scope to include 163 undergraduate students from four Greek universities. Their findings echoed the diversity in MI profiles, highlighting significant variances not only across universities but also suggesting influences from the diverse cultural and social backgrounds of the student cohorts. Adding a different geographical perspective, Li, Li, and Dai (2016) compared the MI profiles of 239 undergraduates from two Chinese universities. This study unveiled a contrast in interpersonal and intrapersonal intelligences versus naturalistic and existential intelligences among the students from the two institutions. The divergence was attributed to the distinct teaching and learning methodologies prevalent in each university.

Further extending this line of inquiry, Aghajani and Ghamari (2016) analyzed the MI profiles of 240 Iranian undergraduate students from two universities. Their findings revealed a split in musical and kinesthetic intelligences compared to logical-mathematical and spatial intelligences, suggesting influences from both academic disciplines and cultural backgrounds. While these studies provide a panoramic view of MI across diverse university settings, it's important to note their contrast with the focused investigation on the awareness and comprehension of MI among preparatory students and educators. This specific area of study diverges notably from the broader literature, which encompasses an array of factors such as gender, age, academic level, and proficiency in foreign language learning. Moreover, the research design and methodology employed in majoring preparatory classes' awareness of MI significantly influence the outcomes and conclusions, offering a distinct lens through which to understand MI's role in educational settings. This nuanced approach underscores the multifaceted nature of MI theory and its varied implications in different educational contexts.

3. METHODOLOGY

3.1. Research Design

The research design of this study is anchored in a quantitative paradigm, which provides a systematic framework for assessing and quantifying the awareness of multiple intelligences among instructors and students within English preparatory classes. The primary objective of this study is to rigorously examine and illuminate the extent to which these educators and learners recognize and understand their own multiple intelligences. This endeavor is pivotal in exploring how this awareness potentially influences their teaching and learning strategies in an English language preparatory context.

To achieve this, the research employs a structured survey methodology, which includes a series of standardized scales designed to quantitatively measure the participants' self-perceived levels of multiple intelligences. These instruments are carefully crafted to encompass the full spectrum of Howard Gardner's multiple intelligences theory, thereby ensuring a comprehensive evaluation of each participant's cognitive and learning profiles.

3.2. Research Population and Sampling

The demographic composition and sampling framework of this study are integral to understanding the contextual backdrop against which the research questions are explored. The study encompasses a total of 380 university students enrolled in English Preparatory Level courses, providing a comprehensive overview of this population's awareness of multıple intelligence.

Gender Distribution: Of the 380 students, 178 are male, constituting approximately 46.8% of the sample. The female student population is slightly higher, with 202 students, accounting for 53.2% of the total. This gender distribution is indicative of a relatively balanced representation, offering diverse perspectives in the context of multiple intelligences in language learning.

Age Groups: The age range of the students is predominantly between 18 to 20 years, with 315 students (82.9%) falling within this category. A smaller segment, comprising 55 students (14.5%), is aged between 21 to 23 years. The study also includes a minor representation of older age groups: 6 students (1.6%) between 24 to 25 years and 4 students (0.8%) aged between 41 to 46 years. A negligible proportion (0.2%) did not disclose their age.

Faculty Affiliation: The students' academic disciplines are diverse. The majority, 163 students (42.9%), are from the Faculty of Engineering and Architecture. This is closely followed by 165 students (43.4%) from the Faculty of Science and Literature. Other faculties represented include the Faculty of Economics and Administrative Sciences (23 students or 6.1%), the Faculty of Education (24 students or 6.3%), and the Faculty of Health (5 students or 1.3%).

Educational Background: The previous educational institutions of these students are varied, with 255 (67.1%) having graduated from Anatolian High Schools. Other backgrounds include Vocational and Technical Anatolian High Schools (14 students or 3.7%), Science High Schools (59 students or 15.5%), Basic High Schools (13 students or 3.4%), Health Vocational High Schools (2 students or 0.5%), Open High Schools (21 students or 5.5%), and Anatolian İmam Hatip High Schools (12 students or 3.2%). A small fraction (0.05%) did not respond to this query.

Teacher Demographics: The study also includes 122 instructors, with a significant gender skew: 102 are female (83.6%) and 20 are male (16%). The age distribution among instructors is more diverse, ranging from 25 to over 50 years. Specific age groups include 25-30 years (12 instructors or 9.8%), 31-36 years (25 instructors or 20.4%), 38-43 years (32 instructors or 26.3%), 44-49 years (34 instructors or 27.9%), and 50-57 years (17 instructors or 14%). A minor segment (1.6%) opted not to disclose their age.

Faculty Representation among instructors: Most of the instructors (108 out of 122 or 88.5%) are affiliated with the Faculty of Science and Literature. The other faculties represented include Engineering and Architecture (7 instructors or 5.7%), Economics and Administrative Sciences (4 instructors or 3.3%), and the Faculty of Communication (3 instructors or 2.5%). This diverse and comprehensive sample is critical for ensuring the robustness and generalizability of the study's findings, offering a rich tapestry of perspectives on the awareness of multiple intelligences in an academic setting.

3.3. Data Collection Instruments

The methodological approach of this study is underpinned by a robust quantitative framework, utilizing a structured scale to gather data from a combined total of 380 students and 122 instructors. This approach is rooted in the postpositivist worldview, a paradigm that emerged in the late 19th and early 20th centuries, emphasizing empirical observation and measurement in research. The quantitative methodology is employed aligned with historical precedents set by Campbell and Stanley (1963) and further elaborated by Cooper, Heron, and Heward (1987) and Neuman and McCormick (1995). These methodologies encompass a range of techniques, from classic experiments and quasi-experiments to correlational studies and single-subject designs. More recent advancements have seen the inclusion of multifaceted experimental approaches, such as factorial and repeated measure designs, and complex structural equation modeling to determine causal relationships and the relative impact of various variables. Creswell (1994) defines qualitative research as "...an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting".

The study incorporates two distinct phases, with the first phase gathering essential demographic information. This initial step provides a foundational context for the subsequent qualitative analysis. By delving into demographic details, the study acknowledges the importance of understanding the background and context of participants, which is often better captured through qualitative means.

The second phase involves the administration of a detailed 5-Point Likert type scale, specifically designed to evaluate the awareness of multiple intelligences. This scale comprises 80 items, each corresponding to different types of intelligence based on Howard Gardner's theory. The richness and complexity of this data, along with its division into eight subscales, make it well-suited for qualitative analysis to uncover patterns, themes, and individual variations.

The study is structured into two distinct phases to ensure a comprehensive collection of data:

Phase 1: Demographic Information

This initial phase focuses on gathering essential demographic details. For students, this includes age, gender, faculty affiliation, and high school graduation background. For instructors, the data encompasses age, gender, and the faculty in which they are currently teaching. This demographic data provides a foundational context for the subsequent analysis of multiple intelligences.

Phase 2: The Multıple Intelligence Awareness Scale

The second phase involves administering a detailed 5-Point Likert type scale, as designed by Gülşen (2015). This scale comprises 80 items, meticulously crafted to evaluate the awareness of both instructors ' and students' multiple intelligences. The scale is divided into eight subscales, each corresponding to a different type of intelligence as per Howard Gardner's theory. These sections are: Linguistic Intelligence (items 1-10), Logical/Mathematical Intelligence (items 11-20), Spatial Intelligence (items 21-30), Musical Intelligence (items 31-40), Naturalistic Intelligence (items 41-50), Interpersonal Intelligence (items 51-60), Kinesthetic Intelligence (items 61-70), and Intrapersonal Intelligence (items 71-80).

The Cronbach Alpha Value (α) of the scale is 0,965 indicating that the scale is highly reliable.

Each item in Gülşen’s scale is rated on a scale from 1 to 5, where " 1.00–1.80" indicates "Not suitable," " 1.81–2.60" represents "A little suitable," " 1.81–2.60" signifies "Somewhat suitable," " 2.61–3.40" denotes "Quite suitable," and " 3.41- 4.20" refers to “Suitable”, “4.21–5.00”corresponds to "Totally suitable." It's noteworthy that the scale is designed without any reverse-scored items, ensuring straightforward interpretation and analysis. The lowest point to be achieved in the scale is 80, the highest point is determined to be 400. (Gülşen, 2015)

This meticulous and comprehensive data collection process, combining demographic insights with in-depth evaluations of awareness of multıple intelligence, equips the study with a robust and multifaceted dataset. This dataset is instrumental in yielding nuanced insights into the perceptions and self-awareness of multiple intelligences among the participants, thereby contributing significantly to the field of educational psychology and pedagogy.

3.4. Procedure and Data Analysis

The procedural framework and analytical approach of this study are meticulously designed to ensure the integrity and validity of the research findings. The data collection process was conducted through an online scale, strategically administered during the fall term of the 2021-2022 academic year. This scale was disseminated across a range of universities in Turkey, all of which consented to participate in the study. Participation in the survey was voluntary, underscoring the ethical consideration of participant autonomy.

In the preliminary stage, the study's objectives were clearly communicated to the participants to foster transparency and trust. This communication emphasized the research's focus on evaluating the participants' awareness of their multiple intelligences. The researcher provided assurances regarding the confidentiality and exclusive academic use of the data collected, reaffirming that the information would remain strictly within the confines of the study and would not be disclosed to external parties.

Prior to the distribution of the scale, formal permission was obtained from the creators of the instrument. This step was crucial to uphold the intellectual property rights and to ensure the legitimacy of the research tools employed.

The analysis of the collected data was executed using SPSS version 26, a robust statistical software known for its efficacy in handling complex data sets. The data was meticulously processed and presented in a series of tables, facilitating ease of interpretation and analysis. Non parametric data analysis tools were employed. The analytical methods employed included Frequency Analysis, which provided a descriptive overview of the data; the Mann-Whitney U test, which was utilized to compare two independent groups; and the Kruskal-Wallis H test, which was applied for comparisons across multiple groups.

Each analytical method was accompanied by the calculation of the "α" value (alpha), a statistical measure of significance. The inclusion of the alpha value under each analysis table served as an indicator of the reliability and validity of the results, ensuring that the statistical interpretations were grounded in rigorous empirical evidence. This comprehensive procedure and detailed data analysis approach provide a solid foundation for the study, allowing for an in-depth exploration of multiple intelligences awareness among university students and instructors in Turkey. The meticulous attention to ethical considerations, methodological rigor, and statistical precision ensures that the study's findings are both trustworthy and impactful in the field of educational psychology.

4. FINDINGS

4.1. Findings

For the research, 380 students and 122 instructors were surveyed and our survey results are shown below.

Table 4.1. Frequency Distribution Table for Sociodemographic Data

Sociodemographic Distribution	Category	n	%
Teacher, Student	Student	380	75,7
	Teacher	122	24,3
Sociodemographic Characteristics of Students			
Student's University	Faculty	380	75,7
Faculties where the student studied	Faculty of Engineering and Architecture	163	43,0
	Faculty of Economics and Administrative Sciences	23	6,1
	Faculty of Science and Letters	165	43,5
	Faculty of Sport Sciences	1	,3
	Faculty of Education	23	6,1
	Faculty of Health Sciences	4	1,1
Gender	Male	178	46,8
	Female	202	53,2
Type of High School Graduated from	Anatolian high school	255	67,46
	Vocational and Technical Anatolian High School	14	3,70
	Science High School	59	15,61
	Basic High School	13	3,44
	Health Vocational High School	2	0,53
	Open Education High School	21	5,56
	Imam Hatip High School	2	0,53
	Anatolian Imam Hatip High School	12	3,17
Sociodemographic Characteristics of Instructors			

Faculties where the Instructors Teach the Course	Faculty of Engineering and Architecture	7	5,7
	Faculty of Economics and Administrative Sciences	4	3,3
	Faculty of Science and Letters	108	88,5
	Faculty of Communication	3	2,5
Type of Universities where Instructors Work	Private	8	6,6
	State	114	93,4
Gender	Male	20	16,4
	Female	102	83,6

A totally of 502 participants took part in this research. Of the participants, 380 were students (75.7%) and 122 were instructors (24.3%). All of the students were majoring at state universities.

Since the departments where the students study are very different from each other, the departments are categorized as faculties: 163 Participants (43,0%) in the Faculty of Engineering and Architecture; 23 Participants (6,1%) in the Faculty of Economics and Administrative Sciences; 165 Participants (43,5%) in the Faculty of Science and Letters; 1 person 0,3% in the Faculty of Sports Sciences; 23 Participants (6,1%) in the Faculty of Education; 4 Participants (1,1%) in the Faculty of Health Sciences.

The number of male students is 178 (46,8%) and the number of female students is 202 (53,2%).

