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SOSYAL BİLİMLER ENSTİTÜSÜ

MÜTERCİM TERCÜMANLIK ANABİLİM DALI

ÇEVİRİBİLİM BİLİM DALI

A MODEL FOR TECHNICAL TRANSLATION TRAINING IN UNIVERSITY DEPARTMENTS OF TRANSLATION & INTERPRETATION IN LINE WITH TRANSLATION MARKET REQUIREMENTS IN TURKEY

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS……i

TABLE OF CONTENTS ……...ii

LIST OF TABLES……viii

LIST OF FIGURES……....ix

I. INTRODUCTION

1.1. Background to the Study…….1
1.2. Problem Statement……..2
1.3. Aim of the Study…….4
1.4. Scope of the Study……..4
1.5. Research Questions…….5
1.6. Limitations……..6
1.7. Assumptions……6

II. REVIEW OF LITERATURE

2.1. Definition and Scope of Technical Translation……..8

2.1.1. Significance of Technical Writing……..11
2.1.2. Properties of Technical Texts and Documentation…….12

2.1.3. The Difference Between Scientific and Technical Translation……..17

2.1.4. Technical Translation within Theoretical Framework……...18

2.1.5. Fallacies , Dogmas and Misconceptions about Technical Translation……..20

2.1.6. The Significance of and Demand for Technical Translation…….23

2.2. Training of Technical Translation…….……..25

2.2.1. A Short History of Approaches to Technical Translation Training…….…..26

2.2.1.1. Language-oriented Approach…….….27

2.2.1.2. Technical Knowledge-oriented Approach……..…….28

2.2.1.3. Teaching Languages for Special Purposes (LSP)……...…28

2.2.2. Identifying Students' Needs for a Better Translation Training……...29

2.2.3. Identifying Needs and Requirements of the Translation Market for a Better Translation Training…….....30

2.2.4. Selection of Instructors for the Training of Technical Translation…….33

2.2.5. Qualifications of Trained Technical Translators…….35

2.3. Job Descriptions of Technical Translators and Technical Writers……35

2.4. Significance of Technical Communication Skills for Technical Translation……39

2.5. Technical Translation and CAT Tools……..40

2.5.1. Terminology Management Systems……...42

2.5.2. Translation Memory Systems……44

2.5.3. Content Management Systems……...45

III. METHOD

3.1. Subjects……47

3.2. Curriculum of Translation and Interpretation Department in Atılım University and Hacettepe University……48

3.2.1. Curriculum of Atılım University……48

3.2.2. "Optimale" Membership of Atılım University……....51

3.2.3. Fédération Internationale des Traducteurs / International Federation of Translators (FIT)……54

3.2.4. Curriculum of Hacettepe University……...56

3.3. Translation Offices in Ankara……59

3.3.1. Nova Language Services…….59

3.3.2. Hacettepe Translation Services……...60

3.3.3. A&G Translation Services……..60

3.3.4. Pen Translation Services…….60

3.3.5. İkarus Translation Services…….61

3.3.6. Gürsoy Translation Services……...61

3.3.7. İmaj Translation Services……61

3.3.8. Net Translation Services…….62

3.3.9. Yöntem Translation Services……..62

3.3.10. Ağ-ka Translation Services…….…..62

3.3.11. Mak Translation Services……..63

3.3.12. Barış Translation Services…….63

3.3.13. Fırat Translation Services……..64

3.3.14. Yedi Kıta Translation Services…….64

3.3.15. Çankaya Translation Services……...64

3.3.16. Elçi Grup Translation Services…….65

3.3.17. Akdil Translation Services……65

3.3.18. Sekreter Büro Translation Services……...65

3.3.19. Ender Translation Services……66

3.3.20. Süreyya Translation Services……66

3.4. Instruments…….66

3.4.1. Questionnaire Distributed to Atılım University and

Hacettepe University Students……..67

3.4.2. Questionnaire Distributed to Translation Offices in Ankara……..67

3.4.3. Interview with the Instructors…….67

3.4.4. Definition of Instruments Used for Analysis……..68

IV. ANALYSIS AND DISCUSSION OF DATA

4.1. Results of the Questionnaire Administered to Students…….69

4.1.1. Students' Fields of Interest in Translation……..69

4.1.1.1. Atılım University…….70

4.1.1.2. Hacettepe University……71

4.1.1.3. Atılım and Hacettepe University…….72

4.1.2. Preferred Foreign Languages Other Than English…….73

4.1.2.1. Atılım University…….73

4.1.2.2. Hacettepe University……73

4.1.2.3. Atılım and Hacettepe University……..73

4.1.3. Students' Views About Requirements of Technical Translation

and Training of Technical Translation at University……...74

4.1.3.1. Atılım University…….74

4.1.3.2. Hacettepe University……75

4.1.3.3. Atılım and Hacettepe University…….76

4.1.4. Students' Self Efficacy Beliefs in Technical Translation……...77

4.1.4.1. Atılım University…….78

4.1.4.2. Hacettepe University……78

4.1.4.3. Atılım and Hacettepe University……..79

4.1.5. Students' Views about the Qualifications of Instructors of

Technical Translation……79

4.1.5.1. Atılım University…….80

4.1.5.2. Hacettepe University……80

4.1.5.3. Atılım and Hacettepe University……..81

4.1.6. Students' Views about the Place of Technical Translation in the Market

and the Idea of Working as a Technical Translator after University……82

4.1.6.1. Atılım University…….82

4.1.6.2. Hacettepe University……82

4.1.6.3. Atılım and Hacettepe University…….83

4.2. Results of the Questionnaire Administered to Translation Agencies……83

4.2.1. Translation Services in General and Technical Translation

Services Offered by Translation Agencies in Years…….84

4.2.2. Working System of Translators and Technical Translators……85

4.2.3. Languages Demanded for Translation in General……..86

4.2.4. Languages Demanded for Technical Translation……88

4.2.5. Demands for Different Fields of Translation……..89

4.2.6. Educational Backgrounds of Technical Translators Employed……..91

4.2.7. CAT Tools Used and Required by Translation Agencies…….…..92

4.2.8. Types of Documents and .Materials Demanded in Technical Translation…….93

4.2.9. Opinions of Translation Agencies about Required Qualifications for Technical Translators and Training of Technical Translation at Universities……95

4.2.9.1. Required Qualifications of Technical Translators……95

4.2.9.2. Training of Technical Translation at Universities……96

4.3. Evaluation of Interviews with the Instructors……97

4.4. Discussion……101

V. SUGGESTED MODEL FOR THE TRAINING OF TECHNICALTRANSLATION……..106

VI. CONCLUSION……111

VII. RECOMMENDATIONS……113

REFERENCES……114

ÖZET……..117

ABSTRACT……118

APPENDICES……119

APPENDIX A……119

APPENDIX B……122

APPENDIX C……126

LIST OF TABLES

Table 1. Fields of Translation Which Students of Atılım University are Interested in ……..70

Table 2. Fields of Translation Students of Hacettepe University are Interested in ……..71

Table 3. Fields of Translation Which Students of Both Hacettepe and Atılım University are Interested in ……..72

Table 4. Experiences of Translation Agencies in Translation / Technical Translation Services ……85

Table 5. Working System of Translators and Technical Translators Employed in Participant Translation Agencies 86

Table 6. Demanded Languages for Translation in General ……87

Table 7. Demanded Languages for Technical Translation ……...88

Table 8. Commonly Demanded Fields of Translation ……90

Table 9. Technical Translatots' Educational Background Employed in the Translation Market ……92

Table 10. CAT Tools Used by Translation Agencies ……93

Table 11. Type of Materials within Technical Context Demanded for Translation …….94

LIST OF FIGURES

Figure 1. Text Types Suggested by Wright and Wright (1993) ……16
Figure 2. Curriculum of the Department of Translation and Interpretation in Atılım University ……48
Figure 3. Curriculum of the Department of Translation and Interpretation in Hacettepe University ……56
Figure 4. Suggested Model for the Training of Technical Translation at University Departments of Translation and Interpretation ……..110

I. INTRODUCTION

This part briefly covers the stages followed in the praparation of the thesis. In this respect, the aim of the study, problem situation, research questions, hypotheses and limitations are discussed in relation to each other. An overview of the study is given in the light of gathered data during the preparation phase.

1.1 . BACKGROUND TO THE STUDY

The study is based on four main pillars jointly contributing to form a model which could be convenient in the actual translation teaching programs. First of all, a comprehensive research was carried out on technical translation, starting from the ongoing debates aspiring to clarify the scope and extent of what is called 'technical'. Technical documentation, technical texts and their prominent style, common fallacies in defining and categorizing technical texts and documents were revealed as the starting point.

For the second pillar of the study, commonly accepted profiles of technical translators, requirements and qualifications for technical translators were searched from various sources. Technical writers, experts and technical translators were described from different points of view in other studies, so they were examined and discussed to contribute to a common profile for technical translators.

Technical translation teaching, the curriculum, profiles and qualifications of academists who teach technical translation, needs analysis for translation students and facilities for technical translation formed the third pillar of the study. Since there

exist a great many debates on who should teach technical translation and how, different views were analyzed and categorized to adopt an approach for the study.

Finally, the fourth pillar of the study includes demands, requirements of the translation market for technical translation and their perceptions of technical translators. Recent surveys and articles were examined to reach common views and findings about demands, requirements, and expectations of translation market for technical translation and technical translators , which could shed light to the survey in this study.

1.2 . PROBLEM STATEMENT

As an interdisciplinary field of science, translation studies has many gates opening to other fields and letting them expand, develop, and renew themselves all over the world. Having such a crucial function, translation studies has been in the focus of questions in terms of the efficacy of translators, interpreters and translation trainers/trainees; curriculum of the translation and interpretation programs; bilingualism and multilingualism, among many others.

Expertise in the field of texts to be translated or in the cultural background to be interpreted has long remained an uncovered issue in the translation market. Some scholars claim that a translator doesn’t have to be an expert for a specialized text to be translated as long as s/he has the knowledge at a satisfactory level while others strictly adopt the idea that a translator has to focus on a single certain field of study and specialize in that to get successful outputs. Technical translation has a unique place in that it combines the theory and practice in line with the demands and

requirements of translation market. Therefore, translators of technical texts or documents are to be treated within this circle, which requires adopting both wholistic and specific approaches when evaluating the challenges and suggesting recommendations.

Now that the developments in technology and science gain speed to an unpredictable extent, the share of technical translation in the translation market grows each and every day. Such growth undoubtedly brings about different emerging fields of study, new terminology, recently updated data and, most importantly, man and machine power to extend and popularize all to the world. Therefore, qualified technical translators are of top priority to meet the needs. However, technical translators who confine themselves to the traditional methods of translating and ignore the recently developed tools, software and programs for translation, will probably not survive as professional translators.

While emphasizing the rapid change in developments, demands and requirements in the market, one need to consider how important it is today to develop a curriculum in training the translators under real life-like conditions with the best practices possible. In order for such a curriculum to meet the needs of translation market by training qualified translators, universities need to take market demands and requirements into account and develop needs analyses regularly for their students.

To this end, building a model for technical translation training in the light of market demands and requirements, and adapting it to the curriculum of translation and interpretation departments may well contribute to the field.

1.3 . AIM OF THE STUDY

The extent of combining theory and practice in translation training has always been questioned by reseachers in this field. Being interdisciplinary, translation studies requires practicing in many different fields, one of which is the technical translation. Technical translation stands as one of the most important pillars of translation studies in this era of rapidly changing technology and science. In this sense, this study aims to define the gap between technical translation training on academic grounds and demands of the translation market where all is to be put into practice and experienced in the real life. Within the limits determined, recommendations to the challenges are put forward and by doing so, a model is offered as a medium.

1.4. SCOPE OF THE STUDY

This study sheds light to a comprehensive investigation on revealing the existing challenges in technical translation training offered by university departments of translation and interpretation regarding the requirements and demands of translation market in Turkey. The basis of the study is built upon deciding on a medium of approximating technical translation training offered by universities to the market requirements and demands through the responses to two questionnaires designed particularly for senior students in translation and interpretation departments and the officials in the bureau of translation.

The study is grounded on an enormous amount of information gathered from a number of books and relevant research. In order to contribute to the technical

translation training offered by universities and meeting the needs of the market at a satisfactory level, the study adopts a comprehensive survey on three pillars of the field.

1.5. RESEARCH QUESTIONS

While adopting the aim of revealing challenges in both technical translation training and the translation market, and trying to put forth a model which may help find a middle ground, this thesis seeks responses to the following research questions :

1) To what extent are the demands and requirements of the translation market compatible with the technical translation training curriculum at university departments of Translation and Interpretation in terms of translators' qualifications, experience and education ?
2) What's the priority and load of technical translation among others in the translation market ?
3) What is the extent and load of technical translation training within the curriculum of university departments of translation and interpretation ?
4) To what extent are the expectations and demands of the students compatible with the curriculum of technical translation training in university departments of translation and interpretation ?

In order to get answers to the above questions, a questionnaire was conducted to senior students studying translation and interpretation and another to translation agencies in Ankara. Besides, an interview was carried out with three academists teaching technical translation in Atılım and Hacettepe University.

1.6. LIMITATIONS

The limitations of the study are as follows:

1) This study focuses on technical translation and training among many other fields of translation studies.
2) The data gathered was limited to the responses of senior students studying translation and interpretation (English-Turkish based) at Atılım University, Hacettepe University, and the translation agencies in Ankara. So, it cannot be generalized to the whole country. Ankara is the second biggest city which is home to leading universities offering translation training at undergraduate and postgraduate levels and translation agencies serving in the capital of the country.
3) The data about the curriculum at two universities was gathered from their websites.

1.7. ASSUMPTIONS

The assumptions of this study are as follows:

1) The questionnaires are comprehensive enough to get sufficient data and they really serve the very purpose of the study.
2) The information about course details, objectives and curriculum on the websites of universities reflect the actual scope and conditions of technical translation training offered.
3) It’s assumed that students and translation agencies have provided valid and accurate information in the questionnaires.