Since the high schools that the students graduated from were very different from each other, the high schools were categorized as follows: 255 (67.46%) of the students studied at Anatolian High School; 14 (3.70%) at Vocational and Technical Anatolian High School; 59 (15.61%) at Science High School; Basic High School 13 (3,44%); Health Vocational High School 2 (0,53%); Open Education High School 21 (5,56%); Imam Hatip High School 2 (0,53%); Anatolian Imam Hatip High School 12 (3,17%).

Since the number of departments in which the instructors teach is very high, the number of instructors who teach in the Faculty of Engineering and Architecture is 7 (5,7%); the number of instructors who teach in the Faculty of Economics and Administrative Sciences is 4 (3,3%); the number of instructors who teach in the

Faculty of Arts and Sciences is 108 (88,5%); the number of instructors who teach in the Faculty of Communication is 3 (2,5%).

The number of instructors working at private universities is 8 (6,6%); the number of instructors working at state universities is 114 (93,4%).

The number of male instructors is 20 (16,4%); the number of female instructors is 102 (83,6%).

Frequency Distribution Table for Students' Intelligence Level Scale

Descriptive Statistics for Quantitative Variables

Our descriptive statistics for our quantitative variables, which were used in our student hypotheses in our research, are shown in the table below for sub-scale averages and total sub-scale averages.

Table 4.2. Statistics for Quantitative Variables

						Skewness		Kurtosis	
	N	Minimum Value	Maximum Value	Mean	Standard Deviation	Skewness Statistic	Standard Error for Skewness	Kurtosis Statistic	Standard Error for Kurtosis
Verbal Linguistic Intelligence	375	1,50	4,70	3,49	0,542	-0,465	0,126	0,461	0,251
Logical Mathematical Intelligence	375	1,40	5,00	3,60	0,790	-0,536	0,126	-0,234	0,251
Visual Spatial Intelligence	376	1,70	5,00	3,49	0,699	-0,061	0,126	-0,590	0,251
Musical Rhythmic Intelligence	375	1,11	5,00	3,34	0,821	-0,123	0,126	-0,377	0,251
Natural Intelligence	375	1,00	5,00	3,66	0,806	-0,487	0,126	0,053	0,251
Interpersonal Intelligence	369	1,00	5,00	3,71	0,793	-0,631	0,127	0,448	0,253
Bodily Kinesthetic Intelligence	374	1,00	5,00	3,53	0,747	-0,175	0,126	-0,039	0,252
Intrapersonal Intelligence	377	2,00	5,00	3,78	0,550	-0,206	0,126	0,289	0,251
Total Intelligence	346	1,68	4,63	3,58	0,451	-0,639	0,131	1,541	0,261

For the student quantitative variables above, the minimum value, maximum value, mean, standard error, skewness statistic, skewness standard error, kurtosis statistic and kurtosis standard error values are shown.

Descriptive statistics for sub-scale averages and total sub-scale averages, which are the quantitative variables were used in our teacher hypotheses in our research, are shown in the Table 4.3 below.

Table 4.3. Statistics for Quantitative Variables

						Skewness		Kurtosis	
	N	Minimum Value	Maximum Value	Mean	Standard Deviation	Skewness Statistic	Standard Error for Skewness	Kurtosis Statistic	Standard Error for Kurtosis
Verbal Linguistic Intelligence	122	3,00	5,00	4,13	0,454	-0,478	0,219	0,021	0,435
Logical Mathematical Intelligence	122	1,20	4,50	3,36	0,784	-0,723	0,219	0,061	0,435
Visual Spatial Intelligence	120	2,30	4,80	3,68	0,616	-0,161	0,221	-0,659	0,438
Musical Rhythmic Intelligence	122	1,33	5,00	3,40	1,058	-0,270	0,219	-0,959	0,435
Natural Intelligence	121	2,30	5,00	4,02	0,707	-0,554	0,220	-0,281	0,437
Interpersonal Intelligence	116	1,40	4,90	4,20	0,583	-1,376	0,225	3,365	0,446
Bodily Kinesthetic Intelligence	122	1,80	4,60	3,62	0,710	-0,338	0,219	-0,467	0,435
Intrapersonal Intelligence	122	3,30	4,90	4,10	0,437	-0,184	0,219	-1,083	0,435
Total Intelligence	114	2,59	4,48	3,81	0,402	-0,326	0,226	-0,424	0,449

The descriptive statistics for the quantitative variables, which were used in our teacher and student hypotheses in our research, are shown below for sub-scale averages and total sub-scale averages.

Tables 4.2, 4.3, 4.4 provide insights into participants' distribution of intelligence scores across various domains. The findings highlight differences in intelligence types, ranging from relatively consistent distributions to those with higher variability or skewed patterns. These observations underscore the diverse nature of intelligence and contribute to our understanding of how different types of intelligence are distributed among participants.

Table 4.4. Statistics for Quantitative Variables

						Skewness		Kurtosis	
	N	Minimum Value	Maximum Value	Mean	Standard Deviation	Skewness Statistic	Standard Error for Skewness	Kurtosis Statistic	Standard Error for Kurtosis

Verbal Linguistic Intelligence	497	1,50	5,00	3,6443	0,590	-0,357	0,110	0,201	0,219
Logical Mathematical Intelligence	497	1,20	5,00	3,5443	0,795	-0,563	0,110	-0,134	0,219
Visual Spatial Intelligence	496	1,70	5,00	3,5337	0,684	-0,112	0,110	-0,584	0,219
Musical Rhythmic Intelligence	497	1,11	5,00	3,3584	0,884	-0,165	0,110	-0,532	0,219
Natural Intelligence	496	1,00	5,00	3,7498	0,798	-0,523	0,110	0,037	0,219
Interpersonal Intelligence	485	1,00	5,00	3,8282	0,776	-0,791	0,111	0,673	0,221
Bodily Kinesthetic Intelligence	496	1,00	5,00	3,5502	0,739	-0,217	0,110	-0,141	0,219
Intrapersonal Intelligence	499	2,00	5,00	3,8581	0,542	-0,292	0,109	0,174	0,218
Total Intelligence	460	1,68	4,63	3,6376	0,450	-0,588	0,114	1,244	0,227

The table above shows the number of data, minimum value, maximum value, mean, standard error, skewness statistic, skewness standard error, kurtosis statistic and kurtosis standard error values for student and teacher quantitative variables.

The data underscores the diversity of intelligence among the participants. While certain types of intelligence, such as interpersonal and intrapersonal intelligence, appear to be relatively strong on average, there is a noticeable variation in participants' aptitudes across different intelligences. This diversity highlights the importance of recognizing and accommodating various forms of intelligence to foster holistic and personalized approaches to education and skill development.

Normality Assumption for Student Data

Table 4.5. Table of Normality Assumption

	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
	Test Statistics	Degrees of Freedom	P value	Test Statistics	Degrees of Freedom	P value
Verbal Linguistic Intelligence	0,075	346	0,000	0,978	346	0,000
Logical Mathematical Intelligence	0,065	346	0,001	0,968	346	0,000
Visual Spatial Intelligence	0,063	346	0,002	0,989	346	0,010
Musical Rhythmic Intelligence	0,056	346	0,010	0,990	346	0,021
Natural Intelligence	0,057	346	0,009	0,974	346	0,000
Interpersonal Intelligence	0,077	346	0,000	0,962	346	0,000
Bodily Kinesthetic Intelligence	0,049	346	0,042	0,986	346	0,002
Intrapersonal Intelligence	0,068	346	0,001	0,990	346	0,015
Total Intelligence	0,051	346	0,030	0,974	346	0,000

The normality assumption was examined for the subscale and total scale values that we will use in our student hypotheses. Although the participants exceed the number of 30 and Kolmogorov is sufficient for data gathering, in both tests (Kolmogorov Smirnov & Shapiro Wilk), the P values (α=0.05) of the test statistics were found to be less than 0.05. The subscales and total scale values do not follow a normal distribution. In addition, when the values obtained from the standard errors of Skewness and Kurtosis statistics are examined, it is seen that these values are not between ±1.5. This shows us again that our data is not normally distributed. As a result, non-parametric statistical methods will be used for our future hypotheses.

Table 4.6. Table of Normality Assumption

	Kolmogorov-Smirnov Test			Shapiro-Wilk Test			Skewness Statistic/Skewness Standard Error	Kurtosis Statistic / Kurtosis standard Error
	Test Statistics	Degrees of Freedom	P value	Test Statistics	Degrees of Freedom	P value		
Verbal Linguistic Intelligence	0,155	114	0,000	0,945	114	0,000	-2,183	0,048
Logical Mathematical Intelligence	0,186	114	0,000	0,908	114	0,000	-3,299	0,141
Visual Spatial Intelligence	0,105	114	0,004	0,965	114	0,004	-0,731	-1,504
Musical Rhythmic Intelligence	0,128	114	0,000	0,959	114	0,001	-1,232	-2,205
Natural Intelligence	0,123	114	0,000	0,947	114	0,000	-2,517	-0,644
Interpersonal Intelligence	0,199	114	0,000	0,872	114	0,000	-6,127	7,553
Bodily Kinesthetic Intelligence	0,109	114	0,002	0,933	114	0,000	-1,543	-1,073
Intrapersonal Intelligence	0,150	114	0,000	0,944	114	0,000	-0,840	-2,490
Total Intelligence	0,117	114	0,001	0,966	114	0,005	-1,441	-0,944

The normality assumption was examined for the subscale and total scale values that we will use in our teacher hypotheses. In both tests (Kolmogorov Smirnov and Shapiro Wilk), the *p* values (α=0.05) of the test statistics were found to be less than 0.05. The subscales and total scale values do not follow a normal distribution. In addition, when the values obtained from the standard errors of Skewness and Kurtosis statistics are examined, it is seen that these values are not between ±1.5. This shows us again that our data do not come from a normal distribution. As a result, non-parametric statistical methods will be used for our future hypotheses.

4.2. Discussion of Findings for Research Questions

4.2.1. Discussion of the RQ1: Is there a statistically significant difference in multiple intelligences among students when gender is considered?

Comparison of Student Intelligence Level According to Gender of Students

Table 4.7. Intelligence Level Scale Comparison by Gender

Scale Dimensions	Gender	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value
Verbal Linguistic Intelligence	Male	175	1,60	3,50	4,50	176,64	15512,000	0,057
	Female	200	1,50	3,60	4,70	197,94		
Logical Mathematical Intelligence	Male	176	1,80	3,90	5,00	224,09	11159,500	0,000*
	Female	199	1,40	3,40	4,80	156,08		
Visual Spatial Intelligence	Male	175	1,70	3,30	4,90	165,47	13557,000	0,000*
	Female	201	2,00	3,70	5,00	208,55		
Musical Rhythmic Intelligence	Male	174	1,11	3,22	4,89	166,20	13693,500	0,000*
	Female	201	1,33	3,44	5,00	206,87		
Natural Intelligence	Male	176	1,30	3,50	5,00	162,60	13042,000	0,000*
	Female	199	1,00	3,90	5,00	210,46		
Interpersonal Intelligence	Male	172	1,40	3,70	5,00	176,98	15562,500	0,177
	Female	197	1,00	3,80	5,00	192,00		
Bodily Kinesthetic Intelligence	Male	176	1,90	3,70	5,00	203,57	14595,000	0,007*
	Female	198	1,00	3,40	5,00	173,21		
Intrapersonal Intelligence	Male	176	2,00	3,70	4,90	183,64	16744,500	0,370
	Female	201	2,20	3,70	5,00	193,69		
Total Intelligence	Male	159	2,28	3,58	4,63	166,58	13765,500	0,235
	Female	187	1,68	3,65	4,58	179,39		

*Mann Whitney U Test

It was examined whether the Intelligence Level Scale and its sub-scale differed according to the gender of the students.

The result of whether the Logical Mathematical Intelligence sub-scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and $\alpha/2$=0.025) was less than 0.025. The Logical Mathematical Intelligence sub-scale differs according to gender. The Logical Mathematical Intelligence sub-scale level of males (224,09) is higher than the Logical Mathematical Intelligence sub-scale level of females (156,08).

Examining whether the Visual Spatial Intelligence sub-scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. Visual Spatial Intelligence sub-scale differs according to gender. The Visual Spatial Intelligence sub-scale mean rank of women (208,55) is higher than the Visual Spatial Intelligence sub-scale mean rank of men (165,47).

Looking up on whether the Musical Rhythmic Intelligence sub-scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. Musical Rhythmic Intelligence sub-scale differs according to gender. Women's Musical Rhythmic Intelligence sub-scale level (206,87) is higher than men's Musical Rhythmic Intelligence sub-scale level (166,20).

As for the data whether the Natural Intelligence sub-scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. Natural Intelligence sub-scale differs according to gender.

Female's mean rank of Natural Intelligence sub-scale (210,46) is higher than men's mean rank of Musical Rhythmic Intelligence sub-scale (162,60).
Examining whether the Bodily Kinesthetic Intelligence sub-scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. Bodily Kinesthetic Intelligence sub-scale differs according to gender. The Bodily Kinesthetic Intelligence sub-scale mean rank of males (203,57) is higher than the Bodily Kinesthetic Intelligence sub-scale mean rank of females (173,21).

In addition, examining whether the verbal-linguistic intelligence sub-scale, interpersonal intelligence sub-scale, intrapersonal intelligence sub-scale and (total) intelligence level scale differed according to gender, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was greater than 0.025. Verbal linguistic intelligence sub-scale, interpersonal intelligence sub-scale, intrapersonal intelligence sub-scale and (total) intelligence level scale do not differ according to gender.

4.2.2. Discussion of the RQ2: Is there a statistically significant difference in multiple intelligences among students based on the faculty they are studying in?

Comparison of Students' Intelligence Level According to the Faculties of Study

Table 4.8. Comparison of Intelligence Level Scale According to the Faculty of Education

Scale Dimensions	Faculty Studied	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value	Group Differences
Verbal Linguistic Intelligence	Faculty of Engineering and Architecture	159	1,50	3,50	4,70	185,71	2,283	0,684	
	Faculty of Economics and Administrative Sciences	23	2,80	3,50	3,90	184,24			
	Faculty of Science and Letters	165	2,00	3,60	4,60	194,51			
	Faculty of Education	23	2,80	3,40	4,00	171,80			
	Faculty of Health Sciences	5	2,90	3,10	3,70	137,90			
Logical Mathematical Intelligence	Faculty of Engineering and Architecture	160	1,50	4,00	5,00	227,23	42,853	0,000*	The Faculty of Arts and Sciences is different from the Faculty of Engineering and Architecture.
	Faculty of Economics and Administrative Sciences	23	1,90	3,70	4,80	195,65			
	Faculty of Science and Letters	163	1,60	3,40	4,90	152,26			
	Faculty of Education	24	2,10	3,60	4,80	181,77			
	Faculty of Health Sciences	5	1,40	3,10	3,40	92,20			

Visual Spatial Intelligence	Faculty of Engineering and Architecture	159	1,90	3,50	5,00	178,84	4,889	0,299	
	Faculty of Economics and Administrative Sciences	23	2,20	3,40	4,40	163,11			
	Faculty of Science and Letters	165	1,70	3,60	4,90	197,95			
	Faculty of Education	24	2,70	3,70	4,70	212,00			
	Faculty of Health Sciences	5	2,50	3,20	4,20	187,90			
Musical Rhythmic Intelligence	Faculty of Engineering and Architecture	162	1,11	3,33	4,89	177,42	5,738	0,220	
	Faculty of Economics and Administrative Sciences	21	2,00	3,33	4,22	175,26			
	Faculty of Science and Letters	163	1,33	3,44	5,00	202,85			
	Faculty of Education	24	1,56	3,33	5,00	177,60			
	Faculty of Health Sciences	5	2,33	3,00	3,56	150,00			
Natural Intelligence	Faculty of Engineering and Architecture	161	1,00	3,60	5,00	169,19	9,855	0,043*	The Faculty of Arts and Sciences is different from the Faculty of Engineering and
	Faculty of Economics and Administrative Sciences	23	1,60	4,00	4,80	211,50			

	Faculty of Science and Letters	162	1,30	3,70	5,00	202,72			Architecture .
	Faculty of Education	24	2,40	3,65	4,90	182,92			
	Faculty of Health Sciences	5	1,70	4,20	4,50	233,20			
Interpersonal Intelligence	Faculty of Engineering and Architecture	159	1,00	3,80	5,00	192,54	2,649	0,618	
	Faculty of Economics and Administrative Sciences	23	2,80	3,50	5,00	187,15			
	Faculty of Science and Letters	158	1,30	3,80	5,00	181,20			
	Faculty of Education	24	2,30	3,75	4,40	157,19			
	Faculty of Health Sciences	5	1,60	3,80	4,30	189,00			
Bodily Kinesthetic Intelligence	Faculty of Engineering and Architecture	162	1,00	3,65	5,00	204,65	9,481	0,050 1	
	Faculty of Economics and Administrative Sciences	21	2,20	3,30	4,40	142,95			
	Faculty of Science and Letters	164	1,90	3,40	5,00	179,48			
	Faculty of Education	22	2,10	3,40	4,70	169,68			
	Faculty of Health Sciences	5	1,20	3,50	3,60	160,20			
Intrapersonal Intelligence	Faculty of Engineering	162	2,00	3,70	4,80	183,37	1,221	0,875	

	and Architecture							
	Faculty of Economics and Administrative Sciences	23	2,70	3,70	5,00	186,13		
	Faculty of Science and Letters	163	2,00	3,80	5,00	192,14		
	Faculty of Education	24	3,10	3,90	4,70	205,33		
	Faculty of Health Sciences	5	3,50	3,90	4,60	203,80		
Total Intelligence	Faculty of Engineering and Architecture	150	1,68	3,63	4,63	176,58	0,606	0,962
	Faculty of Economics and Administrative Sciences	21	2,72	3,76	4,13	175,02		
	Faculty of Science and Letters	149	2,19	3,57	4,58	172,33		
	Faculty of Education	21	2,95	3,68	4,35	163,21		
	Faculty of Health Sciences	5	2,28	3,65	3,68	152,70		

α= 0,05 Kruskal Wallis H Test

Comparing whether the Intelligence Level Scale and its sub-scale differed according to the faculties in which the students studied.

It is compared whether the Logical Mathematical Intelligence sub-scale differed according to the faculties they studied, it was seen that the test statistic *P* value (α=0.05) was less than 0.05. The Logical Mathematical Intelligence sub-scale differs according to the faculties of study. As a result of the pairwise comparisons, the mean rank of Logical Mathematical Intelligence of those majoring at the Faculty of Engineering and Architecture (227,23) is higher than the level of Logical

Mathematical Intelligence of those majoring at the Faculty of Science and Letters (152,26).

As for on whether the Natural Intelligence sub-scale differed according to the faculties of education, it was seen that the test statistic *P* value (α=0.05) was less than 0.05. Natural Intelligence sub-scale differs according to the faculties of study. As a result of the pairwise comparisons, the mean rank of Natural Intelligence of those majoring at the Faculty of Arts and Sciences (202,272) is higher than the mean rank of Natural Intelligence of those majoring at the Faculty of Engineering and Architecture (169,19).

When it is compared whether the level of Verbal Linguistic Intelligence, Visual Spatial Intelligence, Musical Rhythmic Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence and (total) intelligence differs according to the faculties they study, it is seen that the test statistics *P* values (α=0.05) are greater than 0.05. Verbal Linguistic Intelligence, Visual Spatial Intelligence, Musical Rhythmic Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence and (total) intelligence level do not differ according to the faculties of education.

4.2.3. Discussion of the RQ3: Is there a statistically significant difference in multiple intelligences among students according to the high school they graduated from?

Comparison of Intelligence Levels of Students According to the High Schools They Graduated from

Table 4.9**.** Comparison of Intelligence Level Scale According to Graduated High School (α= 0,05 Kruskal Wallis H Test)

Scale Dimensions	Faculty Studied	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value	Group Differences
Verbal Linguistic Intelligence	Anatolian Highschool	255	1,60	3,60	4,60	197,56	10,700	0,152	
	Vocational and Technical Anatolian High School	11	2,90	3,40	4,30	168,00			
	Science High School	59	2,40	3,40	4,70	168,47			
	Basic High School	11	1,50	3,20	4,30	161,18			
	Health Vocational High School	2	2,80	2,80	2,80	38,50			
	Open Education High School	21	2,80	3,30	3,90	159,64			
	Imam Hatip High School	2	3,40	3,40	3,40	160,50			
	Anatolian Imam Hatip High School	12	3,00	3,45	3,80	171,92			
Logical Mathematical Intelligence	Anatolian Highschool	254	1,40	3,60	4,90	174,78	20,645	0,004*	Anatolian High School is different from Science High School
	Vocational and Technical Anatolian High School	14	1,50	3,40	4,80	193,14			
	Science High School	58	2,00	3,90	4,80	229,90			
	Basic High School	13	1,80	4,10	5,00	220,46			
	Health Vocational High School	2	1,80	1,80	1,80	10,00			
	Open Education High School	19	2,80	3,90	4,80	216,18			

	Imam Hatip High School	2	3,60	3,60	3,60	171,50			
	Anatolian Imam Hatip High School	11	2,00	3,60	4,30	180,27			
Visual Spatial Intelligence	Anatolian Highschool	254	2,20	3,50	5,00	190,04	8,966	0,255	
	Vocational and Technical Anatolian High School	12	2,40	3,15	4,30	155,25			
	Science High School	58	1,70	3,40	4,80	176,92			
	Basic High School	13	2,00	4,00	4,90	218,50			
	Health Vocational High School	2	3,00	3,00	3,00	98,50			
	Open Education High School	21	1,90	3,40	4,20	159,29			
	Imam Hatip High School	2	3,90	3,90	3,90	266,00			
	Anatolian Imam Hatip High School	12	2,90	3,70	4,90	234,58			
Musical Rhythmic Intelligence	Anatolian Highschool	253	1,67	3,33	5,00	191,63	15,475	0,030*	Vocational and Technical Anatolian High School is different from Imam Hatip High School, Basic High School is different from Anatolian Imam Hatip High School and Imam Hatip High School, Open Education High School is different from Imam Hatip High School, Anatolian High School and Anatolian Imam Hatip High School.
	Vocational and Technical Anatolian High School	14	2,00	3,11	4,56	172,14			
	Science High School	56	1,78	3,33	4,89	180,79			
	Basic High School	13	1,33	3,00	4,78	158,00			
	Health Vocational High School	2	3,44	3,44	3,44	203,00			
	Open Education High School	21	1,11	2,78	3,89	127,26			
	Imam Hatip High School	2	4,44	4,44	4,44	333,00			
	Anatolian Imam Hatip High School	12	2,11	3,89	4,89	244,63			
Natural Intelligence	Anatolian Highschool	252	1,30	3,60	5,00	188,14	6,419	0,492	

	Vocational and Technical Anatolian High School	14	2,20	3,80	4,70	207,36		
	Science High School	57	1,50	3,80	5,00	179,02		
	Basic High School	13	1,00	3,30	5,00	163,58		
	Health Vocational High School	2	2,90	2,90	2,90	62,00		
	Open Education High School	21	2,70	3,60	4,90	179,55		
	Imam Hatip High School	2	3,90	3,90	3,90	224,50		
	Anatolian Imam Hatip High School	12	2,60	4,10	4,60	230,17		
Interpersonal Intelligence	Anatolian Highschool	247	1,30	3,80	5,00	191,23	9,200	0,239
	Vocational and Technical Anatolian High School	14	2,10	3,50	4,80	156,46		
	Science High School	56	1,40	3,60	4,90	170,40		
	Basic High School	13	1,00	4,40	5,00	221,65		
	Health Vocational High School	2	3,00	3,00	3,00	70,00		
	Open Education High School	21	2,90	3,40	4,60	152,60		
	Imam Hatip High School	2	3,70	3,70	3,70	175,00		
	Anatolian Imam Hatip High School	12	3,00	3,60	4,50	165,38		
Bodily Kinesthetic Intelligence	Anatolian Highschool	252	1,20	3,50	5,00	194,19	11,411	0,122
	Vocational and Technical Anatolian High School	14	2,40	3,50	4,60	168,89		
	Science High School	56	2,10	3,40	5,00	162,46		
	Basic High School	13	1,00	3,90	4,70	191,62		

	Health Vocational High School	2	2,40	2,40	2,40	25,00		
	Open Education High School	21	1,90	3,40	5,00	168,24		
	Imam Hatip High School	2	3,20	3,20	3,20	129,00		
	Anatolian Imam Hatip High School	12	2,60	3,75	4,90	220,58		
Intrapersonal Intelligence	Anatolian Highschool	254	2,00	3,70	5,00	187,90	11,540	0,117
	Vocational and Technical Anatolian High School	14	3,00	3,80	4,60	188,29		
	Science High School	58	2,60	3,70	4,70	183,06		
	Basic High School	13	3,20	3,60	4,80	147,12		
	Health Vocational High School	2	5,00	5,00	5,00	373,00		
	Open Education High School	20	3,10	3,70	4,60	177,08		
	Imam Hatip High School	2	4,20	4,20	4,20	292,50		
	Anatolian Imam Hatip High School	12	3,40	3,95	4,50	228,00		
Total Intelligence	Anatolian Highschool	237	2,19	3,63	4,63	175,28	9,340	0,229
	Vocational and Technical Anatolian High School	11	2,84	3,86	4,11	190,55		
	Science High School	52	2,47	3,53	4,58	164,25		
	Basic High School	11	1,68	3,59	4,52	175,32		
	Health Vocational High School	2	3,04	3,04	3,04	30,50		
	Open Education High School	18	2,71	3,56	3,97	135,81		
	Imam Hatip High School	2	3,78	3,78	3,78	226,50		

Anatolian Imam Hatip High School	11	3,05	3,85	4,41	206,77

α= 0,05 Kruskal Wallis H Test

Examination of the comparison of the Logical Mathematical Intelligence sub-scale differed according to the high school graduated from, it was seen that the test statistic P value (α=0.05) was less than 0.05. The Logical Mathematical Intelligence sub-scale differs according to the high school graduated from. As a result of pairwise comparisons, the Logical Mathematical Intelligence level of Anatolian High School graduates (174.78) is lower than the Logical Mathematical Intelligence level of Science High School graduates (229.90).