4) Translation agencies are assumed to have an average working system and workload in Turkey's standards.
5) The senior students to participate in the study have a sufficient knowledge about the scope of technical translation.
6) The items of both questionnaires to be applied were translated into Turkish, considering that it would increase their reliability.

II. REVIEW OF LITERATURE

2.1. DEFINITION AND SCOPE OF TECHNICAL TRANSLATION

Developments in today's science and technology have reached such a point that languages need to be refreshed and enriched to catch up with all changes and remain lively. As languages enable meeting and interaction of world cultures through different channels, translation plays a crucial role as a medium. This role of translation took its place at the very beginning of the history. In order to enlighten and make use of the function of translation, linguists and scientists put forth a number of theories which made translation an interdisciplinary field of science.

Among many other types of translation, technical translation was exposed to the most controversial ideas in terms of its scope, the way it is done, and the profile of translators. The very first issue was about what is to be regarded as 'technical'.

The term 'technical' in Longman Dictionary of Contemporary English is defined as "connected with knowledge of how machines work", "technical language is language that is difficult for most people to understand because it is connected with one particular subject or used in one particular job" (Longman Dictionary of Contemporary English). The definition of the term in Oxford Advanced Learner's Dictionary is given as "connected with the practical use of machinery, methods, etc. in science and industry", "connected with the skills needed for a particular job, sport, art, etc", "connected with a particular subject and therefore difficult to understand if you do not know about that subject". Dictionaries offer different definitions for the

terms ‘technical’ and ‘technical language’. Nevertheless, all definitions have one thing in common: ‘a field being particular and requiring specific knowledge’.

Among many different categorisations of technical translation, Newmark (1988) places technical translation as one part of specialised translation and regards institutional translation, the area of politics, commerce, finance, government etc. as the other part of it. Newmark also claims that technical translation is primarily distinguished from other forms of translation by terminology. As Aksoy (2005) states, technical translation covers the experimental and descriptive texts in the field of science and technology. She also emphasizes the goals of technical translation being clarity, concision and accuracy.

As cited in Wright and Wright (1993), Burton Raffel divides translation into three basic categories according to the source text; nonliterary prose (including technical material), literary prose, and poetry. According to Raffel, all three require the translator to produce “a comprehensible document” in the target language, to convey the context of the original document, and to grapple “with syntactical and lexical features of both” the source and target languages. Knowing and conveying the context of the original document is crucial (p.12). No matter how translation is categorized, all translated texts are expected to have some common features: being comprehensible, linguistically correct related with appropriate register, reflecting the aims and ideas of the source text.

There are many different views on the types of technical texts and their translations. While some argue that a text may well be categorized as technical as

long as it has a terminology specific to the related field; some others limit technical translation with only texts about technology.

According to Wright and Wright (1993), technical translation includes not only the translation of texts in engineering or medicine, but also such disciplines as economics, psychology and law. These texts require not only a firm mastery of both the source and target languages, but also at least an informed layman's (or even journeyman's) understanding of the subject field treated by the text, coupled with the research skills needed to write like an expert on the leading edge of technical disciplines (p.1). Having a substantial amount of knowledge along with organizational and writing skills like an expert in a particular discipline became a commonly accepted prerequisite for technical translation, especially over the past few decades. As it is really hard for translators to specialize both linguistically and technically, translation industry and departments usually get into a dilemma in the translation of technical texts. Such a dilemma may lead to a negligence in the practice of technical translation, both in universities and in translation agencies.

In relation to this issue, Byrne (2006) argues that technical translation has long been regarded as the ugly duckling of translation , especially in academic circles. Not particularly exciting or attractive and definitely lacking in the glamour and cachet of other types translation, technical translation is often relegated to the bottom division of translation activity and regarded as little more than an exercise in specialized terminology and subject knowledge. Indeed, these factors, particularly subject knowledge , have in some quarters led to technical translation being feared and loathed, like a modern-day barbarian of the linguistic world (p. 1). In order to clarify the purpose of technical translation, Byrne (2006) explains that the purpose of

technical translation is to present new technical information to a new audience, not to reproduce the source text, *per se*, or reflect its style or language. Technical translation is a communicative service provided in response to a very definite demand for technical information which is easily accessible (in terms of comprehensibility, clarity and speed of delivery).

2.1.1. Significance of Technical Writing

Technical translation and technical writing support each other in the production of a source and target text. Though technical translators are not the ones to create or produce technical texts out of nothing, they transmit them by fully understanding, reorganizing and even correcting the whole material. Therefore, technical writing sheds light to the translation of technical documents.

The National Writers' Union (NWU) in the United States, as cited in Byrne (2006), maintains that there are at least three different types of writing encompassed by the general term "technical writing". The first type is Technology Education, which involves writing about technology for non-technical audiences. The products of this type of writing include hardware and software manuals, system administration guides, reports for lay readers, general interest articles, impact statements etc. The second type of writing is Traditional Technical Writing, which involves writing for a technical audience. Writers in this area usually need a strong technical background to produce the repair and maintenance manuals, scientific papers, programming guides and technical specifications required. The third type is Technology Marketing, which involves writing sales and promotional materials and corporate communications materials for technology companies (p.48). As can be referred from NWU's

categorization of technical writing, it has different phases depending on the register and level of expertise. No matter how experienced or specialized a person is in technology, producing texts and documents requires competency in writing and language.

Wright and Wright (1993) state that clarity, concision, and correctness, the principal stylistic goals of technical writing, are simultaneously those of technical translation; an excellent technical translator is an excellent technical writer (p. 11). The job being to translate a technical document does not lessen a translator's responsibilities and workload. Technical translators are expected to be as competent as technical writers in that the form and purpose of the texts and documents are to be preserved. That purpose also affects the way the texts are written.

According to Kingscott (2002), different types of texts need different types of writing approaches. You would go about translating a patent specification in a different way from translating an instruction manual, because the two documents are aiming to achieve different purposes (p.250). In other words, target population and aim of the target text are of great importance in deciding on an appropriate style. Some texts require practising on the given instructions while others just inform about a particular subject, which shapes the style to be applied.

2.1.2. Properties of Technical Texts and Documentation

Among many other types of texts and documents, technical texts and documents have a particular function and purpose. Such documents usually require a practice that determines vital decisions in daily life. Let's think about the translation

of the manual of a medical device. This translation may lead to either proper use or misuse of that machine, which is simply critical for people's lives.

As Markel cites in Byrne (2006), technical documentation always addresses specific readers and many non-technical documents are aimed at a particular audience, but technical documents are more specific as regards the audience they are aimed at than most documents. Technical documents are produced taking into account the age profile, job, experience, knowledge, seniority, tasks, problems, aims and objectives. The content, approach, structure, level of detail, style, terminology etc. are all tailored to this profile. Markel says that "technical communication is not meant to express a writer's creativity or to entertain readers; it is intended to help readers learn or do something". Therefore, it can be discussed that having such practical purposes, technical communication may well simulate the writer's or translator's way of actual communication with the target readers.

According to Byrne (2006) , reading technical documentation is generally not an end in itself. People normally read technical documentation because they want to be able to do something else, for example learn how to use software or find out about the design details of a particular device. As Dobrin cites in Byrne (2006), technical writing adapts technology to the user. As technology appears with surprises each and every day, we need to catch up and harmonize with the developments on international platforms. This is not a case limited within the borders of a country and that's why technical translation stands as a buffer block , facilitating the development process.

Since the debates over the extent and definition of technical translation vary, scholars and linguists offer different categories for technical texts and documents. Byrne (2006) categorizes common technical publications as follows:

(1) Procedural documents such as assembly instructions, instructions for operation etc.

(2) Descriptive and explanatory documents such as descriptions of products and services; explanations of processes, concepts etc; progress reports.

(3) Persuasive and evaluative documents such as research proposals or engineering projects, product or service evaluations as well as reports recommending actions or policies.

(4) Investigative documents such as reports which are intended to present new knowledge etc.

Korning (1999) suggests that traditionally, technical texts are defined on the basis of subject-matter, terminology and a number of typical syntactic features such as nominalisation, heavy pre- and postmodifications, extensive use of passives, use of third person, long and complex sentences. In addition , technical texts are described as being almost totally dominated by the informative function. Korning (1999) also puts forth a commonly cited and analyzed examples of technical texts:

- Scientific articles
- Text books
- Manuals
- Encyclopedias
- Specifications
- Patent applications, etc.
- Technical reports
- Brochures
- Annual reports
- Letters
- Minutes of meeting
- Manuscript speeches, etc. (p.66).

While trying to find answers to what technical texts and documents include, Korning puts forth another approach to this issue. He argues that we don't actually need to define technical translation, rather, we need to be concerned with the fact that 'technical language' is used in numerous genres all serving a multitude of purposes.

According to Korning (1999), technical language has all sorts of characteristics, but that is not the same as claiming that texts which make use of technical language do all belong to the same genre. The expression 'technical texts' is used for all texts which make use of technical language and which exist within a technical knowledge area and this group of texts is treated as being homogeneous to a large extent which is very misleading to the translator (p.71).

Contrary to the common belief that writing and translating technical texts and documents do not require a particular style, technical writers and translators lacking writing and stylistic competence may well find that the target text does not address to the readers properly or in the preferred genre. Moreover, not all technical texts can stylistically be written or translated in the same way. As the 'skopos' of the texts and documents will vary from language to language and culture to culture, the way they are written and translated will probably change as well.

Wright and Wright (1993) suggest a list of text types requiring stylistic modelling in technical translation as shown in Figure 1:

All Levels	- Computer user interfaces and documentation
In-House Documentation	- Application-oriented documentation - Bench-level operating and quality assurance instructions and procedures - Materials resources planning documentation, routings, etc. - Personnel Management documentation
Client/Customer-related Documents	- Advertising, marketing and product literature - Proposals and purchase agreements - Operating and service documentation
Supplier-related Documents	- Bid tenders and purchase agreements - Material specifications - Machine and project descriptions - Supplier quality assurance requirements and related forms

Figure 1. Text Types Suggested by Wright and Wright (1993)

Producing technical texts and documents may not be a simple process because of their rich-text nature with figures , diagrams , data tables and formulas, which require organizational skills. Such skills can be improved by utilizing CAT tools, related software and programs. Hence, technical translators need to improve themselves to work as professional translators.

Byrne (2006) explains that instead of being produced using a simple word processor, many technical documents are produced using high-end desktop publishing packages and are disseminated via the web in formats such as PDFs, HTML and Flash; electronically distributed documentation can even contain animations. All of this makes technical documents more than just printed text on paper. They make the documents more effective and flexible but they require

translators to master many of the tools used in to create the documents in the first place (p.49). Target readers and users of translated texts and documents are of prime importance since the purpose of such texts and documents is usually to make people apply , practice , experience or use something.

Byrne (2006) puts forth some of the areas to be considered when translating technical texts as follows:

- We need to concentrate on the needs of the target audience this is who the translation is produced for and these are the judges of whether a translation is actually good or not,
- We need to understand what it is the target audience needs and wants,
- We need to understand how technical communication works in the target language if we are to produce independent, autonomous texts that can compete with other texts produced in that language,
- We need to remember that it's necessary to add, change or remove information as part of the translation process in order to achieve effective communication via a technical text.

2.1.3. The Difference Between Scientific and Technical Translation

The debates over technical translation also refer to scientific translation since the term 'technical' may be overgeneralized and used as the same with the other. Similarly, texts including topics of science can sometimes be regarded as technical in some way. Some scholars emhasize the difference between scientific and technical texts in terms of context, style and purpose while others assert that technical translation is essential in all types of translation.

Byrne (2006) explains that one of the greatest fallacies when discussing technical translation is to somehow lump it together with scientific translation, or worse still, to use the two terms interchangeably. He claims that they both deal with information based, to varying degrees, on the work of scientists, scientific translation is quite different from technical translation. Certainly, they both contain specialized terminology and, on the surface, deal with complicated scientific subject matter (to an extent) but it is all too easy to overestimate these apparent similarities at the expense of other, more compelling differences (p. 7). He further mentions that 'Technical' relates to technology which is defined as by the Concise Oxford English Dictionary as 'the application of scientific knowledge for practical purposes'. Scientific translation relates to pure science in all of its theoretical, esoteric, and cerebral glory while technical translation relates to how scientific knowledge is actually put to practical use, dirty fingernails and all (p.8).

No matter what is precisely called 'technical' and 'scientific' , such a controversy poses a challenge in translation world in that translation training and translation market need to go hand in hand. Research studies are to bridge this gap using updated data.

2.1.4. Technical Translation within Theoretical Framework

Any scientific field needs to be nourished, developed, supported or critisized by theories. Only when it is based on a theoretical framework can it survive and contribute to further research. As for technical translation, the theories and models suggested may still be open to different debates in terms of technical translators'

profiles and skills, types of technical texts, and the way technical translation is practised.

According to Byrne (2006), when trying to explain or situate technical translation within a theoretical framework it is often extremely difficult to know where to begin. This is made all the more problematic when we consider the shockingly diverse range of approaches, models, rules and theories (p. 22).

Kingscott (2002) explains that the traditional approach in Translation Studies was to emphasize the importance of the source text. Professor Peter Newmark , one of the best-known exponents of this approach , has said that the source text is sacred. But another school of thought , originating in Germany , has developed the *skopos* (Greek word for 'purpose') theory of translation. This school argues that it is the purpose of the translation , and the expectations of the reader , that are important (p. 249). He gives an expample to clarify how skopos theory takes its place in technical translation:

> "The skopos theory has wide-ranging implications in technical translation, and perhaps even in literary translation. Let me give the example of technical instructions of how to assemble a lawnmower. Researchers have found that there are different expectations on the part of a German reader as distinct from a British reader. Germans have a strong sense of structure. What they like to see in technical instructions is, first of all, a general introduction, to give them the overall picture. The British are more pragmatic, and like to go straight to the instructions. If a British text had an introduction, a British reader would be inclined to skim over it and go to the first part of the assembly instructions. So here is an interesting translation question: If you are

translating lawnmower instructions from English to German, and there is no general introduction, should you not write such an introduction, so that the German reader can feel at ease, his expectations having been met?" (p.249).