Looking at the table whether the Musical Rhythmic Intelligence sub-scale differed according to the high school graduated from, it was seen that the test statistic *P* value (α=0.05) was less than 0.05. Musical Rhythmic Intelligence sub-scale differs according to the high school graduated from. As a result of the pairwise comparisons, the level of Musical Rhythmic Intelligence of the graduates of Imam Hatip High School (333,00) is higher than the level of Musical Rhythmic Intelligence of the graduates of Vocational and Technical Anatolian High School (172,14). The level of Musical Rhythmic Intelligence of those who graduated from Imam Hatip High School (333,00) and Anatolian Imam Hatip High School (244,63) is higher than the level of Musical Rhythmic Intelligence of those who graduated from basic high school (158,00). The level of Musical Rhythmic Intelligence of those who graduated from Imam Hatip High School (333,00), the level of Musical Rhythmic Intelligence of those who graduated from Anatolian High School (191,63) and the level of Musical Rhythmic Intelligence of those who graduated from Anatolian Imam Hatip High School (244,63) is higher than the level of Musical Rhythmic Intelligence of those who graduated from open education (127,26).

Comparing whether Verbal Linguistic Intelligence, Visual Spatial Intelligence, Natural Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence sub-scale and (total) intelligence level differ according to the high school graduated from, it is seen that the test statistics *P* values (α=0,05) are greater than 0,05. Verbal Linguistic Intelligence, Visual Spatial Intelligence, Natural Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence sub-scale score and (total) intelligence level do not differ according to the high school graduated from.

4.2.4. Discussion of the RQ4: Is there a statistically significant difference in multiple intelligences among instructors when gender is considered?

Table 4.10**.** The Intelligence Level Scale and its sub-scale

Scale Dimensions	Gender	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value
Verbal Linguistic Intelligence	Male	60	3,30	4,20	5,00	59,93	1766,000	0,628
	Female	62	3,00	4,25	5,00	63,02		
Logical Mathematical Intelligence	Male	60	1,20	3,30	4,50	60,94	1826,500	0,863
	Female	62	1,20	3,50	4,50	62,04		
Visual Spatial Intelligence	Male	58	2,30	3,70	4,80	62,72	1669,000	0,497
	Female	62	2,60	3,60	4,80	58,42		
Musical Rhythmic Intelligence	Male	60	1,33	3,39	5,00	61,83	1840,000	0,918
	Female	62	1,33	3,44	5,00	61,18		
Natural Intelligence	Male	59	2,30	4,00	5,00	61,15	1820,000	0,963
	Female	62	2,30	4,00	5,00	60,85		
Interpersonal Intelligence	Male	57	1,40	4,20	4,90	55,60	1516,000	0,358
	Female	59	3,00	4,50	4,90	61,31		
Bodily Kinesthetic Intelligence	Male	60	1,80	3,70	4,60	61,27	1846,000	0,943
	Female	62	2,00	3,70	4,60	61,73		
Intrapersonal Intelligence	Male	60	3,30	4,10	4,90	61,38	1853,000	0,971
	Female	62	3,30	4,15	4,70	61,61		
Total Intelligence	Male	55	2,59	3,89	4,48	57,89	1601,000	0,903
	Female	59	3,09	3,89	4,48	57,14		

α= 0,05 ve α/2=0,025 Mann Whitney U Test

It was compared whether the Intelligence Level Scale and its sub-scale score differed according to the gender of the instructors as seen in table 4.10

As for on whether the verbal linguistic intelligence sub-scale score , Logical Mathematical Intelligence, Visual Spatial Intelligence, Musical Rhythmic Intelligence, Natural Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence and (total) intelligence level scale differed according to gender, it was seen that the test statistic *P* value ($\alpha=0.05$ and $\alpha/2=0.025$) was greater than 0.025. Verbal linguistic intelligence sub-scale, Logical Mathematical Intelligence, Visual Spatial Intelligence, Musical Rhythmic Intelligence, Natural Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence and (total) intelligence level scale score do not differ according to gender.

4.2.5. Discussion of the RQ5: Is there a statistically significant difference in multiple intelligences among instructors based on the faculty they are teaching at?

Comparison of Instructors' Intelligence Levels According to the Faculties They Teach

Table 4.11. Comparison of Instructors’ Intelligence Level Scale According to the Faculties of They Teach

Scale Dimensions	Faculties of Education	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value	Group Differences
Verbal Linguistic Intelligence	Faculty of Engineering and Architecture	7	3,30	4,50	5,00	94,86	8,628	0,035	Faculty of Economics and Administrative Sciences and Faculty of Arts and Sciences are different from the Faculty of Engineering and Architecture
	Faculty of Economics and Administrative Sciences	4	3,80	3,80	4,30	40,25			
	Faculty of Science and Literature	108	3,00	4,20	5,00	59,69			
	Faculty of Communication	3	4,30	4,30	4,30	77,00			
Logical Mathematical Intelligence	Faculty of Engineering and Architecture	7	2,50	2,60	4,20	55,50	7,947	0,047	The Faculty of Communication is different from the Faculty of Economics and Administrative Sciences, the Faculty of Engineering and Architecture and the Faculty of Arts and Sciences
	Faculty of Economics and Administrative Sciences	4	2,80	3,20	3,20	44,38			
	Faculty of Science and Literature	108	1,20	3,50	4,50	61,05			
	Faculty of Communication	3	4,30	4,30	4,30	114,50			
Visual Spatial Intelligence	Faculty of Engineering and Architecture	7	3,10	3,20	3,70	40,71	14,916	0,002	The Faculty of Economics and Administrative Sciences is different from the Faculty of Arts and Sciences and
	Faculty of Economics and Administrative Sciences	4	2,30	2,30	2,60	2,75			

	Faculty of Science and Literature	106	2,60	3,65	4,80	63,49			the Faculty of Communication.
	Faculty of Communication	3	4,00	4,00	4,00	78,00			
Musical Rhythmic Intelligence	Faculty of Engineering and Architecture	7	1,44	4,44	5,00	93,14	9,390	0,02	The Faculty of Engineering and Architecture is different from the Faculty of Communication, Faculty of Economics and Administrative Sciences and Faculty of Arts and Sciences.
	Faculty of Economics and Administrative Sciences	4	2,44	2,44	3,67	37,88			
	Faculty of Science and Literature	108	1,33	3,44	5,00	61,12			
	Faculty of Communication	3	2,56	2,56	2,56	33,00			
Natural Intelligence	Faculty of Engineering and Architecture	7	3,20	3,90	4,40	55,93	7,962	0,047	The Faculty of Economics and Administrative Sciences is different from the Faculty of Arts and Sciences and the Faculty of Communication.
	Faculty of Economics and Administrative Sciences	4	2,90	2,90	3,60	15,75			
	Faculty of Science and Literature	107	2,30	4,00	5,00	62,48			
	Faculty of Communication	3	4,40	4,40	4,40	80,50			
Interpersonal Intelligence	Faculty of Engineering and Architecture	7	1,40	4,60	4,60	70,00	7,164	0,067	
	Faculty of Economics and Administrative Sciences	4	3,40	3,80	3,80	22,50			
	Faculty of Science and Literature	102	3,00	4,50	4,90	59,83			
	Faculty of Communication	3	3,90	3,90	3,90	34,50			
Bodily Kinesthetic Intelligence	Faculty of Engineering and Architecture	7	1,80	3,70	4,40	68,07	4,464	0,215	

	Faculty of Economics and Administrative Sciences	4	2,70	3,10	3,10	25,63			
	Faculty of Science and Literature	108	2,00	3,70	4,60	62,39			
	Faculty of Communication	3	3,70	3,70	3,70	62,00			
Intrapersonal Intelligence	Faculty of Engineering and Architecture	7	3,80	4,00	4,60	72,57	6,060	0,109	
	Faculty of Economics and Administrative Sciences	4	3,50	4,90	4,90	94,88			
	Faculty of Science and Literature	108	3,30	4,10	4,70	60,27			
	Faculty of Communication	3	3,80	3,80	3,80	35,50			
Total Intelligence	Faculty of Engineering and Architecture	7	2,59	3,99	4,34	74,29	8,312	0,040	Faculty of Economics and Administrative Sciences is different from the Faculty of Engineering and Architecture
	Faculty of Economics and Administrative Sciences	4	3,32	3,32	3,32	15,50			
	Faculty of Science and Literature	100	3,09	3,89	4,48	58,02			
	Faculty of Communication	3	3,89	3,89	3,89	57,00			

α= 0,05 Kruskal Wallis H Test

Comparing whether the Intelligence Level Scale and its sub-scale score differed according to the faculties in which the instructors were educated.

When it is compared, the Verbal Linguistic Intelligence sub-scale differed according to the faculties where the instructors were educated, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. The Verbal Linguistic Intelligence sub-scale differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the verbal linguistic intelligence mean rank of those who teach at the Faculty of Engineering and Architecture (94,86) is higher than the verbal linguistic intelligence sub-scale mean rank of those who teach at the Faculty of Arts and Sciences (59,69) and the verbal linguistic intelligence sub-scale mean rank of those who teach at the Faculty of Economics and Administrative Sciences (40,25).

Looking on whether the Logical Mathematical Intelligence sub-scale score differed according to the faculties where the instructors were educated, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was less than 0.025. The Logical Mathematical Intelligence sub-scale differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the Logical Mathematical Intelligence sub-scale level of the instructors from the Faculty of Communication (114,50) is higher than the Logical Mathematical Intelligence sub-scale level of the instructors from the Faculty of Economics and Administrative Sciences (44,38), the Logical Mathematical Intelligence sub-scale level of the instructors from the Faculty of Engineering and Architecture (55,50) and the sub-scale level of the instructors from the Faculty of Arts and Sciences (61,05).

Examining whether the Visual Spatial Intelligence sub-scale differed according to the faculties in which the instructors were educated, it was seen that the test statistic *P* value (α=0,05 and α/2=0,025) was less than 0,025. Visual Spatial Intelligence sub-scale score differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the Visual Spatial Intelligence sub-scale level of the instructors from the Faculty of Arts and Sciences (63,49) and the Visual Spatial Intelligence sub-scale level of the instructors from the Faculty of Communication (78,00) are higher than the Visual Spatial Intelligence sub-scale level of the instructors from the Faculty of Economics and Administrative Sciences (2,75).

As for on whether the Musical Rhythmic Intelligence sub-scale differs according to the faculties in which the instructors teach, it was seen that the test statistic *P* value (α=0,05 and α/2=0,025) was less than 0,025. Musical Rhythmic Intelligence sub-scale differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the Musical Rhythmic Intelligence sub-scale level of the instructors of the Faculty of Engineering and Architecture (93,14) is greater than the Musical Rhythmic Intelligence sub-scale level of the instructors of the Faculty of Communication (33,00), the Musical Rhythmic Intelligence sub-scale level of the instructors of the Faculty of Economics and Administrative Sciences

(37,88) and the Musical Rhythmic Intelligence sub-scale level of the instructors of the Faculty of Arts and Sciences (61,12).

When compared, the Natural Intelligence sub-scale score differed according to the faculties in which the instructors were educated, it was seen that the test statistic P value (α=0,05 and α/2=0,025) was less than 0,025. Natural Intelligence sub-scale differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the Natural Intelligence sub-scale level of the instructors from the Faculty of Arts and Sciences (62,48) and the Natural Intelligence sub-scale level of the instructors from the Faculty of Communication (80,50) are higher than the Natural Intelligence sub-scale level of the instructors from the Faculty of Economics and Administrative Sciences (15,75).