Expectations , purposes and practices of a society may well differ from others in using a tool or reading a manual. Therefore , technical translators need to have the required knowledge and experiences in both source and target languages , field-specific terminology , and cultural diversities. That's why translation cannot be purely defined as transmitting words and sentences from one language to another.

2.1.5. Fallacies, Dogmas and Misconceptions about Technical Translation

As the history of technical translation goes back to ancient times, different cultures had a number of purposes for technical translation depending on living conditions and the need for communication. While some of the dogmas and fallacies appeared and lost from time to time , there are still many misconceptions in technical translation. Such misconceptions mainly stem from what is meant by the term "technical".

Byrne (2006) lists some of the most common misconceptions about technical translation as follows:

(1) Technical translation includes economics, law, business etc.

(2) Technical Translation is all about terminology

(3) Style doesn't matter in technical translation

(4) Technical Translation is not creative; it is simply a reprodutive transfer process.

(5) You need to be an expert in a highly specialized field.

(6) Technical translation is all about conveying specialized information (p. 3).

Byrne (2006) maintains that in reality, 'technical' means precisely that something to do with technology and technological texts. Just because there is a specialized terminology doesn't make something technical. In discussing technical translation, it's useful to make the distinction between specialized and technical translation. For example, religion has a very specific terminology and very definite conventions, styles and document structures but it is never regarded as 'technical' (p. 3). It can be put forth from this citation that, a text cannot be classified as technical simply because it has a special terminology or special field of study. The problem here is probably that deciding on the limits and criteria for technical translation sounds very complicated for most people, and that's why technical translation remains the least touched field in translation studies.

According to Pinchuck, as cited in Byrne (2006), vocabulary is the most significant linguistic feature of technicl texts. This is true insofar as terminology is, perhaps, the most immediate noticeable aspect of a technical text and indeed it gives the text the 'fuel' it needs to convey the information. Nevertheless , as cited in Byrne (2006), Newmark has claimed that terminology accounts for a most just 5-10 % of the total content of technical texts yet there is a disproportionate amount of attention devoted to terminology and lexical issues in technical translation.

Style is another contradictive term in technical translation. While it can be referred to only for literary translations by some scholars , others maintain that style has much to do with technical translation. A target text deprived of a delicate style will probably not stimulate the readers.

Byrne (2006) argues that if we look at style from a literary point of view , then it does not have any place in tehnical translation. But if we regard style as the way we write things , the words we choose and the way we construct sentences , then style is equally , if not more , important in technical translation than in other areas because it is there for a reason , not simply for artistic or entertainment reasons (p. 7).

Technical translation and literary translation are mostly regarded as different claiming that a translator needs to have creativity and originality when translating literary texts. On the other hand , translation of technical texts are generally underestimated by limiting it to a series of terminology databases and technical knowledge. Common principles , methods of translation are to be applied in the translation of all types of texts.

As Robinson cites in Byrne (2006), armed with a good and solid understanding of the basic principles and technologies, many technical translators can ‘fake it’. He says that “translators … make living pretending to be (or at least to speak or write as if they were) licensed practitioners of professions that they have typically never practised. They are like actors “getting into character”.

Since technical experts may lack linguistic competence required for translations, it cannot be possible for companies, agencies or university departments to employ them as technical translators or trainers. Therefore, translators are expected to

specialize in any of the fields regarded as technical in accordance with their interests, experiences or qualifications to translate related texts and documents.

Korning (1999) lists the dogmas of technical translation alternatively as follows:

(1) The purpose of the translation is to transmit factual information

(2) The greatest problem is terminology

(3) No particular translation strategy is needed as long as the translator is familiar with the relevant terminology and the typical syntax of a technical text (p.69).

If translation tools, dictionaries and technical knowledge were enough to achieve technical translation, we wouldn't talk about technical translators. Computers could well deal with such translations mechanically. The ability to write, play with words and mirror what we have as a source text is the punchline in translation studies. A translation deprived of the translator's soul will remain poor all the time.

2.1.6. The Significance of and Demand for Technical Translation

The fabulously rapid change in technology shapes people's needs and lifestyles in such a way that many companies compete against each other to pioneer the whole world, which requires transfer between languages. Hence, technical translation becomes the key factor in international trade and communication.

Regarding the increasing popularity of technical translations, Byrne (2006) states that in recent years, the range of technical texts facing translators has grown significantly. No longer is it enough for a translator to merely understand the source text and be able to render it into a comprehensible target text. Nowadays, clients spend vast amounts of money on professional technical writers, document design and

testing procedures while technical writers spend years studying how best to present technical information to users. Technical translators, on the other hand, do not necessarily receive the training and exposure to the text types which have become so prevalent or to the processes needed to create them. There is, therefore , an urgent need to incorporate knowledge of technical communication and usability testing into the theory and practice of technical translation.

Since technical writers reportedly are demanded intensely all over the world, technical translators need to be exposed to a comprehensive training to meet the needs and catch up with the market demands. This is also the case for universities which offer 'Translation and Interpretation' programs.

Pointing out the popularity of technical translation , Kingscott (2002) explains that technical translation already looms large in that it comprises more than 90 % of the translation of the proffessional world output. Technical translators will still have to master a foreign language as they already have contingent liability and are legally responsible for translation errors. The functions of technical translation are gradually fusing or becoming difficult to distinguish from those of technical writing as both professions have an interest in producing unambiguous messages. The technical translator also has to take into account the audience to a more marked extent. Korning (1999) also draws attention to the rising demands for technical translation by claiming that during the 20th century the number of technical texts which are translated has exploded as a result of industrialisation and increased international business and cooperation – most recently as a result of the requirements of the EU machinery directive of 1989. Today , technical translation constitutes the vast majority of the professional translator's workload. (p.67).

Regarding the increasing popularity of technical translation, Van Slype, Guinet, Seitz, Benejam (1983) put forth that at the level of demand the emphasis is moving from the traditional sectors: literature, law, administration, commerce, to new fields and types of text: scientific and technical review articles, patents, standards, minutes of meetings, congress and visit reports, installation and maintenance handbooks for large industrial equipment, etc.

From this quotation we can understand that the shift in translation demands started much earlier compared to demands in the translation market in Turkey.

2.2. TRAINING OF TECHNICAL TRANSLATION AND CURRICULUM

This part examaines the resources, plans and methods in the training of technical translation; requirements and steps in curriculum development; qualifications and selection of the teachers.

As Wright and Wright (1993) suggests, when we consider the training of technical translators and interpreters, we should describe the tasks to be performed by translators and interpreters of technical texts in the future. If we agree that technical translators or interpreters work and will work with technical texts, it would seem clear that an analysis of the needs in the training of technical translators or interpreters could begin with a definition of important characteristics of technical texts. Then we probably should look at specific qualifications needed by technical translators or interpreters in order to perform such tasks with such texts (p. 123).

Hatim (2001) puts forth arising questions to be considered for teaching translation:

- Are translators or interpreters born or made?
- Is a theoretical input desirable?
- When is training most optimal (e.g. undergraduate or postgraduate), and in which department (linguistics, literature, other)?
- What do we ultimately want to achieve (academic, vocational or professional competence)?
- Should training be specialised or generalist?
- What criteria to use in the selection, grading and presentation of materials?
- How much language teaching or interpreting should there be on a translator or interpreter training course?
- What requirements do we make of candidates (aptitude, previous experience)?
- What qualifications should we require of teachers of translation?
- What should be tested and how should it be tested? (p.163).

2.2.1. A Short History of Approaches to Technical Translation Training

Training of Translation and Interpretation covers a wide-range of fields of study and work, one of which is the technical translation. When we consider that technical translation refers to a particular field of expertise, the training of it is also expected to rely on professional and applied programs. However, we cannot talk about a single ideal training program for technical translation since each and every trainer or scholar tends to have a different way of teaching.

According to Wright and Wright (1993), various approaches have been used by training centers and employers or recommended by translation theoreticians in their attempt to answer the question of who makes technical translation better (p.124).

2.2.1.1. Language-oriented Approach

One of the most commonly accepted approaches in technical translation training is that by having proficiency in both source and target language, having stylistic competence and organizational skills, technical translation may well be achieved. This approach focuses on the correct and proper use of language rather than being a technical expert.

As Cormier, Dzierzanowska, Seleskovitch, Voellnagel cite in Wright and Wright (1993), traditionally , training centers for translation and interpretating have selected candidates proficient in at least one foreign language and taught them translation techniques (p.25). Chrzanowski and Reid cite in Wright and Wright (1993) that U.N agencies and other employers have hired graduates from these centers, convinced that a trained linguist with a degree in translation will perform better than a technical specialist who knows a foreign language (p.125). Like many approaches, this approach was naturally critisized for ignoring technical knowledge and expertise while emphasizing proficiency or expertise in both languages. In university departments of Translation and Interpretation in Turkey, for example, students are accepted by a nation-wide general examination and offered a praparatory training if their proficiency in the target language is below the required level. However, no prerequisites are demanded for the training of translation in technical, scientific or specialized translation, except in Interpretation.

2.2.1.2. Technical Knowledge-oriented Approach

Being a technical specialist is regarded as superior to linguistic competence for Technical Translation by many scholars, which is still open to heated debates in universities and translation industry. This approach maintains that technical experts can do better translations with sufficient language training than translators who are not experts in related fields.

As Rolling cites in Wright and Wright (1993), The European Common Market Translation Center in Luxembourg, has recently begun hiring bilingual technicians rather than graduates from translation schools with whose performance it was dissatisfied (p.125). However , according to Wright and Wright, very few translation theoreticians have agreed to the view that bilingual technicians can translate technical texts better than such graduates (p.125). As cited in Wright and Wright (1993), Cary emphasizes that a good technical translation is possible only when the translator is technically competent , i.e. , when he has a strong background in the technical field , be it metallurgy , chemistry or electronics (p.125).

While maintaining that technicians can do better translations than bilingual translators , it is also emhasized that translators need to have the required knowledge and experience beside linguistic competence in order to deal with technical translation.

2.2.1.3. Teaching Languages for Special Purposes (LSP)

Teaching Languages for Specific Purposes (LSP) was considered as a middle-of-the-road for technical translation. LSP combines language teaching with specialized fields, enabling to master a language within a particular field. In order to

obtain a feasible description, Gotti and Sarcevic (2006) suggest that LSP translation shall be the exteriorization of specialized knowledge systems and cognitive processes weighed and selected from an information offer (interiorisation) with the objective of disseminating them in another linguistic (interlingual) and cultural context (transcultural) governed by skopos.

As Arntz, Bühlmann, Pecrus, Varantola cite in Wright and Wright (1993), in the last decade, several translation theoreticians and translator trainers have tried to solve the problem of linguistic or technical priority by combining the teaching of both sets of skills from the very beginning in LSP (Language for Special Purposes) courses. Such courses may begin with a common general scientific or technical trunk and branch off into more more narrowly specialized fields. In Translation and Interpretation departments, offering LSP courses upon students' needs and interests can really help them to guide their future career as translators. By this way, more and more translators can have a voice in technical translation in the market.

2.2.2. Identifying Students' Needs to Develop a Better Translation Training

A comprehensive, practical and long-term curriculum for the training of translation can be possible with the joint participation of institutions, market and students. Since the students are regarded as future translators with different skills, interests and backgrounds, they need to have a role in defining the way they are trained.

Stern and Payment (as cited in Gabr, 2001) argue that if the instructor disregards the needs of students, their previous knowledge about the topic or their

developmental needs, the success of the course will be threatened. The consequences will be:

1- Training content is inappropriate and poorly received by the (students).
2- (The instructor) misses the opportunity to connect with the (students).
3- Materials are too basic or too advanced.
4- Communication breakdown occurs.
5- (the instructor) loses credibility (p.5).

Emhasizing the joint roles of students and instructors, Burnaby (as cited in Li, 2002) points out that the curriculum and learning experiences to take place in class should be negotiated between learners, teacher and coordinator at the beginning of the project and renegotiated regularly during the project.

Admission tests including world knowledge, general ability or proficiency in languages cannot alone determine students' tendencies in translation. Hence, needs analysis and aptitude tests may well facilitate the process of designing the curriculum and employing the instructors.

2.2.3. Identifying Needs and Requirements of the Translation Market for a Better Translation Training

Translation and Interpretation programs aim to train student translators and interpreters to work for the government , translation companies and agencies, and for many other personal fields. Whatever the purpose of training, it prepares future translators for real-life conditions. Thus, real-life experiences and working conditions need to take place in the training, which can be possible with the co-operation between training institutions and translation market.

As Ulrych cites in Gabr (2001), students should be introduced to real-life situations because “the importance of incorporating real-world criteria within a curriculum for translator training and education cannot be underestimated” (p.3). Gabr (2001) maintains that in order to put together an effective training program for preparing , or creating , an efficient translator , one must consider the demands of the market. As cited in Gabr (2001), Antony Pym also supports this idea by suggesting that demands should shape the way in which translators are trained. In this regard, Pym raises the issue of specialization: as a phenomenon triggered by technological factors that determine the market structure, it indirectly affects the kinds of texts to be translated. He believes that “translator training must try to address the phenomenon of specialization”. Pym concurs with the program of the ESIT in Paris that the purpose of training should be “to produce not translators who are specialists, but specialists in translation.” He proposes that students should be taught translation as a general set of communication skills that (they) can apply and adapt to the changing demands of future markets , and indeed changing professions (p.3).

Competence in translation can be described as the fixed-foot, inevitable pillar for translation market while specializing in a field functions as the pivot-foot. That is to say market needs and demands may change depending on the conditions and the translators need to shape themselves in order to keep up-to-date by specializing in certain fields.

As Laszlo cites in Gabr (2001), translators must balance their knowledge about language with their knowledge about subjects. He concludes that because the market wants translators who specialize, the training of translators should address some field of specialization. Laszlo further believes that all translation programs

must include the use of computer, including word processing software, translation software, communications equipment and general business software … No translator can possibly work as a professional without a computer.” (p. 3). Since the technology improves at an unpredictable rate with all new devices, programs and software , translations are required to keep up with this speed by translators who are competent and specialized. Besides , both private and public sector usually opt for translators who are specialized in their field of work or study , rather than the ones working on general-purpose translations. Therefore , the students to be trained need to specify their aims and fields of interest depending on their skills , which will be useful in the design of a curriculum.

Gouadec, as cited in Gabr (2001), holds that the type of translation curriculum should depend on the kind of students and the demands of the market. It should cover terminology and specialization up to the point where the students know how to deal with the problem of terminology in the texts to be translated and how to find information :

> “What has changed is that even an overwhelming variety of markets exist today (as opposed to 20 years ago). This is reflected in the contents of translator training programs with courses of legal translation , commercial translation , financial translation , subtitling , multimedia translation , localization , translating using voice recognition systems , etc. The issue seems to be how to offer the students most of the above skills , at least at some decent level of specialization”.

A curriculum covering translation of all subjects may not be possible within a limited period of education and with limited number of instructors. Moreover , such a program probably costs a lot more than institutions and companies can afford. Thus ,

identifying market demands and requirements along with students' needs and interests can result in a middle-of-the-road curriculum for training process.

2.2.4. Selection of Instructors for the Training of Technical Translation

There is an on-going debate in translator training communities about who should teach translation. As Gabr (2001) argues, so far there seem to be three groups with differing opinions. The first group supports the notion that the academics, the scholars, the Ph.D holders, should teach translation; the second assumes that the professionals, the actual doers of the job, should teach translation, and the last group, which seems very logical in its approach, is of the view that a team of academics and professionals should perform this task. The academics can teach the theoretical aspects of translation while the professionals can guide students in practice (p.11).

The question of who should teach translation can be narrowed down to different fields of translation regarding the academics' field of study. If universities offer only the courses in which academics are specialized, then it could restrict the students. Similarly, courses without competent instructors cannot be offered to students. As for the training of technical translation, a cooperation between academics and technical experts may be an optimum solution to the problem. In this case, however, financial affairs of the institution to afford it may well arise as another problem. According to Snell Hornby (1992), there is a growing need for academic specialists in a number of fields- technology, law, economics, for example- to understand and speak foreign languages, particularly English as the international lingua franca, in order to keep up with the latest developments in their subject and to participate in the international dialogue.

Regarding this issue, Mossop cites in Gabr (2001) that language and literature professors should teach courses in linguistics and translation theories, while practicing translators, teaching on a part-time basis, should handle practice-in-translation modules (p.11). Similarly, Gouadec, as cites in Gabr (2001), suggests "the answer to who should teach translators is quite straightforward: both professionals with a talent for teaching and teachers with good knowledge of the job … that they are supposed to train people for." (p.11). On the other hand, Gerding-Salas, cited in Gabr (2001), proposes the following prerequisites for a competent translation teacher:

- Sound knowledge of the SL and the TL, translation theory, transfer procedures, cognition and methodology.
- Comprehension of what translation is and how it occurs.
- Permanent interest in reading various kinds of texts.
- Ability to communicate ideas clearly, emphatically and openly.
- Ability to work out synthesis and interrelationships of ideas.
- Capacity to create, foster and maintain a warm work environment.
- Capacity to foster search and research.
- Accuracy and truthfulness; critical, self-critical and analytical capacity.
- Clear assessment criteria (pp.11-12).

All these debates indicate that the institution or company which offers the training of technical translation may have conflicts of whom to employ or assign to teach; academists, technical experts or both.

2.2.5. Qualifications of Trained Technical Translators

Working as technical translator is becoming more and more challenging as the workload of companies increases within rapidly expanding technological industry. Required qualifications of technical translators vary depending on their IT Skills, competence in using Computer Assisted Translation (CAT) Tools, how effective they use terminology, and perhaps most importantly, to what extent they are experienced in the specialised field.

Today, some translation companies and agencies tend to employ engineers, architects, lawyers rather than technical translators to deal with translations demanded. However, not all technical specialists have the essential linguistic competence as they mainly focus on terminology and rely on their knowledge of subject field. On the other hand, technical translators who are linguistically competent may not be experienced enough to produce successful translations. Therefore, training of technical translators should have the aim of improving linguistic competence, knowledge of specialised field, proficiency in using CAT Tools, technical writing skills. A comprehensive research to be carried out in the translation market may well reveal what qualifications are required from technical translators.

2.3. Job Descriptions of Technical Translators and Technical Writers

Technical writers need to conduct a great deal of research in the related subject even though they may have a comprehensive knowledge of it since the terminology can be updated recently. They usually focus on the source language and the texts appeal to professionals or experts. The workload of technical translators are

generally not less than technical writers as they also need to have the required knowledge and have the responsibility to convert it into another language, considering target readers and culture.

Korning (1999) describes a stereotyped writer of technical texts as a factual and objective engineer who is not particularly aware of or interested in the target group of his text and whose only aim is to transmit the technical information of the text in question (p. 67). On the other hand , Byrne (2006) points out that that like the technical writer, the translator uses information from variety of sources, not just the source text, to produce a target text which is effective and which performs the desired communicative function. The sign of a good technical translator is the ability to do some of the things a technical writer does to make sure that the person who ultimately reads the text can do so with relative ease and that whatever tasks the reader needs to perform, are easier having read the text". From above citations, we can mention that neither a technical writer nor a technical translator has less responsibilities or workload than the other. Furthermore, technical writers and translators can benefit from each other to improve their field standards.

Wright and Wright (1993) draw attention to the requirements of a good technical translation and qualifications of technical writers: "Technical translation requires more than writing down the dictionary equivalents of words. As for all translation, facility with the source language is important, but facility with the target language is crucial. Just as no one but a skilled poet is likely to make a good translation of a poem, no one but a skilled technical writer is likely to make a good translation of a technical document. But knowledge of the source language and

writing skill in the target language are still insufficient. A technical writer must also know the subject matter of the original document. Only then is a clear, concise, and correct translation possible" (p. 19). Gouadec (2007) states that the multilingual technical writer shares with the translator a number of closely related skills (documentation techniques, terminology searches, phraseology management, ICT skills, etc.). He further maintains that many translators more or less gradually slip into technical writing, more especially when this actually means going into multilingual content management (and, more often than not, associated webmastering).

Debates over the job descriptions of technical writers and translators are generally based on who should translate technical texts or documents. While, in Wright and Wright's citation above, it is claimed that technical writers are likely to make good translations of technical documents, some other scholars do not mention a superiority over technical writers or translators.

Byrne (2006) adopts a more moderate approach by stating that technical translators need to 'impersonate' the original author who is generally an expert in a particular field and that they need to write with the same authority as an expert in the target language. He also points out that the real challenges for the technical translator are to be able to research subjects and to have expert knowledge of the way experts in a particular field write texts" (p.6). Considering that technical translators have the necessary qualifications to carry out research and improve their technical skills, opportunity to practice in the market, they may well teach technical translation with the advantage of linguistic competence and teaching skills.

About the qualifications of technical writers and translators, Kingscott (2002) suggests:

- The technical writer not only is careful to be technically accurate, but also has to be aware of the educational level and the comprehension ability of the likely reader of instructions.
- The translator must also be able to write well in the target language, usually the mother tongue. And that doesn't just mean elegance of style. The translator must find the correct register for the text in question. Instructions for a lathe operator or a dumper truck driver should not use long words or complex constructions, but instead be expressed in simple, direct language. The terminology must reflect current usage in the particular industry.
- The technical translator, in fact, has to be a technical writer but operating across two languages instead of just one (p. 248).

Kingscott (2002) puts forth a contradictory claim vis a vis many other scholars about the way technical translators should follow in their translations: 'The technical translator, just like the technical writer, must write to communicate. It does not matter how beautifully expressed his prose is, it is all of no avail unless it communicates immediately and without ambiguity the message to the user of the documentation. It is in fact more difficult to write simple, direct language than it is to spread oneself in awkward, convoluted text' (p. 250). The citation above emhasizes the communicative function of technical translation, clearly conveying the message to the readers, but the style is ignored. On the other hand, it is a commonly accepted

view that translators should not only convey the message to the readers but they should also pay attention to stylistic appropriateness depending on the register and text types.

2.4. Significance of Technical Communication Skills for Technical Translation

Since technical translation refers to specialised fields, it cannot be just a means of transmitting a group of terms from one language to another. Compared to many other fields of translation, communication in technical language can be regarded as more challenging . On one hand, it doesn't refer to a literary context or everyday speech, on the other hand, it requires competence to pick technically appropriate words or phrases and also visual and spatial intelligence.

Gurak and Lannon (2004) define technical communication as the art and science of making complex technical information accessible, usable, and relevant to a variety of people in a variety of settings (p. 4).

It is pointed out in the above citation that without an effective technical communication, messages or information will remain complicated, unclear to many people on different grounds.

Zimmerman and Clark (1987) suggest eight major steps in the technical communication process: Define and Solve the Problem, Select the Audience, Analyze the Audience, Determine what to Communicate, Select the Proper Format, Produce the Product, Distribute the Product Cost-effectively and finally Evaluate the Communication.

Riera (2004) argues that scientists and engineers in the combustion industry encounter translation difficulties and they often use terms that are unique to the

business, making translating and discussing these terms challenging. Furthermore, Riera mentions that this case is especially true when the terms are being translated for clients ina country where the technology was not intented and/or the technology is relatively new.

As Keller (2004) argues, contrary to what most people think, much technical writing is for general readers- that is, nonspecialist readers- who don't understand a topic and doon't have expert knowledge on which to build. He adds that this kind of writing requires special techniques if the material is to be accessible to its audience (p. 282).

When highly sensitive and complicated devices produced in this electronic era are taken into consideration, it becomes more important to transmit these services to fabulously various parts of the world. Technical translation is the key to open all the doors we can reach. Therefore, effective use of technical communication skills in technical translations can bring many different cultures together.

2.5. Technical Translation and Computer Assisted Translation (CAT) Tools

Technical translation is becoming more and more popular worldwide hand in hand with amazingly improving technology. Improvements in technology naturally trigger the translation market since world languages function as transmitters. Therefore, job requirements of technical translators are also changing in time.

Kingscott (2002) explains that pressures are really building for the translator to become less of a passive figure, and make more of a pro-active role, that is, shaping and adapting the text to meet the target language purpose. Most companies

use their own terminology systems and demand the translators to stick to these, which facilitates and speeds up the process of translations. Being competent in using CAT Tools is one of the most common prerequisites to employ technical translators.

Kiraly (2000) suggests that the translator's tools are very much a part of the translation process. According to him, having students do all of their practice translations with pen and paper during training would be akin to having dentists-in-training use a manual drill, pliers and plaster of paris to repair patients' teeth. No matter how highly developed the emerging dentist's dexterity, knowledge of anatomyand awareness of the principles of modern dentistry, the results would in no way reflect the capabilities of that same dentist aided by state-of-the-art tools of the practice.

Carrove (1999) explains why it is important to teach translation through computers:

- Computer-literacy and familiarity with computer-assisted tools software is becoming an integral part of the training of translators.
- Translation institutions need to prepare trainees for a computer prone market (pp. 12-14).

On the other hand, LETRAC (Language Engineering for Translator Curricula) Survey Findings (1999) reveal that a major obstacle for an adequate adaptation of new technologies at translators' and interpreters' training institutions is the lack of funds, which is mentioned by all project partners regardless of their location. This frequently leads to problems with respect to purchasing the necessary up-to-date hard and software equipment, but occasionally also to an insufficient number of competent teaching personnel.

About the requirement of CAT Tools, Zanettin (n.d.) maintains that while in the case of most literary translators the translated text will probably take shape by means of a general purpose word processor, in the case of technical translators the target text will be produced with the help of the most sophisticated “translator workbench”, equipped with all sorts of CAT Tools, translation memory and terminology systems, and localization software.

According to Yuste (n.d.), in order to respond to revolutionized translation work patterns, most translation training institutions have incorporated some technology-related elements within their syllabuses, but it still remains unclear whether they are sufficient and efficient enough.

Considering both today’s requirements and demands for the qualifications of technical translators in the translation market, and keeping up with the enormously growing workload, computer assisted translation can work as a doping in timing translations. Most commonly used software programs in CAT Processes are Terminological Management Systems, Translation Memory Systems and Content Management Systems.

2.5.1. Terminology Management Systems

Translation companies usually assign translators in different positions of a network. This network uses common databases and systems for the unity and coherence of the translations. Terminology management systems are exactly life-savers for the market.

Emphasizing the importance of terminology, Herrera (2003) states that the quality of translation of highly specialized technical terms depends on to a great extent on the availability of appropriate terminological resources.

Wright and Wright (1993) describe terminology management as a special kind of "information management" that focuses on structuring, storing, exchanging, disseminating and using terminological information for text production (including dictionaries, etc.)" (p.209). Pointinting out the advantage of terminology management, Wright and Wright (1993) further mention that the translation of technical texts requires considerable specific knowledge, i.e., not only knowledge about linguistic rules and structures, but also knowledge about the topic of the text to be translated. Knowledge about just one of these two aspects does not suffice to produce a correct translation. The main advantage of terminology management can be seen in its crucial role in the process of acquiring, storing and applying both linguistic and subject-specific knowledge related to the production of the target text (p.209). So, it provides unity and accuracy in translations by making use of stored data we need.

As Carrove (1999) mentions, terminology management systems are not usually based on standard database systems, but rather consist of tools designed specifically for translators. Such systems provide a means for maintaining complex, concept-oriented terminological entry structures which can be individually adapted by the translator (p. 89).

It is essential that training of technical translation enable students to practice using terminology management systems and create their own term bases. In this way,

they can start working for the market or as a freelancer after having gained the required skills.