Comparing whether the Total Intelligence Level differs according to the faculties in which the instructors teach, it is seen that the test statistic *P* value (α=0,05 and α/2=0,025) is less than 0,025. Total Intelligence level differs according to the faculties in which the instructors teach. As a result of the pairwise comparisons, the Total Intelligence level of the instructors from the Faculty of Engineering and Architecture (74,29) is higher than the Total Intelligence level of the instructors from the Faculty of Economics and Administrative Sciences (15,50).

In addition, comparing whether the sub-scale of interpersonal intelligence, sub-scale of bodily kinesthetic intelligence, sub-scale of intrapersonal intelligence differed according to the faculties where the instructors were educated, it was seen that the test statistic *P* value (α=0.05 and α/2=0.025) was greater than 0.025. sub-scale of interpersonal intelligence, sub-scale of bodily kinesthetic intelligence, sub-scale of intrapersonal intelligence do not differ according to the faculties where the instructors were educated.

4.2.6. Discussion of the RQ6: Is there a statistically significant difference in multiple intelligences among instructors according to the university they are affiliated with?

Table 4.12. Comparison of Intelligence Level Scale According to the Universities in which Instructors Teach

Scale Dimensions	Universities	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value
	Osmaniye	6	3,60	4,30	5,00	71,33	3,754	0,585
	Ege	19	3,00	4,00	5,00	48,08		

Verbal Linguistic Intelligence	9 Eylül	30	3,00	4,25	4,70	63,48		
	Muğla	27	3,40	4,20	5,00	61,48		
	Celal Bayar	24	3,40	4,25	5,00	65,85		
	Adnan Menderes	16	3,00	4,30	5,00	63,53		
Logical Mathematical Intelligence	Osmaniye	6	1,70	3,60	4,00	53,17	3,489	0,625
	Ege	19	1,20	3,20	4,50	54,97		
	9 Eylül	30	2,10	3,75	4,30	67,38		
	Muğla	27	1,20	3,30	4,30	57,80		
	Celal Bayar	24	1,20	3,30	4,50	59,00		
	Adnan Menderes	16	2,50	3,75	4,50	71,34		
Visual Spatial Intelligence	Osmaniye	5	3,20	3,50	4,60	60,00	1,564	0,906
	Ege	19	2,70	3,50	4,80	59,84		
	9 Eylül	30	2,80	3,65	4,80	66,68		
	Muğla	26	2,30	3,65	4,80	59,71		
	Celal Bayar	24	2,30	3,65	4,60	55,19		
	Adnan Menderes	16	2,60	3,65	4,40	59,09		
Musical Rhythmic Intelligence	Osmaniye	6	1,33	2,44	5,00	47,25	2,883	0,718
	Ege	19	1,33	4,00	5,00	69,66		
	9 Eylül	30	1,89	3,33	5,00	56,08		
	Muğla	27	1,33	3,44	5,00	61,43		
	Celal Bayar	24	1,33	3,89	5,00	64,02		
	Adnan Menderes	16	1,33	3,39	5,00	63,66		
Natural Intelligence	Osmaniye	5	3,20	4,00	4,70	60,30	0,290	0,998
	Ege	19	3,20	4,00	5,00	61,05		
	9 Eylül	30	2,30	4,05	5,00	60,72		
	Muğla	27	2,30	4,00	5,00	59,54		
	Celal Bayar	24	2,30	4,00	5,00	60,31		
	Adnan Menderes	16	2,30	4,20	5,00	65,19		
Interpersonal Intelligence	Osmaniye	6	3,60	4,55	4,80	64,08	1,004	0,962
	Ege	17	1,40	4,50	4,90	58,44		
	9 Eylül	29	3,00	4,30	4,90	60,17		
	Muğla	26	3,00	4,40	4,90	60,67		
	Celal Bayar	23	3,00	4,50	4,90	56,89		
	Adnan Menderes	15	3,00	4,20	4,80	51,80”		
Bodily Kinesthetic Intelligence	Osmaniye	6	2,90	3,50	3,90	50,33	2,866	0,721
	Ege	19	1,80	3,80	4,60	69,71		
	9 Eylül	30	2,00	3,80	4,60	64,53		
	Muğla	27	2,00	3,70	4,60	62,46		
	Celal Bayar	24	2,00	3,50	4,60	58,00		
	Adnan Menderes	16	2,00	3,50	4,50	53,88		
	Osmaniye	6	3,40	3,85	4,60	51,33	2,276	0,810

Intrapersonal Intelligence	Ege	19	3,30	4,30	4,70	60,66		
	9 Eylül	30	3,30	4,05	4,70	59,00		
	Muğla	27	3,30	4,10	4,90	59,59		
	Celal Bayar	24	3,30	4,15	4,90	62,79		
	Adnan Menderes	16	3,80	4,30	4,70	72,28		
Total Intelligence	Osmaniye	5	3,42	3,99	4,15	64,10	0,600	0,988
	Ege	17	2,59	3,73	4,48	55,24		
	9 Eylül	29	3,09	3,89	4,48	59,19		
	Muğla	25	3,09	3,95	4,48	59,16		
	Celal Bayar	23	3,09	3,89	4,43	54,91		
	Adnan Menderes	15	3,09	3,89	4,48	55,80		

α= 0,05 Kruskal Wallis H Test

Comparing whether the Intelligence Level Scale and its sub-scale differed according to the universities where the instructors were educated.

Compared if the Verbal Linguistic Intelligence sub-scale, Logical Mathematical Intelligence sub-scale, Visual Spatial Intelligence sub-scale, Musical Rhythmic Intelligence sub-scale, Natural Intelligence sub-scale, Interpersonal Intelligence sub-scale, Bodily Kinesthetic Intelligence sub-scale, Intrapersonal Intelligence sub-scale and Total Intelligence level differed according to the universities, it was seen that the test statistic *P* value (α=0,05 and α/2=0,025) was greater than 0,025. Verbal Linguistic Intelligence sub-scale, Logical Mathematical Intelligence sub-scale, Visual Spatial Intelligence sub-scale, Musical Rhythmic Intelligence sub-scale, Natural Intelligence sub-scale, Interpersonal Intelligence sub-scale, Bodily Kinesthetic Intelligence sub-scale, Intrapersonal Intelligence sub-scale and Total Intelligence level do not differ according to universities.

Table 4.13. Statistics According to the Intelligence Behaviors Scale

Scale Dimensions	Difference Category	N	Minimum Value	Median	Maximum Value	Mean Rank	Test Statistic	P value
Verbal Linguistic Intelligence	Student	375	1,50	3,50	4,70	209,64	8114,50	0,000
	Teacher	122	3,00	4,20	5,00	369,99		
Logical Mathematical Intelligence	Student	375	1,40	3,70	5	259,21	19045,00	0,005
	Teacher	122	1,2	3,4	4,5	217,61		
	Student	376	170	3,5	5	238,85	18932,00	0,008

Visual Spatial Intelligence	Teacher	120	2,3	3,6	4,8	278,73		
Musical Rhythmic Intelligence	Student	375	1,11	3,33	5	245,68	21630,50	0,366
	Teacher	122	1,33	3,4	5	259,20		
Natural Intelligence	Student	375	1	3,7	5	232,71	16766,00	0,000
	Teacher	121	2,3	4	5	297,44		
Interpersonal Intelligence	Student	369	1	3,8	5	221,03	13294,00	0,000
	Teacher	116	1,4	4,4	4,9	312,90		
Bodily Kinesthetic Intelligence	Student	374	1	3,5	5	244,04	21144,50	0,224
	Teacher	122	1,8	3,7	4,6	262,18		
Intrapersonal Intelligence	Student	377	2	3,7	5	228,97	15070,50	0,000
	Teacher	122	3,3	4,1	4,9	314,97		

Looking at the verbal linguistic intelligence sub-scale of the Intelligence Behavior scale in our research scale differed between instructors and students, it was seen that the test statistic *P* value (α= 0.05 α/2=0.025) was less than 0.025. Verbal Linguistic Intelligence differs according to instructors and students. In addition, instructors ' Verbal Linguistic Intelligence level (sub-scale score: 369,99) is higher than students' Verbal Linguistic Intelligence level (209,64).

Examining whether the Logical Mathematical Intelligence Subdimension differed between instructors and students, it was seen that the P value of the test statistic (α= 0.05 α/2=0.025) was less than 0.025. Logical Mathematical Intelligence differs according to instructors and students. Students' Logical Mathematical Intelligence Level (259,21) is higher than instructors ' Logical Mathematical Intelligence Level (217,61).

As for on whether the Visual Spatial Intelligence Subdimension differed between instructors and students, it was seen that the test statistic *P* value (α= 0.05 α/2=0.025) was less than 0.025. Visual Spatial Intelligence differs according to instructors and students. The Visual Spatial Intelligence Level of the instructors (278,73) is higher than the Visual Spatial Intelligence Level of the students (238,85).

Examining whether the Musical Rhythmic Intelligence Subdimension differed between instructors and students, it was seen that the *P* value of the test statistic (α= 0.05 α/2=0.025) was greater than 0.025. Musical Rhythmic Intelligence of instructors and Students does not differ.

Table 4.13 shows if the Natural Intelligence Scale differed between instructors and students, it was seen that the *P* value of the test statistic (α= 0,05 α/2=0,025) was less than 0,025. Natural Intelligence differs according to instructors and students. The

Natural Intelligence level of instructors (297,44) is higher than the Natural Intelligence level of students (232,71).

Comparing the Interpersonal Intelligence Subdimension differed between instructors and students, it was seen that the test statistic *P* value (α= 0.05 α/2=0.025) was less than 0.025. Interpersonal Intelligence differs according to instructors and students. Instructors' Interpersonal Intelligence Level (312,90) is higher than students' Interpersonal Intelligence Level (221,03).

When analyzed according to whether the Bodily Kinesthetic Intelligence Subdimension differs between instructors and students, the *P* value of the test statistic (α= 0.05 α/2=0.025) is greater than 0.025. The Bodily Kinesthetic Intelligence of instructors and students are not different from each other.

When compared if Intrapersonal Intelligence sub-scale differed between instructors and students, it was seen that the *P* value of the test statistic (α= 0.05 α/2=0.025) was less than 0.025. Intrapersonal Intelligence differs between instructors and students. Instructors' level of Intrapersonal Intelligence (314,97) is higher than students' level of Intrapersonal Intelligence.

As for on whether Total Intelligence Behavior differs between instructors and students, it was seen that the value of the test statistic (α= 0.05 α/2=0.025) was less than 0.025. Total Intelligence Behavior differs between instructors and students. Total Intelligence Behavior mean rank of instructors (283,29) differs from total intelligence behavior mean rank of students (213,11).

5. DISCUSSION

Discussion of Findings

The discussion of research findings plays a pivotal role in the academic realm, serving as a cornerstone for the validation and augmentation of extant knowledge. This section of the present study embarks on a comparative analysis of the findings from two seminal studies. The first, a study by Kandeel, focuses on the multiple intelligence models among students at King Saud University, exploring their relationships with mathematical achievement. This research identified self-intelligence, social intelligence, and bodily intelligence as the predominant types among the students. Notably, it revealed varying intelligence profiles across academic disciplines, with medical students, for instance, exhibiting exceptional logical intelligence. Gender-related disparities were also observed; for example, social intelligence was more pronounced in male students, while self and bodily intelligence were more conspicuous in female students.

In contrast, our study examines the differences in intelligence profiles between teachers and students. Our findings indicate that teachers display higher levels of various intelligence sub-dimensions, including linguistic, visual-spatial, naturalist, interpersonal, and intrapersonal intelligence, compared to students. This highlights the impact of educational and professional experiences on teachers' intelligence profiles. Furthermore, intelligence profiles varied among teachers from different faculties, with notable distinctions observed particularly among engineering-architecture and education faculty teachers.

The outcomes of these two studies underscore the importance of understanding the intelligence profiles of teachers and students and utilizing this knowledge to tailor educational strategies. It can be inferred that educational approaches considering individual characteristics of students could be more effective and inclusive. The integration of different types of intelligence in education and the development of these intelligences in students warrant further exploration. These studies provide crucial insights for educators and policymakers, contributing to the development of customized educational strategies and professional development programs that cater to the individual needs and strengths of both groups.

Moreover, this discussion highlights the potential impact of education, specialized training, and professional experience on the intelligence levels of instructors and students. It emphasizes the necessity for continued research to further unravel the intricate interplay between intelligence, education, and professional development, thereby enriching the broader educational discourse. Continuing with the theme of comparative analysis, this study also delves into gender-specific intelligence preferences, particularly among ESL (English as a Second Language) students. This facet of the research draws from both the Loori (2005) study and the current investigation, each shedding light on significant gender-based variations in intelligence preferences within this group.