2.5.2. Translation Memory Systems

Technical texts and documents in a particular subject typically include repeated words and phrases, which facilitates translators' work. Translation memories can be number one assistants for translators if used effectively.

As Biau and Pym (2006) define , Translation Memories are programs that create databases of segments that can then be re-used. These tools are invaluable aids for the translation of any text that has a high degree of repeated terms and phrases, as is the case with use manuals, computer products and versions of the same document (website updates) (p.5). Today, many job postings on the websites of prestigious companies include the condition of using translation memory systems and other CAT Tools since these companies are generally strict in time management of the assigned translation in order to compete and lead in the sector.

Kingscott (2002) explains that the use of translation memory systems is now so widespread that it is difficult to realise that ten years ago the very concept was only just being thought of. Essentially, according to Kingscott, the idea is to save the translator having to re-translate any segment of text, large or small, for which a translation already exists. Many technical documents contain repetitions, and there are immense savings to be had if the previous translation can be generated (p. 253). Biau and Pym (2006) agree in that the use of translation memories tools has speeded up the translation process and cheapened costs , and this created into a wider demand for translation services (p. 5).

As can be inferred from the citations, it is commonly agreed that translation memories can lighten translators' workload and help them to save more time for other translations.

2.5.3. Content Management Systems

In technical translation, there is always a flow of updated information depending on the recent developments. All this information has to managed, stored and re-used for upcoming translations.

Biau and Pym (2006) describe content management systems as follows:

"These are computer programs designed to manage databases comprising "information chunks" (generically known as 'content'), usually no longer than a couple of paragraphs, which are combined and updated to create several customized texts according to the user's needs. The information chunks are regularly updated and re-labeled. This means that there is no final text, but a constant flow of updated, rearranged, re-sized and user-adapted provisional texts based on a large database of content in constant change" (p. 5).

Technical translation, according to Kingscott (2002), can no longer be considered an isolated or discrete activity seperate from other activities in documentation, communication and information. In the coming years it is likely to be heavily influenced by new developments in the structuring of information, or content management as it is increasingly being called (p.253). Content Management Systems, together with Terminology Management Systems and Translation Memories, may well help technical translators to organize their work and produce better translations.

Working with and translating only printed materials without making use of these programs will probably require much longer time and energy.

III. METHOD

In this section, method of the study is defined, participants of the study along with their background infromation are described. Besides, instruments of the study are introduced and data analysis methods are explained.

This study adopts both quantitative and qualitative method to obtain and analyze data.

3.1. Subjects

As the aim of this study is to propose a model for teaching technical translation at university departments of Translation and Interpretation in the light of demands and requirements of the translation market, four groups participated in the study; senior students of Atılım University and Hacettepe University, technical translation instructors from both universities and translation offices in Ankara.

A total of 60 senior students participated in the study; 10 of them from Atılım University and 50 from Hacettepe University. All these students took technical translation courses in the previous years. Besides, three academists teaching technical translation were interviewed. As for the last group, 20 translation offices in Ankara participated in the study. These offices are experienced in the translation market for at least from 3-4 years to over 20 years. These translation offices were randomly selected among a total of 42 Translation and Interpretation Bureaus officially registered in Ankara Chamber of Commerce (ATO). 33 of these offices purely deal with translation and other 9 offices deal only with Interpretation.

3.2. Curriculum of Translation and Interpretation Departments in Atılım University and Hacettepe University

In order to reveal what courses are offered in Translation and Interpretation departments, the curriculum of both universities was examined and compared. Since the participants were senior students, each curriculum was discussed as a whole from the first grade to the fourth.

3.2.1. Curriculum of Atılım University

Atılım university offers technical translation for one term (3 credits) in the 6th semester (3rd year). Figure 2 shows the curriculum of Translation and Interpretation Program in Atılım University.

1. **Semester**

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 101	English Writing Skills I	2	2	3	5
ETI 103	Text Analyses I	2	2	3	5
ETI 105	Linguistics and Translation	3	0	3	4
ETI 107	Spoken English I	2	2	3	4
COMPE 103	Introduction to Computers	3	0	3	3
HIST 101	Ataturk's Principles and Hist. I	2	0	2	2
TURK 101	Turkish Language I	2	0	2	2
FE	Free Elective	3	0	0	5
Total		16	6	19	30

2. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 104	Text Analyses II	2	2	3	4
ETI 102	English Writing Skills II	2	2	3	5
ETI 106	Current Issues	3	0	3	4
ETI 110	Research Methods	2	0	2	4
ETI 112	Spoken English II	2	2	3	4
HIST 102	Princ. of Ataturk and Hist of Turk. Rev. II	2	0	2	2
TURK 102	Turkish Language II	2	0	2	2
FE	Free Elective	3	0	0	5
Total		15	6	18	30

3. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 201	Media and Journalism	3	0	3	5
ETI 203	Various Uses of Language I	2	2	3	5
ETI 205	Discourse Analysis	3	0	3	5
ETI 209	European Culture and Institutions	3	0	3	5
ETI 211	Listening Comprehension and Oral Presentation I	2	2	3	5
FE	Free Elective	3	0	0	5
Total		13	4	15	30

4. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 200	Introduction to Translation	2	2	3	5
ETI 206	International Politics	3	0	3	5
ETI 212	Listening Comprehension and Oral Presentation II	2	2	3	5
ETI 218	International Organizations	3	0	3	5
ETI 220	Various Uses of Language II	2	2	3	5
FE	Free Elective	3	0	0	5
Total		12	6	15	30

5. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 303	Translation of Texts of Social Sciences	1	3	3	5
ETI 307	Sight Translation	1	3	3	5
ETI 311	Note Taking	1	3	3	5
ETI 317	Introduction to Interpreting I	1	3	3	5
ETI 319	Translation Theory	3	0	3	5
FE	Free Elective	3	0	0	5
Total		7	12	15	30

6. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
ETI 308	Translation of Medical Texts	1	3	3	5
ETI 310	Communication and Media Translation	1	3	3	5
ETI 312	Publishing and Editing	3	0	3	5
ETI 318	ETI 318 Introduction to Interpreting II	1	3	3	5
ETI 320	Technical Translation	1	3	3	5
FE	Free Elective	3	0	0	5
Total		7	12	15	30

7. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
TI 407	Literature and Translation I:	2	0	2	6
ETI 409	Translation of International Politics and Law	3	2	4	6
ETI 411	Consecutive Translation	1	3	3	6
ETI 415	Computer Technologies & Translation	3	0	3	6
ETI 419	General Translation I	2	2	3	6
ETI 413	Simultaneous Interpreting	3	0	3	6
Total		14	7	18	36

8. Semester

Course Code	Course Name	Lecture	Lab Hour	Credit	ECTS
TI 407	Literature and Translation I:	2	0	2	6
ETI 409	Translation of International Politics and Law	3	2	4	6
ETI 411	Consecutive Translation	1	3	3	6
ETI 415	Computer Technologies & Translation	3	0	3	6
ETI 419	General Translation I	2	2	3	6
ETI 413	Simultaneous Interpreting	3	0	3	6
Total		14	7	18	36
Curriculum Total		133 / 132			252

Figure 2. Curriculum of the Department of Translation and Interpretation in Atılım University

3.2.2. "Optimale" Membership of Atılım University

OPTIMALE (Optimising Professional Translator Training in a Multilingual Europe) is an Erasmus Academic Network involving 70 partners from 32 different European countries (including 27 within the EU). OPTIMALE will monitor the changing nature of the translation professions in the age of the internet, social networks and increasing automation. It aims to act as a vehicle and stimulus for innovation and high quality in the training of professional translators. (http://www.translator-training.eu/)

OPTIMALE addresses one of the key challenges of a multilingual and multicultural Europe: how to ensure that its universities continue to produce the high-level professionals that the European translation services and translation industry need, in rapidly changing societal and market conditions, while maintaining . As recent reports have highlighted, the rapid technological changes of the past

decade, far from reducing the need for multilingual translation, have increased it many-fold. However, translators and language service providers have moved into a new era, where a combination of high productivity, speed and above all, guaranteed quality will provide the added value that machine translation systems alone cannot deliver. Advanced and innovative translator education and training is now being delivered at Master's Degree level by a growing number of higher education institutions, but the highest standards of quality and professional relevance need to be maintained by all those offering advanced degrees in this area.

Building on the groundwork recently established by the European Master's in Translation network, OPTIMALE aims to act as a vehicle and stimulus for innovation and high quality in the training of professional translators in sixty-four universities across the EU and beyond. It will do this by producing an online map of current translator training in universities across Europe, from the Algarve to Saint-Petersburg; by working in close partnership with professional bodies in the industry, notably the EUATC, to identify emerging market and professional needs; by exploring specific areas of translator competence and producing case studies of innovative practice in these areas, leading to the definition of shared standards or training and performance; and by identifying transferable resources and by making them available, when appropriate, to members of the consortium. Finally, training of trainer sessions implemented by experts in the field will enable academic staff from more recently established HE programmes to discover new approaches to the training of professional translators. (http://www.translator-training.eu/about-optimale/aims-and-objectives).

Aims and objectives

Over the full three years of the project, the network will:

- Produce an extensive map of ongoing translator training programmes in European Higher Education institutions, identifying the level of programmes being offered, the language combinations available, the translation specialisations by theme or by type addressed more particularly by each programme, the learning objectives and methodologies and the tools and resources available in different countries and institutions, as well as provision made for mobility between institutions and countries.
- Monitor market needs and professional requirements relevant to translator education and training**,** by working with the European Union of Associations of Translation Companies and national professional bodies to identify changing professional needs induced by new business environments and client requirements, and on new work practices and processes induced by new tools and technological environments.
- Translate new professional competences into learning outcomes to be achieved through translator training programmes or through work experience, and identify transferable good practice in introducing professionally-relevant activities in such programmes to be disseminated via a resource platform.
- Implement training of trainer sessions to help translation faculties and departments with recently introduced translator training programmes train existing staff to meet changing needs and adopt new practices while encouraging the emergence of new professionally-oriented fields of research in the field of translation studies.

(http://www.translator-training.eu/about-optimale/aims-and-objectives)

3.2.3. Fédération Internationale des Traducteurs / International Federation of Translators (FIT)

FIT (the Fédération Internationale des Traducteurs/International Federation of Translators) is an international grouping of associations of translators, interpreters and terminologists. More than 100 professional associations are affiliated, representing over 80 000 translators in 55 countries. The goal of the Federation is to promote professionalism in the disciplines it represents (www.fit-fit.org).

The founding members were six interpreters' and translators' associations from Denmark, France, Italy, Norway, the Federal Republic of members and 21 associate members and continues to grow at a brisk pace. Regular members are professional associations which represent translators and which have similar goals to those of the Federation. For the purpose of admission to membership of FIT, the word "translator" covers individuals who practice translation in any of its forms, written or spoken, including those specializing in one of the elements of the translation process or in research and education. Associate members are other organizations interested in translation, mostly universities and translation schools. Commercial translation agencies and their representative organizations are not eligible for membership (Joly, 2001).

Objectives of the Federation

- to link and bring together existing associations of translators, interpreters and terminologists

- to encourage and facilitate the formation of such associations in countries where they do not already exist

- to provide member associations with information about conditions of work, technological tools, initial and ongoing training, and all questions useful to the profession

- to develop and maintain, among all member associations, good relations that serve the interests of translators

- to uphold the moral and material rights of translators throughout the world.

- to promote the recognition of the professions of translator, interpreter and terminologist, enhance the status of translators in society, and promote translation as a science and an art.

The Federation, through its committees, undertakes to meet the various expectations of its members by addressing matters of training, conditions of work, the various aspects of the profession, and the categories of translators, interpreters and terminologists. To take part in the work of one of the twelve committees is an individual contribution to the profession as a whole.

Two regional centres are currently active**:** FIT Europe and FIT Latin America**.** A third centre is being considered in Asia. These centres foster the activities of FIT in their regions, organising meetings to strengthen exchanges between member associations on any questions concerning the profession, and liaising with the FIT Council.

The journal *BABEL* and the bulletin *Translatio* are the Federation's quarterly publications, and are widely disseminated. *Babel* is a scholarly publication presenting articles from all round the world. *Translatio* is the Federation's information organ, telling members about its activities and those of its committees and member associations. The proceedings of each congress are also published, and serve as a further source of valuable information to those interested in the many facets of the translation profession. In addition, FIT participates, between its own world congresses, in the organisation of seminars, colloquia and round table discussions on various aspects of the profession (www.fit-fit.org).

3.2.4. Curriculum of Hacettepe University

Hacettepe University offers scientific and technical translation classes for one term (6th semester) and for 3 credits. A course named Information Technologies for Translators is offered in the first semester. Figure 4 shows the curriculum of the Department of Tranlsation and Interpretation in Hacettepe University.

1. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	107	Çevirmenler İçin Bilgi Teknolojileri	1	2	2	4	Z
MTB	115	Çevirmenler İçin Türkçe I	2	0	2	3	Z
IMT	121	Okuma Becerisi	3	0	3	5	Z
IMT	123	Yazma Becerisi	1	2	2	3	Z
IMT	125	Sözcük Bilgisi	3	0	3	5	Z
IMT	129	İngilizce Konuşma I	1	2	2	3	Z
TKD	103	Türk Dili I	2	0	2	4	Z
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	16	6	19	30	

2. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	104	Çağdaş Türk Toplumu	2	0	2	4	Z
MTB	110	Uygarlık Tarihi	3	0	3	5	Z
MTB	116	Çevirmenler İçin Türkçe II	2	0	2	3	Z
IMT	122	Güncel Konular	2	0	2	3	Z
IMT	124	Yazılı Çeviriye Giriş	1	2	3	5	Z
IMT	130	İngilizce Konuşma II	1	2	2	3	Z
TKD	104	Türk Dili II	2	0	2	4	Z
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	16	4	19	30	

3. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	205	Çağdaş Türk Edebiyatı	2	0	2	3	Z
MTB	207	Çevirmenler İçin Dilbilim	2	0	2	4	Z
IMT	209	İngiliz ve Amerikan Kültür Tarihi	2	0	2	3	Z
IMT	225	Yazılı Çeviri	3	0	3	5	Z
IMT	229	Duyduğunu Anlama ve Sözlü Anlatım	3	0	3	5	Z
AIT	203	Atatürk İlkeleri ve İnkılâp Tarihi I	2	0	2	2	Z
		Seçmeli Ders	2	0	2	5	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	19	0	19	30	

4. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	208	Çeviri Araçları	2	2	3	7	Z
IMT	210	Çağdaş İngiliz ve Amerikan Toplumu	2	0	2	3	Z
IMT	212	Söylem Çözümlemesi	1	2	2	4	Z
IMT	224	Not Alma Teknikleri	2	0	2	4	Z
IMT	226	Kültürlerarası İletişim	2	0	2	4	Z
AIT	204	Atatürk İlkeleri ve İnkılâp Tarihi II	2	0	2	2	Z
		Seçmeli Ders	2	0	2	3	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	16	4	18	30	

5. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	305	Terimbilim	3	0	3	4	Z
IMT	309	Tıp Çevirisi	3	0	3	6	Z
IMT	315	Sözlü Çeviriye Giriş	3	0	3	6	Z
IMT	323	Çeviri Kuramı	3	0	3	6	Z
		Seçmeli Ders	2	0	2	5	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	17	0	17	30	

6. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
MTB	302	Yazılı Çevirmenlik Meslek Bilgisi	2	0	2	3	S
MTB	306	Terim Çalışmaları	1	2	2	3	Z
IMT	312	Yazılı Basın Çevirisi	3	0	3	5	S
IMT	324	Bilimsel ve Teknik Metinler Çevirisi	3	0	3	6	S
IMT	326	Yazın Çevirisi	3	0	3	6	S
		Seçmeli Ders	2	0	2	4	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	17	2	18	30	

7. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
IMT	409	Görsel Basın ve Film Çevirisi	3	0	3	6	S
IMT	411	Hukuk Çevirisi	4	2	5	8	S
IMT	417	Avrupa Araştırmaları ve Topluluk Hukuku	3	0	3	5	Z
		Seçmeli Ders	2	0	2	4	S
		Seçmeli Ders	2	0	2	4	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	17	2	18	30	

8. Semester

B.Kodu	Kodu	Dersin Adı	T	P	K	AKTS	Statüsü
IMT	410	Ekonomi Çevirisi	3	0	3	6	S
IMT	412	AB Metinleri Çevirisi	4	2	5	8	S
IMT	418	Çeviri Eleştirisi	3	0	3	5	Z
IMT	450	Yazılı Çeviri Stajı	0	3	2	4	S
		Seçmeli Ders	2	0	2	4	S
		Seçmeli Yabancı Dil	3	0	3	3	S
		TOPLAM	15	5	18	30	

Figure 3. Curriculum of the Department of Translation and Interpretation in Hacettepe University.

3.3. Translation Offices in Ankara

20 translation offices in Ankara participated in the study by thoroughly completing the questionnaire designed for them. They provided the study with comprehensive information about their work load, staff and attitudes towards technical translation training, translation market and qualifications of technical translators.

3.3.1. Nova Language Services

Nova Translation company has been offering translation services for over 6 years. Translators in general are employed full time, part time and as freelancer. Technical translators work as freelancers. Most demanded languages for translation in general are English, German, French, Spanish, Russian and Arabic. Demand for technical translation is mostly in English, German, Russian and Arabic. Technical

translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.2. Hacettepe Translation Services

Hacettepe Translation company has been offering translation services for 5 years. Translators in general are employed full time and as freelancer. Technical translators work as freelancers. Most demanded languages for translation in general are English, German, Russian, Persian and Arabic. Demand for technical translation is mostly in English, Russian and Arabic. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.3. A&G Translation Services

A&G Translation company has been offering translation services for over 6 years. Translators in general are employed full time, part time and as freelancer. Technical translators work full time, part time and as freelancers. Most demanded languages for translation in general are English, German, French, Persian and Arabic. Demand for technical translation is mostly in English, German and French. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.4. Pen Translation Services

Pen Translation company has been offering translation services for over 11 years. Translators in general are employed part time and as freelancer. Technical translators work part time and as freelancers. Most demanded languages for

translation in general are English, German, French and Arabic. Demand for technical translation is mostly in English, German, French and Arabic. Technical translators employed in the company are technical specialists and graduates of translation and interpretation department.

3.3.5. İkarus Translation Services

İkarusTranslation company has been offering translation services for over 6 years. Translators in general are employed full time and freelancer. Technical translators work full time and as freelancers. Most demanded languages for translation in general are English and German. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.6. Gürsoy Translation Services

Gürsoy Translation company has been offering translation services for over 16 years. Translators in general are employed as freelancer. Technical translators work as freelancers. Most demanded languages for translation in general are English and German. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.7. İmaj Translation Services

İmaj Translation company has been offering translation services for over 21 years. Translators in general are employed part time and as freelancer. Technical

translators work part time and as freelancers. Most demanded languages for translation in general are English, German and French. Demand for technical translation is mostly in English, German and French. Technical translators employed in the company are technical specialists and graduates of other departments.

3.3.8. Net Translation Services

Net Translation company has been offering translation services for over 11 years. Translators in general are employed full time. Technical translators work as freelancers. Most demanded languages for translation in general are English, German, Russian and Arabic. Demand for technical translation is mostly in English, German, French, Spanish, Russian and Arabic. Technical translators employed in the company are technical specialists.

3.3.9. Yöntem Translation Services

Yöntem Translation company has been offering translation services for over 6 years. Translators in general are employed full time and as freelancer. Technical translators work full time and as freelancers. Most demanded languages for translation in general are English, German, French, Russian and Arabic. Demand for technical translation is mostly in English, German, French, Russian, Arabic and Persian. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department.

3.3.10. Ağ-ka Translation Services

Ağ-ka Translation company has been offering translation services for over 21 years. Translators in general are employed full time, part time and as freelancers.

Technical translators work full time, part time and as freelancers. Most demanded languages for translation in general are English and German. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department.

3.3.11. Mak Translation Services

Mak Translation company has been offering translation services for over 6 years. Translators in general are employed full time, part time and as freelancers. Technical translators work as freelancers. Most demanded languages for translation in general are English, Russian and Arabic. Demand for technical translation is mostly in English. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.12. Barış Translation Services

Barış Translation company has been offering translation services for over 11 years. Translators in general are employed as freelancers. Technical translators work as freelancers. Most demanded languages for translation in general are English, French, Russian, Arabic and German. Demand for technical translation is mostly in English, French, Russian, Arabic and German. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.13. Fırat Translation Services

Fırat Translation company has been offering translation services for over 21 years. Translators in general are employed full time and as freelancers. Technical translators work full time and as freelancers. Most demanded languages for translation in general are English and Arabic. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical translators as graduates of other departments and experienced native speakers.

3.3.14. Yedi Kıta Translation Services

Yedi Kıta Translation company has been offering translation services for over 6 years. Translators in general are employed part time and as freelancers. Technical translators work part time and as freelancers. Most demanded languages for translation in general are English, Russian and German. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.15. Çankaya Translation Services

Çankaya Translation company has been offering translation services for over 6 years. Translators in general are employed full time. Technical translators work full time. Most demanded languages for translation in general is English. Demand for technical translation is mostly in English. Technical translators employed in the company are graduates of other departments.

3.3.16. Elçi Grup Translation Services

Elçi Grup Translation company has been offering translation services for 5 years. Translators in general are employed as freelancers. Technical translators work as freelancers. Most demanded languages for translation in general are English, Russian and Persian. Demand for technical translation is mostly in Russian. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.17. Akdil Translation Services

Akdil Translation company has been offering translation services for over 6 years. Translators in general are employed as freelancers. Technical translators work as freelancers. Most demanded languages for translation in general are English, German, French, Spanish, Russian and Arabic. Demand for technical translation is mostly in English, German, French, Spanish, Russian and Arabic. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.18. Sekreter Büro Translation Services

Sekreter Büro Translation company has been offering translation services for over 21 years. Translators in general are employed full time, part time and as freelancers. Technical translators work part time and as freelancers. Most demanded languages for translation in general are English, German, French, Spanish, Russian, Arabic, Japanese, Chinese, Italian and Persian. Demand for technical translation is mostly in English, German, French, Spanish, Russian and Arabic. Technical

translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.3.19. Ender Translation Services

Ender Translation company has been offering translation services for over 21 years. Translators in general are employed full time and as freelancers. Technical translators work full time and as freelancers. Most demanded languages for translation in general are English, German, French, Russian, Persian and Arabic. Demand for technical translation is mostly in English and German. Technical translators employed in the company are technical specialists and graduates of other departments.

3.3.20. Süreyya Translation Services

Süreyya Translation company has been offering translation services for over 11 years. Translators in general are employed full time, part time and as freelancers. Technical translators work full time, part time and as freelancers. Most demanded languages for translation in general are English, German, French, Russian and Arabic. Demand for technical translation is mostly in English, German, French, Russian and Arabic. Technical translators employed in the company are technical specialists, graduates of translation and interpretation department and graduates of other departments.

3.4. Instruments

In this study, two questionnaires and an interview were employed to get the required data from the participants. A questionnaire was distributed to the senior

students at Hacettepe University and Atılım University, the other questionnaire was distributed to the translation offices in Ankara and an interview was made with three instructors teaching technical translation in Atılım and Hacettepe University.

3.4.1. Questionnaire Distributed to Atılım University and Hacettepe University Students

The questionnaire designed for the students mainly consists of two parts; the first part includes items concerning personal information about the students and the second part aims to elicit students' views of and attitudes towards technical translation training, translation market and qualifications of technical translators.

3.4.2. Questionnaire Distributed to Translation Offices in Ankara

Questionnaire administered to translation offices includes two parts; the first part consists of questions and items related to the workload and working conditions of translation offices, technical translators employed and translation demands in the market. The second part aims to elicit views of translators in charge of the offices about the qualifications of technical translators to be employed, training of technical translation and requirements of the market.

3.4.3. Interview with the Instructors

A semi-structured interview was made with three instructors who teach technical translation at the department of Translation and Interpretation in Atılım and Hacettepe University. The interview is mainly based on six questions relating to their opinions about current technical translation courses offered in their universities, qualifications of technical translators and instructors, CAT Tools in technical

translation, materials and text types used in technical translation classes and needs analysis or market research as a prerequisite for technical translation curriculum.

3.4.4. Definition of Instruments Used for Analysis

SPSS was used to analyze the data collected via the questionnaires. Frequency and percentages were calculated to reveal the results. Responses in the interview were discussed qualitatively.

IV. ANALYSIS and DISCUSSION of DATA

The results are presented in tables including frequencies and percentages together with related discussions. The results are discussed in four different groups: Atılım University, Hacettepe University, Atılım University and Hacettepe University, Translation Offices.

4.1. Results of the Questionnaire Administered to Students

Students' responses to the questionnaire are analyzed in six groups: Students' fields of interest in translation, the languages they speak other than English, their views about requirements of technical translation and training of technical translation at university, their self-efficacy beliefs in technical translation, their views about the qualifications of instructors of technical translation, their views about the place of technical translation in the market and the idea of working as a technical translator after university. Each group is discussed for Atılım University, Hacettepe University and for both universities.

4.1.1. Students' Fields of Interest in Translation

The aim of this part of the questionnaire was to determine how interested the students were in the technical translation and what other fields of translation they were into. Considering the curriculum of the two universities and the types of translation services offered by translation offices in Ankara, eight categories were included in this part: Legal Translation, Medical Translation, Technical Translation, Translation of Literary Texts, Subtitling, Translation of Texts in Economics, Trade and Banking, Academic Translation, Others.

Students' interests are of great importance in deciding on the courses to offer within the department. Therefore, the results obtained from this part of the questionnaire are significant for evaluation of the program.

4.1.1.1. Atılım University

As observed in Table 1 below, 22.6 % of the participants at Atılım University (the highest percentage of all) stated they were interested in technical translation. Students' interest in Legal (16.1%) and Medical Translation (19.4%) is also noticeable compared to others. The least interested fields of translation are Literary Translation and Translation of EU Texts (stated under "other" category).

Table 1

Fields of Translation Which Students of Atılım University are Interested in

Fields of Translation	N	Percentage
Legal Translation	5	16.1
Medical Translation	6	19.4
Technical Translation	7	22.6
Literary Translation	1	3.2
Subtitling	4	12.9
Economics/Banking/Trade	4	12.9
Academic Translation	3	9.7
Other	1	3.2
Total	31	100.0

4.1.1.2. Hacettepe University

Subtitling has the highest percentage (23.1%) among others as stated by the students at Hacettepe University. Legal translation has also a considerable percentage after subtitling. Technical translation (15%) and Literary translation (15.6%) were also stated as very popular fields of translation. Literary translation was stated as the least popular by Atılım University students. The least popular field of translation among Hacettepe University Students is the translation of Economics, Banking and Trade (11%).

Table 2

Fields of Translation Students of Hacettepe University are interested in

Fields of Translation	N	Percentage
Legal Translation	26	17.7
Medical Translation	18	12.2
Technical Translation	22	15
Literary Translation	23	15.6
Subtitling	34	23.1
Economics/Banking/Trade	11	7.5
Academic Translation	13	8.8
Total	147	100

4.1.1.3. Atılım and Hacettepe University

When responses of both Atılım and Hacettepe University students are examined, subtitling is the most popular field of translation (21.3%). Legal Translation (17.4%) and Technical Translation (16.3%) are other most popular fields. Only one student mentioned a field (EU Texts) which was not on the list (0.6%). It can be seen that translation of texts in Economics and Academic translation are the least popular among all students.