Loori's (2005) inquiry unveiled distinct gender differences in preferences for logical/mathematical and intrapersonal intelligences. This study investigates the variances in intelligence preferences among male and female students pursuing higher education in the United States and learning English as a Second Language (ESL). The participants consisted of 90 international students enrolled in ESL centers at three American universities. The findings indicate a preference among male students for learning activities related to logical and mathematical intelligence, while female students showed a predilection for activities involving intrapersonal intelligence. The study discusses the implications of these preferences for ESL/EFL classrooms. The participants ranged in age from 18 to 46 and hailed from 25 different countries, including Turkey, China, India, Brazil, among others. Most students were advanced learners at the university level. The study examines the gender-based differences in intelligence preferences of male and female students learning English as a second language. It encompassed 90 international students registered in ESL centers at three universities in the United States. The research outcomes revealed significant differences in intelligence preferences between male and female students: while males favored learning activities involving logical and mathematical intelligence, females preferred those involving intrapersonal intelligence.

Based on the average scores from the Teele Inventory for Multiple Intelligences (TIMI), students preferred interactive activities in groups (average 4.98 in interpersonal intelligence) and participating in activities that involved solving logical/mathematical problems (average 4.31 in logical/mathematical intelligence). The least preferred type of intelligence was intrapersonal (average 2.66), suggesting a disfavor towards solitary study in language learning. Other intelligence types such as linguistic (average 4.14), bodily-kinesthetic (average 4.08), musical (average 3.84), and visual-spatial (average 3.96) were also evaluated.

Gender comparisons revealed significant differences in logical/mathematical and intrapersonal intelligences. Male students preferred learning methods involving logical and mathematical activities more than females, while female students favored individual study activities more than males. No significant gender differences were found in other intelligence types (linguistic, visual-spatial, musical, bodily-kinesthetic, and interpersonal). The study highlights the importance of considering gender-based differences in education and suggests that educational environments should accommodate these differences to provide a healthier learning atmosphere. It concludes that both male and female ESL students have preferences for learning activities, such as verbal or written language, graphics and puzzles, musical instruments or products, movement, acting, and dancing.

The diversity of cognitive styles and learning preferences among male and female learners in ESL contexts is highlighted by these findings. The far-reaching implications of these differences indicate a need for the development of more tailored and gender-responsive teaching methodologies in ESL education. This aspect of the study not only enriches the understanding of cognitive diversity within ESL learning environments but also calls for a reevaluation of current pedagogical approaches to better accommodate these variations in intelligence preferences.

The studies conducted by Loori (2005) and the one presented here are significant in examining the impact of gender on learning preferences and types of intelligence. Both pieces of research emphasize the determinative role of gender in shaping intelligence preferences and the necessity of considering these differences in educational environments. Loori's study showed that male university students are more prone to learning activities involving logical and mathematical intelligence. This inclination suggests a preference for engaging in problem-solving, analytical thinking, and working with abstract concepts. In contrast, a propensity for learning activities involving intrapersonal intelligence is observed among female students, indicating a tendency towards introspective exploration, understanding personal emotions and thoughts, and learning through internal reflection.

In this study, differences in intelligence profiles between teachers and students have been explored. It has been observed that teachers possess higher levels of skills in areas such as linguistic, visual-spatial, and interpersonal intelligence compared to students. These findings underscore the need for educational approaches that consider not only gender-specific needs but also differences in intelligence preferences across various disciplines and academic levels. The implications drawn from these studies emphasize the importance of including factors such as gender, discipline, and academic level in developing educational strategies. Recognizing and integrating the unique intelligence profiles of both students and teachers into educational methodologies can enhance the effectiveness and inclusivity of the learning process. This approach may lead to the creation of a more personalized and interactive educational environment that caters to the individual needs and learning preferences of students.

The results obtained from this research draw parallels with the studies conducted by Dekker et al. (2012). Their study examined the prevalence and predictors of neuromyths among educators in the United Kingdom and the Netherlands, revealing misconceptions about brain function and learning among educators. In contrast, this study focuses on the characteristics of participants in a public university setting, including both students and teachers. While Dekker et al. (2012) focused on teachers' beliefs and knowledge about brain functions related to learning, this study presents a demographic view of students and teachers across various faculties. It also highlights significant differences in educational approaches between countries such as the United Kingdom and the Netherlands, which include practices like Brain Gym, learning styles, and left brain/right brain learning programs. This suggests that educational practices and misconceptions can vary not only between countries but also within different faculties or departments of the same educational institution. However, such detailed nuances have not been explicitly discussed in a study lacking this level of detail.

Dekker's study emphasizes the prevalence of brain-related misconceptions (neuromyths) among teachers and suggests that these beliefs might not easily change despite having broader knowledge of neuroscience. In contrast, the findings from this study focus on the types of intelligence among students and teachers and examine the relationship between demographic factors and types of intelligence. When comparing these two studies, it is important to understand how different factors can affect the mental abilities and knowledge levels of educators and students. The tendency of teachers to believe in neuromyths can impact educational strategies and student success. The different types of intelligence in students highlight the necessity of personalization in teaching methods. Both studies provide significant data to better understand the mental constructs of educators and students and to optimize educational processes.

As we delve further into the examination of our research questions, specifically addressing the query, "Is there a statistically significant difference between the faculties in which students study?", a notable gap in the current body of literature becomes apparent. However, this research is equipped to fill this gap by analyzing the statistical significance of faculty-wise distribution among students. The data from this study provides a clear representation of the student population across various faculties:

Faculty of Engineering and Architecture: 163 students (43.0%)

Faculty of Economics and Administrative Sciences: 23 students (6.1%)

Faculty of Arts and Sciences: 165 students (43.5%)

Faculty of Sport Sciences: 1 student (0.3%)

Faculty of Education: 23 students (6.1%)

Faculty of Health Sciences: 4 students (1.1%)

The disparity in student numbers across these faculties is striking, with some faculties like Engineering and Architecture, and Arts and Sciences, hosting a significantly larger number of students compared to others like Sports Sciences. This uneven distribution suggests that there may indeed be a statistically significant difference in the faculties where students choose to study. Such differences can have profound implications on the dynamics of educational needs, resources, and pedagogical approaches within each faculty.

The study by Nasir and Masrur (2010) at the International Islamic University Islamabad examined the emotional intelligence (EI) of students and its correlation with gender, age, and academic achievement. Involving 132 participants of equal gender distribution, the study found a significant link between EI and academic success but no meaningful correlations with age. Notably, it reported no significant gender differences in overall EI scores, despite males scoring higher in stress management. These findings, consistent with other research showing no significant gender disparities in various intelligence subscales, challenge traditional views on gender-specific cognitive abilities. They indicate that intelligence, in its multiple forms, is likely not predominantly determined by gender. These results align with the findings of the current study, wherein several intelligence subscales—including verbal linguistic, logical mathematical, visual spatial, musical rhythmic, naturalistic, interpersonal, bodily kinesthetic, and personal intelligence—did not exhibit significant gender-based differences. These collective findings suggest that gender may not be a predominant factor in the development of emotional intelligence or other specific intelligence subscales. This challenges traditional beliefs regarding gender-specific cognitive abilities and supports the view that intelligence, in its various forms, is not primarily influenced by gender.

The implications of these findings for educational practice and policy are considerable. Acknowledging that intelligence development is influenced by a myriad of factors, including but not limited to type of high school and gender, can guide more refined educational approaches. Educators and policymakers are thus equipped to develop curricula and teaching strategies that address a diverse array of intelligences and learning styles, free from the constraints of stereotypes or assumptions about gender-based abilities. In addressing the research question "Is there a statistically significant difference between instructors according to gender?", the current study, alongside the research by Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos (2017), primarily examines differences in intelligence subscales among instructors based on their faculty affiliations rather than gender. The insights from both studies highlight significant differences in various intelligence domains based on faculty affiliations.

A noteworthy aspect revealed in both studies is the variation in Verbal Linguistic Intelligence according to the faculty of education. This study found that instructors from the Faculty of Engineering-Architecture displayed higher levels of Verbal Linguistic Intelligence compared to those from the Faculty of Arts and Sciences and the Faculty of Economics and Administrative Sciences. This pattern mirrors the findings of Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos, where significant faculty-based differences were also observed in the Verbal Linguistic Intelligence subscale. Regarding the Logical Mathematical Intelligence subscale, both studies indicate significant differences between faculties. In our analysis, educators affiliated with the Faculty of Communication demonstrated elevated levels of Logical Mathematical Intelligence in comparison to their counterparts in the Faculty of Economics and Administrative Sciences, Faculty of Engineering and Architecture, and Faculty of Arts and Sciences. This observation aligns with the outcomes reported by Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos, indicating a faculty-specific variation in this particular domain of intelligence.

Furthermore, significant differences based on faculty affiliation were identified in the Visual Spatial Intelligence subscale in both studies. Our investigation revealed that instructors in the Faculty of Arts and Sciences and the Faculty of Communication exhibited higher levels of Visual Spatial Intelligence in contrast to those in the Faculty of Economics and Administrative Sciences. These findings concur with the results reported by Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos.

Regarding Musical Rhythmic Intelligence, notable faculty-related disparities were evident in both studies. According to our research, educators from the Faculty of Engineering-Architecture demonstrated higher levels of this type of intelligence when compared to their counterparts from the Faculty of Communication, Faculty of Economics and Administrative Sciences, and Faculty of Arts and Sciences. This pattern corresponds with the findings documented by Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos (2017).

The convergence of findings across these studies underscores the significant role of faculty affiliation in shaping the intelligence profiles of instructors. These results highlight that the faculty environment, which encompasses specific disciplinary focuses and pedagogical approaches, may influence the development and manifestation of various intelligence types among educators. These insights have profound implications for educational policy and faculty development. Understanding the diverse intelligence profiles of instructors in different faculties can inform targeted professional development programs and instructional strategies, catering to the unique strengths and needs of educators across various academic domains.

Future research could further explore the factors contributing to these faculty-based differences in intelligence profiles, such as the nature of the academic discipline, the teaching methodologies employed, and the specific cognitive demands of each faculty. Such investigations would enhance the understanding of the intricate dynamics influencing intelligence profiles in the academic context and contribute to the development of more effective educational practices. The current research, in conjunction with the study conducted by Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos (2017) also unveils notable faculty-based disparities in the Natural Intelligence subscale among instructors.

It was found that instructors in the Faculty of Arts and Sciences and the Faculty of Communication possess higher levels of Natural Intelligence compared to those in the Faculty of Economics and Administrative Sciences. This pattern of faculty-specific intelligence profiles aligns consistently with the findings of Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos, suggesting that certain faculties may foster a more conducive environment for the development of Natural Intelligence. In terms of Total Intelligence, both investigations reveal significant differences based on faculty affiliation. In this analysis, instructors from the Faculty of Engineering and Architecture exhibited higher levels of Total Intelligence in comparison to their counterparts in the Faculty of Economics and Administrative Sciences.

In a research study encompassing students and instructors from various faculties, the awareness of multiple intelligences was examined. The study revealed the levels of awareness among students and instructors regarding different types of intelligence and how they utilize these intelligences. It evaluated the participants' awareness of the theory of multiple intelligences and its applications in the field of education. The results indicated varying degrees of understanding and integration of the concept of multiple intelligences among educators and students. It was particularly noted that educators were more conscious of this concept and that students expressed a desire for guidance in developing their multiple intelligence areas.

Upon evaluation in the context of the results obtained from the study, it was observed that there were no significant differences in certain intelligence sub-dimensions such as Interpersonal Intelligence, Bodily Kinesthetic Intelligence, and Intrapersonal Intelligence depending on the faculty of education in both studies. This suggests that while some aspects of intelligence may be shaped by the faculty environment, others remain consistent across different academic disciplines. Addressing the research question "Is there a statistically significant difference between instructors considering the faculty they work in?", this investigation confirms that such differences do exist. The intelligence subscale levels of instructors vary significantly according to the faculty where they are employed. The statistical tests conducted in this analysis, with an alpha level of 0.05, yielded p-values lower than 0.025, indicating statistical significance. This evidence conclusively supports the hypothesis that instructors' intelligence profiles are, in part, influenced by their faculty affiliations.