Table 3

Fields of Translation Which Students of Both Hacettepe University and Atılım University are Interested in

Fields of Translation	N	Percentage
Legal Translation	31	17.4
Medical Translation	24	13.5
Technical Translation	29	16.3
Literary Translation	24	13.5
Subtitling	38	21.3
Economics/Banking/Trade	15	8.4
Academic Translation	16	9
Other	1	0.6
Total	178	100

4.1.2. Preferred Foreign Languages Other Than English

The aim of this part of the questionnaire is to find out what languages other than English are mostly preferred by students, either as C language or for general purposes. Taking both students' responses and demand in the market, elective courses for other foreign languages can be offered to the department of Translation and Interpretation.

4.1.2.1. Atılım University

Of the participants at Atılım University, 30% reported they speak at least a foreign language other than English. Mostly preferred languages are German (33.3%) and French (33.3%). Spanish(22.2%) is second most popular language among others.

4.1.2.2. Hacettepe University

Of all the participants at Hacettepe University, 26% reported they don't speak any other foreign languages while other 74% mentioned at least one non-English foreign language. Among the most popular languages are German (34.8%) and French (28.3%). There are 8 other languages reported in the questionnaires.

4.1.2.3. Atılım and Hacettepe University

Results of the study show that 73.3% of all participants deal with foreign languages other than English among which are German, French, Italian, Spanish, Chinese, Russian, Arabic, Japanese, Korean and Greek, respectively from most popular to the least. 26.7% reported no other foreign languages out of English.

4.1.3. Students' Views about Requirements of Technical Translation and Training of Technical Translation at University

This part of the questionnaire includes 11 items regarding the requirements of technical translation and training of technical translation in university departments of Translation and Interpretation. Students' responses were elicited depending on whether or not they agree with the statements.

4.1.3.1. Atılım University

According to the results obtained, 50% of participants from Atılım University think that they use information technologies sufficiently in technical translation classes while 30% do not find it sufficient. On the other hand, only 30% of participants say that technical translation courses offered by the university for 3 credits in one semester is sufficient. 60% find it insufficient.

In terms of the requirements of technical translation, 70% of participants are of the opinion that technical translation requires visual and spatial intelligence and all the participants (100%) stated that becoming skillful at localization in language is a must for successful technical translation. Besides, 70% of participants agree with the statement that students' needs, interests and competencies should be predetermined for technical translation training.

80% of participants are of the opinion that they should be allowed to take classes from other departments depending on their interests and skills.

As for the training of technical translation, students' responses are quite similar. All participants (100%) agree with the statement that training of technical

translation should meet the needs of and demands for technical translation in the market. Whether translation training should be based on theoretical knowledge or practices remains one of the most controversial issues in literature. Relating to this issue, 10% of participants think that it should be based on theoretical knowledge. Interestingly, 60% remained undecided for this statement. However, 90% of participants are of the opinion that training of technical translation should be based on practices.

A need for collaboration between demandant, employer, translator and technical writer during the translation process is emphasized in many studies. This issue was also included in this part of the questionnaire. 90% of participants agreed that such a collaboration should be used in technical translation training as well.

4.1.3.2. Hacettepe University

The results of the study show that 30% of participants from Hacettepe University think they use information technologies sufficiently in technical translation classes while 38% do not find it sufficient. On the other hand, only 16% of participants say that technical translation courses offered by the university for 3 credits in one semester is sufficient. 66% find it insufficient.

In terms of the requirements of technical translation, 74% of participants are of the opinion that technical translation requires visual and spatial intelligence and 68% of the participants stated that becoming skillful at localization in language is a must for successful technical translation. Besides, a majority of participants (86%)

agree with the statement that students' needs, interests and competencies should be predetermined for technical translation training.

88% of participants are of the opinion that they should be allowed to take classes from other departments depending on their interests and skills while 8% don't agree with that.

As for the training of technical translation, students' responses are quite similar. All participants (100%) agree with the statement that training of technical translation should meet the needs of and demands for technical translation in the market. Relating to the issue of whether translation training should be based on theoretical knowledge or practices, 12% of participants think that it should be based on theoretical knowledge. On the other hand, 90% are of the opinion that training of technical translation should be based on practices.

As for the collaboration between contributors to the translation process, 92% of participants agreed that such a collaboration should be used in technical translation training as well.

4.1.3.3. Atılım and Hacettepe University

According to the results of the study, students' responses to the statement whether they use information technologies in their technical translation classes sufficiently differ to a large extent. While 36.6% disagreed with the statement, 33.3% agreed with it and still another 30% remained undecided. As for technical translation courses offered, 17.14% say that technical translation courses offered by the university for 3 credits in one semester is sufficient and 65% find it insufficient.

Regarding requirements of technical translation, 72.14% of all participants are of the opinion that technical translation requires visual and spatial intelligence and 72.14% of all participants stated that becoming skillful at localization in language is a must for successful technical translation. Besides, a majority of participants (82.14%) agree with the statement that students' needs, interests and competencies should be predetermined for technical translation training.

86.6% of all participants are of the opinion that they should be allowed to take classes from other departments depending on their interests and skills.

As for the training of technical translation, students' responses do not vary that much. All participants (100%) agree with the statement that training of technical translation should meet the needs of and demands for technical translation in the market. Relating to the issue of whether translation training should be based on theoretical knowledge or practices, 11.6% of all participants think it should be based on theoretical knowledge. On the other hand, 90% are of the opinion that training of technical translation should be based on practices.

As for the collaboration between contributors to the translation process, 91.7% of all participants agreed that such a collaboration should be used in technical translation training as well.

4.1.4. Students' Self-efficacy Beliefs in Technical Translation

This part of the questionnaire aims to elicit students' responses to whether they have the required knowledge of technical translation and its job opportunities in

the translation market, Computer Assisted Translation (CAT) Tools and Technical Writing Skills.

4.1.4.1. Atılım University

Results of the study show that 40% of participants from Atılım University stated they have the required knowledge of technical translation and its job opportunities in the translation market. Surprisingly, 50% of participants remained undecided.

Since CAT Tools are of great significance for technical translation, it was also included in this part of the questionnaire. When the results are examined, 70% of the participants stated they have the required knowledge of CAT Tools while 20% didn't agree it.

Technical writing skills have a crucial role for successful technical translation. Therefore, students' responses to this matter will be decisive for the training at university. 60% of the participants see themselves competent enough in technical writing and 40% remained undecided.

4.1.4.2. Hacettepe University

Students' responses to whether they have the required knowledge in technical translation and its job opportunities in the market vary: While 32% didn't agree with the statement, 34% stated they have the required knowledge. Still another 34% remained undecided. On the other hand, a majority of students (60%) stated they have the required knowledge of CAT Tools and 18% didn't agree with that. As for technical writing skills, students responses vary to a large extent. While 42% of the

participants see themselves competent enough in technical writing skills necessary for technical translation, 28% don't. The number of students who remained undecided is surprisingly high (30%).

4.1.4.3. Atılım and Hacettepe University

When the study results are examined, 34.10% of all participants stated they have the required knowledge of technical translation and its job opportunities. However, a majority of the participants either remained undecided or didn't agree with the statement.

As for the statement regarding students' knowledge of CAT Tools, majority of the participants (61.7%) agreed that they have sufficient knowledge of CAT Tools while 18.3% didn't agree with the statement.

The responses of all participants to the statement regarding their technical writing skills vary significantly. 44.10% stated they are competent enough in technical writing skills, but 22.14% didn't agree that they are competent and still another 31.7% remained undecided for this issue.

4.1.5. Students' Views about the Qualifications of Instructors of Technical Translation

This part of the questionnaire aims to reveal what students' expect from instructors of technical translation in terms of their qualifications and competencies. Their responses were elicited through 7 items regarding whether they agree (to what extent) or disagree (to what extent) with tyhe statements given.

4.1.5.1. Atılım University

The issue of who should teach technical translation is one of the most debated topics in Translation Studies. Students were directed three commonly accepted ideas about the identity of instructors: Technical specialists in the market rather than academicians, academicians only, collaboration between technical specialists and academicians. 30% of participants from Atılım University agreed that technical specialists should teach it while other 30% stated only academicians should teach it. However, all participants also agreed that there should be a collaboration between technical specialists and academicians.

All participants (100%) agreed that academicians teaching technical translation should have the knowledge and experience to the same degree as specialists in the market, have sufficient knowledge of both home and target culture, have the linguistic proficiency to translate from and into A/B languages and they should have effective technical communication skills. So, all students are of the same opinion about the required qualifications of academicians teaching technical translation.

4.1.5.2. Hacettepe University

Results of the study show that 32% of the participants from Hacettepe University agreed that technical translation should be taught by technical specialists from the market, 8% stated it should be taught by academicians only, while all participants (100%) agreed there should be a collaboration between technical specialists and academicians.

As for the required qualifications of academicians teaching technical translation, a vast majority of students (96%) agreed that academicians teaching technical translation should have the knowledge and experience to the same degree as specialists in the market, 94% agreed that they should have sufficient knowledge of both home and target culture, 98% stated that they should have the linguistic proficiency to translate from and into A/B languages, and 94% agreed that they should have effective technical communication skills. From these results its clear that students' expectations of academicians' required qualifications are very similar.

4.1.5.3. Atılım and Hacettepe University

When the results of the study regarding all participants are examined, it can be observed that 31.7% agreed that technical specialists from the market should teach technical translation, but 26.7% disagreed with this statement. Moreover, only 11.7% of all participants stated that technical translation should be taught by academicians only. On the other hand, all participants (100%) agreed that there should be a collaboration between academicians and technical specialists on this issue.

Almost all the participants agreed on the required qualifications of academicians teaching technical translation: 96.7% stated that academicians teaching technical translation should have the knowledge and experience to the same degree as specialists in the market, 95% agreed that they should have sufficient knowledge of both home and target culture, 98.4% of all participants stated that they should have the linguistic proficiency to translate from and into A/B languages. Finally, 95% of all participants agreed that the academicians teaching technical translation should have effective technical communication skills.

4.1.6. Students' Views about the Place of Technical Translation in the Market and the Idea of Working as a Technical Translator After University

This part of the questionnaire aims to elicit students' opinions about how important and in demand technical translation is in the translation market and whether they are thinking about working as a technical translator after university. Participants' responses were elicited through 2 items in the questionnaire.

4.1.6.1. Atılım University

Considering today's market of translation, 90% of participants from Atılım University stated that technical translation is demanded more than other fields of translation in the market. Furthermore, 70% of the participants agreed that they would like to improve themselves in technical translation and work as a technical translator after university.

These results show that a vast majority of students at Atılım University are aware of the significance and popularity of technical translation in the market and most of them are eager to improve themselves as technical translators after university.

4.1.6.2. Hacettepe University

Regarding the significance and popularity of technical translation in the market, 50% of the participants from Hacettepe University stated that technical translation is demanded more than other fields of translation in the market. However, 46% remained undecided about this statement. Students' responses to whether they would like to work as a technical translator after university vary considerably: While

34% accepted it as a future career, other 38% disagreed with this statement and still 28% remained undecided.

Taking these results into consideration, it can be figured that less than half of the participants from Hacettepe University see working as a technical translator a future career.

4.1.6.3. Atılım and Hacettepe University

Results of the study show that about half of all participants (56.7%) agreed that technical translation is demanded more than other fields of translation in the market while 40% remained undecided. A market research may well acquaint students with demands, requirements and challenges in the translation market.

As for the item regarding students' opinions about working as technical translators after university, the responses vary. 40% of all participants agreed that they would like to work as technical translators after university while 33.3% disagreed with this statement.

In conclusion, students' interest in technical translation as a future career is not at a low level when we consider that translation in general has many other subfields. The issue is all students need to be informed about and encouraged to investigate what is going on outside the campus, in the translation market.

4.2. Results of the Questionnaire Administered to Translation Agencies

Questionnaire designed for the translation offices is a comprehensive one involving workload and working conditions of translation agencies; qualifications of

translators employed; demands for different types of translation and languages; share of technical translation in the translation market; translation agencies' opinions about the training of technical translation, instructors of technical translation; requirements for and nature of technical translation. The questionnaire was administered to 20 translation agencies in Ankara and all agencies responded properly.

4.2.1. Translation Services in General and Technical Translation Services Offered by Translation Agencies in Years

In order to reveal the experiences of participating translation agencies in technical translation and translation in general, five categories were determined. As observed in the table, only 10% of the participating agencies have the experience under 6 years. About half of the participating agencies (45%) have the experience in technical translation services for over 6 years. Besides, their experiences in translation services in general and technical translation services do not differ much.

Table 4

Experiences of Translation Agencies in Translation / Technical Translation Services

	Frequence		Percentage (%)	
Experience in Years	Translation	Technical Translation	Translation	Technical Translation
1-5 years	2	2	10	10
6-10 years	8	9	40	45
11-15 years	5	4	25	20
16-20 years	-	1	-	5
21 years and over	5	4	25	20
TOTAL	20	20	100	100

4.2.2. Working System of Translators and Technical Translators

For translators, the issue of working full time, part time or as a freelancer is of great significance for their employment and career since working system of translators directly determines their income. In this part of the questionnaire, three types of working system were included: Full time, Part time, Freelancer.

Table 5

Working System of Translators and Technical Translators Employed in Participating Translation Agencies

	Frequence		Percentage (%)	
Working system	Translators	Technical Translators	Translators	Technical Translators
Full time	13	8	31.7	23.5
Part time	9	7	22	20.6
Freelancer	19	19	46.3	55.9
TOTAL	41	34	100	100

As observed from Table 5, freelancer employments have a bigger share for both translators in general (46.3%) and technical translators (55.9%). Part time employment seems to have the least stake in the translation market.

4.2.3. Languages Demanded for Translation in General

Training of future translators involves offering them second or third foreign languages other than their A nd B languages. Therefore, a research for most commonly demanded languages in the market for translation in general and technical translation will help to prepare students for the needs and requirements of the translation market.