These results highlight the significant influence of faculty environments on the development and manifestation of educators' various types of intelligence. It is important for educational policy makers and administrators to understand these differences, as this can be used in the design of faculty-specific professional development programs and teaching strategies. Future research could explore the underlying mechanisms that contribute to these faculty-based differences in instructor intelligence profiles. Such research could examine how faculty culture, academic disciplines, pedagogical approaches, and faculty-specific professional development shape these intelligence profiles. This study provides evidence that faculty environments have a significant influence on the development and manifestation of educators' types of intelligence. Understanding these differences is important for educational policy makers and administrators because this information can be used in the design of faculty-specific professional development programs and instructional strategies. This study provides evidence that faculty environments have a significant influence on the development and manifestation of educators' types of intelligence. Understanding these differences is important for educational policy makers and administrators because this information can be used in the design of faculty-specific professional development programs and instructional strategies.

Addressing the research question "Is there a statistically significant difference between instructors in terms of their university?", this study, in conjunction with Kandeel's (2016) research, investigated the differences in intelligence levels between instructors and students across various sub-dimensions. While direct comparisons between universities could not be sufficiently established, significant insights were gained regarding intelligence disparities between the two groups. Both studies consistently found that instructors exhibited higher levels of Verbal Language Intelligence and Visual Spatial Intelligence compared to students. Additionally, instructors demonstrated a greater proficiency in Naturalistic Intelligence, Interpersonal Intelligence, and Intrapersonal Intelligence. These findings suggest that the accumulated experience and specialized training that instructors undergo contribute significantly to their development in these intelligence areas.

An intriguing contrast emerged in the Logical Mathematical Intelligence domain, where students outperformed instructors in both studies. This could be attributed to the students' exposure to contemporary educational strategies and curricula that prioritize logical and mathematical reasoning skills, reflecting a shift in teaching methodologies. The overarching conclusion from these studies indicates that instructors generally possess higher levels of intelligence across multiple sub-dimensions than students. This disparity can be largely attributed to the comprehensive training, ongoing professional development, and practical experience that instructors accumulate over time. These factors play a critical role in enhancing various intelligence skills.

However, it is essential to recognize that intelligence is a complex and multifaceted construct. While educational background and professional experience are influential, they are not the sole determinants of intelligence. Factors such as individual cognitive abilities, learning environments, and personal experiences also significantly shape one's intelligence profile. These findings have important implications for the education sector. They underscore the value of continuous professional development for instructors and highlight the dynamic nature of intelligence in educational settings. Future research could explore the specific aspects of teacher training and professional experiences that most effectively contribute to the development of these intelligence skills. Additionally, investigating the evolving intelligence profiles of students in response to modern educational practices could provide further insights into how education systems can adapt to foster diverse intelligence capabilities effectively.

In the endeavor to compare intelligence levels between instructors and students, the studies conducted by Salem, A. A. (2013), and the current research yield crucial insights into the similarities and differences across various intelligence sub-dimensions. Both investigations consistently reveal that instructors possess higher levels of Verbal Language Intelligence compared to students, suggesting enhanced communication and language skills among educators. This proficiency is likely a result of their extensive experience in teaching and communicating complex concepts, highlighting the critical role of language skills in the teaching profession. This finding is supported by Rattan et al. (2012), who observed high competence among instructors in a competitive private university, and is in line with the idea of enhanced intelligence among instructors, as well as with the findings of the present study. Additionally, the study by Valente et al. (2018) contributes further evidence by examining the impact of teachers' emotional intelligence on classroom discipline management, suggesting a link between emotional intelligence and teaching effectiveness. The research by Yüksel and Geban (2014) underscores the correlation between emotional intelligence levels and academic achievement, indicating that instructors' higher emotional intelligence may enhance their verbal language intelligence. Furthermore, the study by Filiz (2020) explores the connection between effective communication skills and verbal intelligence levels, emphasizing the importance of communication abilities in instructors. Overall, these studies collectively support the assertion that instructors exhibit higher levels of verbal language intelligence than students, attributed to their extensive teaching experience, effective communication skills, and potentially higher emotional intelligence, all contributing to their expertise in verbal language intelligence.

The present study finds students to exhibit higher levels of Logical-Mathematical Intelligence compared to instructors, a finding corroborated by Zaiyar et al. (2020) and Nurlaily et al. (2018). However, Salem, A. A. (2013) did not investigate this specific comparison, suggesting potential variations in mathematical and logical abilities between different groups of instructors and students, possibly influenced by evolving educational curricula and teaching methodologies. This discrepancy underscores the necessity for further research into the distinct differences in logical-mathematical intelligence between instructors and students.

Additionally, research by Campos et al. (2019) and Gani et al. (2017) consistently indicates that instructors demonstrate superior Visual-Spatial Intelligence compared to students. This suggests that instructors are more skilled in visual perception, imagination, and spatial reasoning, abilities integral to various teaching and learning contexts. These findings are in line with the current study, accentuating the advanced visual-spatial intelligence of instructors compared to students.

While no significant differences in Musical Rhythmic Intelligence between instructors and students were observed in this analysis, Salem, A. A. (2013) did not address this intelligence subscale. This observation suggests that musical and rhythmic abilities might be relatively consistent across the two groups, potentially reflecting the universal nature of these skills. In summary, these studies collectively support the notion that students demonstrate higher levels of Logical-Mathematical Intelligence than instructors, while instructors show superior Visual-Spatial Intelligence. Further research is warranted to delve into the specific variations in mathematical and logical abilities between instructors and students.

Salem, A. A. (2013) observed that instructors possess higher levels of Natural Intelligence compared to students, indicating an enhanced ability to understand and engage with the natural environment. Moreover, both studies concluded that instructors excel in Interpersonal Intelligence, underscoring their proficiency in understanding and effectively interacting with others. Additionally, it was discovered that instructors have higher levels of Intrapersonal Intelligence than students. This suggests that instructors exhibit greater self-awareness, introspection, and emotional intelligence, which are vital attributes for effective teaching and personal development.

Regarding Total Intelligence Behavior, disparities between instructors and students were noted in both studies. This implies that overall intelligence levels might vary between these two groups, influenced by factors such as professional experience, educational background, and personal development. The hypothesis that intelligence levels could differ between instructors and students, shaped by aspects like professional experience and educational background, is supported by research in the field. For instance, Rattan et al. (2012) highlighted high competence among instructors at a competitive private university, suggesting the potential impact of professional experience and educational background on intelligence levels. Furthermore, a study by Evans et al. (2021) demonstrated improvements in posttest scores among all student groups, indicating variations in intelligence levels among different demographics. In addition, research by Xu (2018) emphasized the significance of understanding the relative impacts of part-time adjuncts in community colleges, pointing to the potential influence of professional experience on intelligence levels. Collectively, these findings support the concept that intelligence levels may indeed vary between instructors and students, influenced by a combination of factors including professional experience, educational background, and personal development.

The findings from these studies emphasize the multifaceted nature of intelligence in the educational context. They reveal that instructors generally exhibit higher levels in certain intelligence sub-dimensions, which can be attributed to their professional training, experience, and the demands of the teaching profession. Conversely, students excel in areas like Logical-Mathematical Intelligence, reflecting the influence of contemporary educational approaches. For a more holistic understanding, future research could explore how these intelligence profiles evolve over time and are influenced by various educational and developmental factors. Such insights would be invaluable for tailoring educational strategies and professional development programs to enhance the diverse intelligence capabilities of both instructors and students in educational settings.

The comprehensive analysis of the studies conducted by ourselves and Baum et al. (2014) provides an insightful synthesis of intelligence differences between instructors and students. While there are overarching similarities in intelligence patterns across the two groups, notable differences in specific sub-dimensions have emerged, underscoring the diversity in intelligence abilities among different populations. These findings underscore the importance of recognizing and understanding the unique intelligence profiles of both instructors and students. Such knowledge is pivotal as it directly influences their respective approaches to teaching and learning. Appreciating these differences can lead to more effective educational strategies, tailored to leverage the strengths and address the challenges specific to each group.

This study, in conjunction with Baum et al.'s (2014) research, focused on a range of intelligence subscales, including Verbal Language Intelligence, Logical Mathematical Intelligence, Visual-Spatial Intelligence, Musical Rhythmic Intelligence, Naturalistic Intelligence, Interpersonal Intelligence, Bodily Kinesthetic Intelligence, Intrapersonal Intelligence, and Total Intelligence Behavior. This comprehensive examination allows for a nuanced understanding of the specific cognitive abilities where instructors and students may diverge. The differences observed in the studies may be attributed to various factors, including the characteristics of the sample population, the measurement instruments used, and the specific educational contexts in which the studies were conducted. These variables can significantly influence the outcomes of such research, highlighting the need for careful analysis and comparison of results from different studies.

A thorough comparison and analysis of these studies are essential to develop a more complete understanding of the intelligence profiles of instructors and students.

By considering the broader context and specific attributes of each study, we can gain deeper insights into the nuances of intelligence across these two critical groups in the educational setting. The insights garnered from these analyses have significant implications for educational practice. Recognizing the varied intelligence strengths and needs of instructors and students can inform the development of more personalized and effective teaching methods, curriculum designs, and professional development initiatives.

In conclusion, the exploration of intelligence differences between instructors and students is a complex yet crucial aspect of educational research. The findings from these studies emphasize the need for a holistic and nuanced approach to understanding and harnessing the unique intelligence profiles within the educational environment. Such an approach is vital for fostering an educational landscape that is responsive to the diverse cognitive needs and potentials of both educators and learners.

The comparative analysis of Baum et al.'s (2014) study and the current research offers a detailed exploration of intelligence levels between instructors and students, shedding light on both similarities and differences. This discussion also delves into the potential educational implications of these findings and factors that might contribute to the observed differences in intelligence profiles. Both Baum et al. (2014) and this study consistently found that instructors possess higher levels of Verbal Language Intelligence than students. This similarity suggests that instructors, by virtue of their professional roles and experiences, develop stronger skills in language and communication.

In the realm of Logical Mathematical Intelligence, Baum et al. (2014) reported no significant difference between instructors and students, whereas this study highlighted that students had higher levels in this domain. This discrepancy could indicate a generational shift in educational focus or variations in curricular emphasis. Similarly, for Visual Spatial Intelligence, Baum et al. (2014) found no significant difference, while this study indicated higher levels among instructors. This suggests potential variations in the development of spatial reasoning skills across different educational contexts.

Regarding Musical Rhythmic Intelligence, both studies concurred with no significant differences between instructors and students, implying a potential uniformity in musical and rhythmic abilities across these groups. Similarly, for Naturalistic Intelligence, both studies observed higher levels among instructors, which might reflect their greater exposure and interaction with diverse natural environments through professional experiences. In the domains of Interpersonal and Intrapersonal Intelligence, both studies agreed on higher levels for instructors. This finding underscores the importance of social understanding and self-awareness in the teaching profession. The studies diverge in their findings on certain intelligence domains, including Logical Mathematical Intelligence, Visual Spatial Intelligence, and Bodily Kinesthetic Intelligence. These variations could be influenced by factors like sample characteristics, the methodologies employed, or the educational settings of the studies. Further research is warranted to delve deeper into these differences, exploring how factors such as teaching methodologies, curricular designs, and teacher-student dynamics influence these intelligence areas.

The insights from these studies highlight the need for tailored educational strategies that consider the unique intelligence profiles of both instructors and students. Understanding these profiles can guide the development of more effective teaching approaches, curriculum designs, and professional development programs. In conclusion, the comparative analysis of Baum et al. (2014) and the current study provides a nuanced understanding of the intelligence profiles of instructors and students. Recognizing the strengths and developmental areas in these profiles is crucial for advancing educational practices that are responsive to the cognitive needs and potentials of both educators and learners. Such an approach is fundamental for fostering a dynamic and inclusive educational environment.

The studies by Algadheeb (2015) and ours, along with the research conducted by Tawalbeh (2016), contribute to this field by providing a comparative analysis of various intelligence subscales between these two groups. Across these studies, a pattern emerges where instructors generally exhibit higher levels of intelligence in certain subscales compared to students.

Both Algadheeb's(2015) study and ours identify that instructors possess higher levels of Verbal Language Intelligence, suggesting enhanced linguistic and communicative abilities. In contrast, students were found to have higher Logical Mathematical Intelligence, indicating stronger skills in logical reasoning and problem-solving, particularly in mathematical contexts. This difference could be a reflection of the evolving educational curriculum focusing more on developing these skills among students.

Regarding Visual Spatial Intelligence, Algadheeb found no significant difference, while the current study indicated that instructors outperform students in this area. This could imply that instructors, through their professional experience, develop better spatial reasoning and visualization skills. The findings related to Musical Rhythmic Intelligence were consistent in both this study and Algadheeb's, showing no significant differences between instructors and students, which may suggest a uniformity in musical and rhythmic abilities across these groups.

When examining Naturalistic Intelligence, both studies observed that instructors have a higher understanding and connection with the natural world compared to students. Similarly, in terms of Interpersonal Intelligence, instructors were seen to excel, possibly due to their roles requiring effective social interaction and understanding of others. However, when it comes to Bodily Kinesthetic Intelligence, no significant differences were noted, indicating similar levels of physical coordination and skill between instructors and students. The findings regarding Intrapersonal Intelligence across these studies were quite telling, with instructors consistently showing higher levels, suggesting greater self-awareness and emotional intelligence. This could be attributed to the introspective nature of teaching as a profession.

Additionally, both Algadheeb's research and ours found that instructors have a higher level of Total Intelligence Behavior than students. This comprehensive intelligence might stem from the varied skills and knowledge that instructors acquire through their education and professional development. These insights are crucial for understanding the dynamics of teaching and learning environments. The higher intelligence levels in various subscales observed in instructors could be attributed to their years of training, professional experience, and continuous development in their field. Meanwhile, the higher levels of Logical Mathematical Intelligence among students highlight the impact of modern teaching methods and curriculum designs.

However, it's important to note that these studies, while revealing significant trends, may have variances due to different sample sizes, methodologies, or contexts. Therefore, further research is essential to explore these differences in more detail and understand the broader implications for education. Such investigations will not only confirm these findings but also provide a more generalized view of intelligence profiles in different educational settings, contributing to the development of tailored educational strategies and practices that cater to the diverse cognitive needs of both instructors and students.

6. CONCLUSION

This thesis embarked on a comprehensive exploration of intelligence levels, examining various facets of this multifaceted trait across different stages, from gender and high school backgrounds to faculties, universities, and the distinctions between instructors and students. The research journey was structured around several key questions, each designed to uncover the intricate relationships between intelligence, education, and experience.

The initial chapter of this thesis delved into the realm of gender differences in intelligence preferences among students. Through a meticulous review of existing studies, it became evident that gender indeed plays a significant role in shaping preferences for specific intelligences. Studies consistently demonstrated that male and female learners exhibit distinct cognitive preferences, often influenced by a combination of societal, developmental, and biological factors. This recognition of gender-based differences in cognitive styles and learning preferences is crucial for educational practitioners. It underlines the need for gender-sensitive pedagogical approaches that acknowledge and embrace these differences, rather than adopting a one-size-fits-all strategy. By tailoring educational methods to suit diverse learning styles, educators can enhance the learning experience and academic achievement of all students, regardless of gender.

Subsequently, the second chapter of this thesis explored the subtleties of faculty-related differences in students' intelligence profiles. It was revealed that there are indeed statistically significant variations between faculties in terms of the distribution of students. This finding suggests that the academic environment, including the specific disciplines and pedagogical approaches of each faculty, plays a significant role in shaping students' cognitive abilities and preferences. For instance, students in faculties such as Engineering and Architecture may develop heightened spatial intelligence due to the nature of their coursework, while those in Arts and Sciences may exhibit stronger verbal and naturalistic intelligences. These variations point to the necessity of faculty-specific educational strategies that recognize and utilize the unique cognitive strengths of students. Further research in this area could focus on identifying the precise educational practices and environmental factors within faculties that contribute to these intelligence variations. Such insights would be invaluable in guiding curriculum development, teaching methods, and resource allocation, ultimately leading to more effective and personalized educational experiences for students.

The investigation of high school backgrounds constituted the third chapter of this thesis. This chapter emphasized that high school experiences should be considered as a critical factor shaping students' intelligence profiles. However, the complexity of these relationships became apparent as other factors beyond the high school environment, such as socio-economic background, cultural influences and individual learning experiences, also emerged as important contributors. This multifaceted perspective emphasizes the importance of a holistic approach to understanding students' intelligence development and recognizes high school background as one of many interacting elements.

In its quest to understand intelligence differences among educators, it has examined gender differences among educators. Unfortunately, this stage yielded insufficient information to draw concrete conclusions regarding gender-based distinctions in intelligence levels among instructors. The limited data in this area highlights a significant gap in educational research, suggesting a need for more focused studies to explore how gender influences the cognitive profiles of educators. This gap in knowledge presents an opportunity for future research to delve deeper into the potential impact of gender on teaching styles, pedagogical approaches, and professional development needs of instructors. Understanding these aspects could lead to more personalized support systems for educators, enhancing their teaching effectiveness and professional growth.

The study also examined the differences in intelligence levels among the trainers according to the faculties they work in. Building upon the findings of Díaz-Posada, Varela-Londoño, and Rodríguez-Burgos (2017), and further supplemented by the research conducted in this study, significant variations in intelligence subscale levels among instructors from different faculties were observed. For example, instructors in faculties like Engineering and Architecture exhibited higher spatial intelligence, whereas those in the Faculty of Arts and Sciences showed stronger verbal and interpersonal intelligences. This diversity in cognitive profiles underscores the importance of tailoring professional development and support to the unique characteristics of each faculty. By recognizing and addressing the specific intelligence strengths and needs of educators in different disciplines, institutions can promote more effective teaching practices and foster an environment conducive to both educator and student growth. This stage of the thesis calls for further research into faculty-specific pedagogical needs and the development of targeted professional development programs that cater to the diverse cognitive profiles of educators.

Regrettably, the exploration of university-related differences among instructors in this thesis did not yield sufficient data to draw definitive conclusions regarding the impact of the university where instructors work on their intelligence profiles. This lack of comprehensive data suggests a significant gap in current educational research. Understanding the influence of university environments on instructors ' cognitive abilities could be crucial for optimizing teacher training programs and developing targeted support strategies. This stage of the research highlights a potential avenue for future investigations. Future studies could focus on how the academic culture, teaching methodologies, and professional development opportunities offered by different universities shape the intelligence profiles of their faculty. Such research would not only fill existing gaps in our understanding but also provide actionable insights for higher education institutions to enhance their teaching staff's cognitive and pedagogical capabilities.

In the final part of this thesis, the levels of intelligence between instructors and students were compared comprehensively in terms of various sub-dimensions. The synthesis of findings from multiple studies indicated that instructors generally exhibited higher levels of intelligence than students in several dimensions, highlighting the potential influence of training, experience, and specialized knowledge on cognitive abilities. This stage emphasized the intricate nature of intelligence and the importance of acknowledging its multifaceted aspects when addressing teaching and learning practices. In conclusion, this thesis embarked on a multifaceted journey through stages of exploration, shedding light on the complex interplay between intelligence, education, and experience. Each stage contributed to our understanding of how gender, high school backgrounds, faculties, and the distinctions between instructors and students shape intelligence profiles. These findings offer valuable insights for educational stakeholders, policymakers, and researchers to tailor interventions, curricula, and professional development opportunities that cater to the unique needs of diverse learners and educators. While this thesis has uncovered significant patterns, it also emphasizes the ongoing need for further research and investigation to deepen our understanding of intelligence in the educational context.

In this study, notable differences in intelligence levels were highlighted across various faculties and between instructors and students, underlining the diversity of cognitive abilities within educational settings. This diversity calls for a strategic reevaluation of pedagogical practices within educational institutions, emphasizing the need for approaches that recognize and cater to these diverse forms of intelligence. The application of varied teaching strategies and assessment methods that align with different intelligences becomes crucial in fostering inclusive and effective learning environments.

With the observed variances in intelligence profiles, educators are encouraged to embrace a more personalized approach to instruction. This involves gaining a deep understanding of students' unique intelligence profiles, including their strengths and areas for improvement. Such insights are invaluable for instructors in designing lesson plans and instructional methods that resonate with individual learning styles and needs, thereby enhancing the overall educational experience. Moreover, the disparities in intelligence levels across faculties, as revealed by this study, suggest a need for an interdisciplinary approach in pedagogical practices. Encouraging collaborations among different faculties can foster a rich exchange of knowledge and perspectives. Such interdisciplinary efforts can lead to the development of integrated curricula and collaborative projects, enabling students to engage with and develop a broad spectrum of intelligences. This approach not only enriches students’ academic experiences but also prepares them for the complexities of the real world, where multidisciplinary knowledge is increasingly valued.

Furthermore, the study highlights distinct differences in verbal language intelligence between instructors and students. Addressing this gap requires a focus on enhancing students' communication skills. Educational practices should prioritize activities that improve speaking, listening, reading, and writing abilities. Incorporating diverse communication-focused activities, such as debates, presentations, group discussions, and even creative writing exercises, can significantly boost students' oral language proficiency. Such practices not only aid in the development of communication skills but also contribute to students' confidence and overall ability to articulate their thoughts and ideas effectively.

In light of the study's observation that students exhibit higher logical mathematical intelligence than instructors, there is a clear indication for pedagogical practices to focus on strengthening this intelligence among educators. This can be achieved through targeted professional development programs that emphasize logical reasoning and mathematical problem-solving. instructors can benefit from engaging in training that integrates complex problem-solving tasks, exercises in mathematical reasoning, and logical thinking activities. Such training can not only enhance educators' own skills but also enable them to more effectively nurture students' logical mathematical intelligence through their teaching methodologies.

Moreover, the study reveals a higher level of visual-spatial intelligence among instructors in comparison to students. To address this gap, pedagogical strategies should incorporate activities that foster spatial awareness and visualization skills in students. This can involve the use of visual aids, such as diagrams and maps, graphic organizers to aid in the organization of thoughts and ideas, and tasks that require spatial reasoning. Furthermore, introducing hands-on activities, like model-building projects or experiments that involve manipulating objects in space, can be highly beneficial in enhancing students' visuospatial intelligence.

The investigation also noted higher levels of interpersonal intelligence among educators compared to students. To bridge this gap, educational practices should provide ample opportunities for students to develop their interpersonal skills. This could include incorporating more group work and collaborative projects into the curriculum, as well as mechanisms for peer feedback and classroom discussions. instructors can foster a classroom environment that encourages open communication, empathy, and cooperative learning, allowing students to practice and enhance their interpersonal abilities in a supportive setting.

Similarly, the research findings indicate elevated levels of intrapersonal intelligence among instructors, in contrast to students. Pedagogical practices, therefore, should include activities that encourage students to develop self-awareness, self-reflection, and self-regulation. Techniques such as journaling can provide students with a means to reflect on their thoughts and feelings. Goal-setting activities can help them in understanding and working towards their personal objectives, and mindfulness practices can aid in developing self-regulation and emotional awareness. These techniques can be integrated into the curriculum in various ways, such as through dedicated sessions or as part of regular classroom activities.

Overall, it is critical for educators to tailor these pedagogical practices to fit their unique instructional contexts. This involves considering the specific needs, backgrounds, and learning styles of their students to ensure that these practices effectively cater to the diverse intelligence profiles within their classrooms. By doing so, educators can create a more dynamic, inclusive, and effective learning environment that recognizes and cultivates the multiple intelligences of all students.

Investigating the relationship between instructors' and students' intelligence levels and their academic achievement is a critical area of exploration that could provide valuable insights into the effectiveness of intelligence in different educational settings. This research could illuminate how cognitive abilities correlate with academic success and inform strategies to enhance educational outcomes. Such an investigation could involve longitudinal studies tracking students' academic progress in relation to their intelligence profiles, or cross-sectional analyses comparing intelligence levels with current academic performance.

Additionally, examining whether the faculties in which instructors are trained influence specific intelligence subscales is essential. For instance, it would be enlightening to analyze whether instructors from the Faculty of Arts and Sciences demonstrate higher levels of Natural Intelligence or if those from the Faculty of Communication exhibit elevated levels of Interpersonal Intelligence and how these attributes contribute to their performance in their respective fields. This research could involve comparing intelligence profiles of instructors from different faculties and correlating these profiles with their teaching effectiveness or professional accomplishments.

The identification of additional variables contributing to higher levels of intelligence is crucial. Such variables may encompass diverse elements like instructional strategies, curriculum development, participation in extracurricular activities, and environmental aspects including classroom environments and the availability of school resources. Understanding these influences could help educators and policymakers design more effective teaching practices and learning environments that foster the development of various intelligences. Comparing the intelligence levels of instructors and students across different education systems, including public and private schools or varying countries, would offer a broader perspective on how cultural and educational factors influence intelligence. Such a comparative study could reveal insights into the impact of different educational policies, cultural attitudes towards education, and resource allocation on the development of intelligence.

Exploring how intelligence levels relate to other cognitive abilities such as problem-solving skills, creativity, or critical thinking is crucial. This investigation could help determine whether intelligence operates as an independent factor or in conjunction with other cognitive abilities to influence academic performance and professional success. It could involve multidimensional assessments that not only measure intelligence but also evaluate other cognitive skills and their interrelationships. Finally, implementing and evaluating interventions aimed at improving specific intelligence subscales is an important area of research. For example, introducing targeted programs to develop Musical Rhythmic Intelligence and subsequently assessing their impact could provide empirical evidence on the effectiveness of such interventions.

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