Table 6

Demanded Languages for Translation in General

Demanded Language Pairs	Percentage				
	Never	Seldom	Some times	Often	Always
English to Turkish/Turkish to English	-	-	5	10	85
German to Turkish/Turkish to German	-	5	15	40	40
French to Turkish/Turkish to French	-	15	35	25	25
Spanish to Turkish/Turkish to Spanish	10	25	50	5	10
Russian to Turkish/Turkish to Russian	-	15	25	40	20
Arabic to Turkish/Turkish to Arabic	-	15	20	50	15
Japanese to Turkish/Turkish to Japanese	35	60	-	-	5
Chinese to Turkish/Turkish to Chinese	25	65	5	-	5
Italian to Turkish/Turkish to Italian	5	25	65	-	5
Persian to Turkish/Turkish to Persian	10	20	40	20	10
Hindi to Turkish/Turkish to Hindi	85	15	-	-	-
Portuguese to Turkish/Turkish to Portuguese	25	65	10	-	-

As observed in Table 6, English is the most demanded language for translation in general. German, French, Russian and Arabic have a big share in the market. Students may well be guided to master these commonly demanded languages.

4.2.4. Languages Demanded for Technical Translation

Apart from translation in general, technical translation is demanded more commonly by certain language pairs

Table 7

Demanded Languages for Technical Translation.

Demanded Language Pairs for Technical Translation	Percentage				
	Never	Seldom	Some times	Often	Always
English to Turkish/Turkish to English	-	-	10	15	75
German to Turkish/Turkish to German	5	5	20	30	40
French to Turkish/Turkish to French	5	20	30	25	20
Spanish to Turkish/Turkish to Spanish	20	30	35	10	5
Russian to Turkish/Turkish to Russian	5	20	35	25	15
Arabic to Turkish/Turkish to Arabic	20	15	30	25	10
Japanese to Turkish/Turkish to Japanese	55	35	10	-	-
Chinese to Turkish/Turkish to Chinese	45	45	10	-	-
Italian to Turkish/Turkish to Italian	30	15	55	-	-
Persian to Turkish/Turkish to Persian	35	15	45	5	-
Hindi to Turkish/Turkish to Hindi	85	15	-	-	-
Portuguese to Turkish/Turkish to Portuguese	55	40	5	-	-

As seen from the table, demand in languages for technical translation is rather limited compared to demand for translation in general. English is again the most commonly demanded language followed by German, French, Russian and Arabic. The number of languages never demanded for technical translation is much higher than it is for translations in general.

4.2.5. Demands for Different Fields of Translation

The types of translation moct commonly demanded in the market may well contribute to the training of technical translation. The place of technical translation among others and the demand for it in the translation market are revealed in this part of the questionnaire. The fields of translation were picked considering the curricula of Atılım University and Hacettepe University, services offered by translation agencies that are also found in their websites. There is a debate on the categorisation of types of translation in literature. The issue is whether to attribute technical translation to all specialised translations ranging from medical, legal to engineering, or attribute it to technology only. In this part of the questionnaire they were grouped according to the curricula of Atılım and Hacettepe University and translation services offered by agencies.

Table 8

Commonly Demanded Fields of Translation

Demanded Fields of Translation	Percentage				
	Never	Seldom	Some times	Often	Always
Legal Translation	-	-	30	20	50
Medical Translation	-	10	20	30	40
Technical Translation	-	-	25	15	60
Literary Translation	15	30	40	5	10
Subtitling	55	30	15	-	-
Academic Translation	10	20	25	20	25
Economics / Trade / Banking	5	10	25	30	30
Translation for General Purposes	-	-	5	10	85

As observed from Table 8, translation for general puposes are mostly demanded types of translation. This item involves translation of official documents such as certificates, diplomas, visas, transcripts and others. Such documents are needed in the daily life for education, jobs or travelling. Results show that technical translation was reported to be always demanded by 60% of translation agencies, which makes it a very popular and required field of translation in the market. It is followed by legal and medical translations which are also two most essential parts of

our daily lives. Demand for subtitling and literary translation is quite low compared to others. The reason for lower demands may be that there are certain companies that purely hold subtitling and are very experienced as they employ translators who are solely into movie industry. As for literary translation, it has a very specific nature in itself which can only be discovered and treated by writers, poets or others who devoted their lives to literature for years.

4.2.6. Educational Backgrounds of Technical Translators Employed

Determining educational backgrounds of technical translators employed in the translation market is of great significance in order to guide students for their future careers and collaborate with translation agencies for the employment of these students. This issue is also one of the fiercely debated ones in literature as there are different views about what educational background is required for technical translation; students graduating from translation and interpretation departments and have linguistic competence, technical specialists or whoever has a sufficient experience in the field.

Table 9

Technical Translatots' Educational Background Employed in the Translation Market

Educational Background	N	%
Technical Specialist (Experienced in the related field)	18	35.3
Technical Translator (Graduate of Translation and Interpretation)	15	29.4
Technical Translator (Graduate of other departments)	16	31.4
Other :	2	3.9
TOTAL	51	100

As shown in table 9, technical specialists are most commonly employed as technical translators, followed by graduates of other departments, and thirdly graduates of translation and interpretation departments. In addition, two of the participating translation agencies stated that they also employed high school graduates experienced in this field and technical translators who are native speakers of the target language (foreigners) to be translated into.

4.2.7. CAT Tools Used and Required by Translation Agencies

Translation agencies were asked in this part of the questionnaire to state whether they use any of the CAT Tools (Trados, Across, etc.) in technical translation and what tools they prefer. 11 CAT Tools were included in the questionnaire which were selected after a detailed research of literature.

Table 10

CAT Tools Used by Translation Agencies

	Responses	
CAT Tools	N	%
SDL Trados	13	59.1
Across	2	9.1
Wordfast	1	4.5
Lokalize	1	4.5
MemoQ	3	13.6
Passolo	1	4.5
Other	1	4.5
TOTAL	22	100

Results of the study show that 70% of translation agencies use CAT Tools in technical translation while 30% don't. As can be observed from Table 11, the most preferred tool is SDL Trados (59.1%), followed by MemoQ (13.6%) and Across (9.1%). The preferences and requirements of translation agencies for CAT Tools should be considered in the training of technical translation .

4.2.8. Types of Documents and .Materials Demanded in Technical Translation

This part of the questionnaire aims to elicit participants' responses to what kinds of documents or materials are demanded to be translated with technical context. The items of this part were determined by examining the common types of materials

included in technical translation and translation services mentioned in the websites of translation agencies.

Table 11

Type of Materials within Technical Context Demanded for Translation

Types of Materials	Responses N	Responses %
Books or Encyclopedias	4	3.4
Essays / Articles	15	12.7
Manuals	16	13.6
Patent Applications	15	12.7
Reports and Minutes	15	12.7
Brochures / Catalogues	17	14.4
Contracts / Declarations	20	16.9
Web Sites / Software	14	11.9
Other	2	1.7
TOTAL	118	100

The results show that most commonly demanded materials for technical translation are contracts and declarations (16.9%), followed by brochures and catalogues (14.4%) and then manuals (13.6%). Demand for books and encyclopedias to be translated is quite low compared to others.

Identifying the demand for these types of materials may contribute to selection of materials to be used in the training of technical translation.

4.2.9. Opinions of Translation Agencies about Required Qualifications for Technical Translators and Training of Technical Translation at Universities

The last part of the questionnaire consists of items regarding the qualifications of technical translators and training of technical translation, with the aim of eliciting translation agencies' responses and compare them with students' responses. Such a comparison will determine the bases of suggested model for training of technical translation.

4.2.9.1. Required Qualifications of Technical Translators

Regarding the qualifications of technical translators there are 6 items in this part of the questionnaire which are the same as the ones in students' questionnaire.

Results show that a vast majority of participants (90%) agreed technical translators should have the linguistic proficiency to translate from and into A/B languages. On the other hand, 65% stated Technical translators should have a sufficient knowledge of both home and target culture and 25% remained undecided. As for the knowledge and experience of CAT Tools, 75% of the participants agreed that technical translators should be competent and experienced in Computer Assisted Translation (CAT) Tools. Furthermore, 80% agreed that technical translators should have the knowledge and experience to the same degree as specialists of the related field while 15% didn't agree with this statement.

Having effective technical communication skills is quite appreciated for technical translators. So, participants were also directed a statement about this issue. The results show that 70% agreed that technical translators should have effective technical communication skills while 15% disagreed with this statement.

Revealing the share of technical translation workload in the translation market could encourage students to improve their skills in technical translation. Participants' responses to this item vary to a large extent. While 50% of the participants agreed that technical translators should have effective technical communication skills, 25% didn't agree with this statement and other 25% remained undecided. One reason for that may be not all translation agencies are demanded equally in different types of translation. Some of them may have much more workload in legal or medical translation whereas others can be very busy with technical or academic translations.

4.2.9.2. Training of Technical Translation at Universities

Relating to one of the most debated issues in translation studies, participants were asked who should teach technical translation at universities. Only 25% of them agreed that training of technical translation should be given by technical specialists from the market rather than academicians, 30% disagreed with this opinion and nearly half of the participants (45%) remained undecided. 55% of participants stated only academicians should teach technical translation and a vast majority of the participants (85%) agreed that there should be a collaboration between technical specialists from translation market and academicians. When these results are

considered, the opinion of a collaboration between academicians and technical specialists was appreciated by most translation agencies.

The balance between theory and practice in the training of technical translation is another issue related to the participating translation agencies. While 60% stated training of technical translation should rely on theoretical knowledge, 85% agreed that it should rely on practice. Taking these results into account, it can be stated that training of technical translation should not only depend on theory or practice but on a balanced way by which the two supports each other.

Competence in technical writing, regarded to contribute to successful technical translations, was also included in the questionnaire and responses to this item were quite similar. 90% of the participants agreed that training of technical translation should include improving technical writing skills.

Considering that a majority of participants emhasized the significance of practices in training of technical translation, it is simply natural that 80% of them are of the opinion that training of technical translation should meet the needs of and demands for technical translation in the market. As for the nature of technical translation, 75% of the participants stated technical translation requires visual and spatial intelligence.

4.3. Evaluation of Interviews with the Instructors

The interview carried out with three instructors teaching technical translation covers the key points of this study. It was evaluated according to the instructors' responses to six questions within the context of this thesis. Instructors' participation

in this study contributed largely to the model suggested for the training of technical translation in university departments of Translation and Interpretation.

4.3.1. Instructors' Opinions about Technical Translation Courses Offered in Hacettepe and Atılım University

When interviewees were asked whether technical translation courses offered in their universities were sufficient or to be improved, they agreed that the courses offered were sufficient in credits since students had the chance to gain experience in other courses as well. Moreover, it was also pointed out that there were a number of areas of translation other than technical translation to be offered in the Bachelor's education. On the other hand, interviewees suggested that technical translation courses should be improved. A close connection between university departments of Translation and Interpretation was highlighted and it was put forth that technical translation classes should be supported with ITs.

4.3.2. Instructors' Opinions about Required Qualifications for Technical Translators and Instructors of Technical Translation

All interviewees maintained that instructors teaching technical translation should have close ties with translation agencies and translation market. Besides, participants reported that the instructors should have a good knowledge of ITs and terminology management. Another point emphasized by the interviewees was that gaining professional experience as translators in the market would contribute largely to the qualifications of instructors teaching technical translation.

4.3.3. Instructors' Opinions about the Necessity of Collaboration between Academists Teaching Technical Translation and Teachnical Specialists or Translation Offices in the Market

Interviewees were of the same opinion that academists teaching technical translation should, in some way, collaborate and keep in contact with technical specialists or professional technical translators in the translation market throughout the training process. According to the participants, instructors could invite technical speacialists to the classes to share their experiences, organize workshops and real life-like practices.

4.3.4. Instructors' Opinions about Carrying out Needs Analysis and Market Research for Technical Translation Curriculum

Two of the interviewees stated that a needs analysis would be of great significance before deciding on the curriculum for technical translation since students might have very different interests, skills and backgrounds. In addition, exchanging experiences with professionals in the translation market and other academists was emphasized in the interview. On the other hand, it was also reported by one of the interviewees that needs analysis for Bachelor's Education wouldn't be that necessary as the students already started technical translation training with no experiences and lesson plans could be prepared taking this into consideration.

4.3.5. Instructors' Opinions about Use of Computer Assisted Translation (CAT) Tools in Technical Translation and Training

All interviewees agreed that being competent in using at least one of the CAT Tools and terminology management systems was a must for technical translators and instructors in today's world of stunning technological developments. Since technical translators are usually in race against time to catch up with the demands of the market, participating instructors also highlighted the function of CAT Tools in facilitating technical translation.

4.3.6. Materials and Text Types Used by Instructors Teaching Technical Translation

In order to lay a bridge between practices in the translation market and academic training in university departments of Translation and Interpretation, demanded materials and text types in technical translation should also be taken into consideration to decide on the curriculum. Therefore, interviewees were asked what types of materials or text types they preferred for technical translation classes. Most commonly used materials varied from user manuals, patents to texts on electrics, electronics, construction, astronomy, physics and mathematics. Considering the responses of translation agencies in the market, it could be maintained that academists are trying to keep up with these demands in technical translation classes.

4.4. DISCUSSION

In this part, findings of the study are discussed with reference to the results given in the previous part. Discussion is based on the different parts in the questionnaire: Discussion of the findings from the results of Students' Questionnaire, discussion of the findings from the results of translation Agencies' questionnaire.

4.4.1. Results of the Questionnaire Administered to Students

The study reveals that students' interests in different fields of translation vary, which is quite natural when we consider their interests, needs and competences. An important factor in students' preferences is what classes and languages are offered in their curriculum, how they are introduced to the students and to what extent students kow about the translation market.

Technical translation is among most preferred ones. A needs analysis should be done to find out students' tendencies and competencies, and they should be encouraged to improve their skills for their future careers. Students who are interested in technical translation should be enabled to learn about computer assisted translation programs and software, and what types of documents are to be translated most in the translation market. Technical writing should also be included in the training so that students can improve their technical communication skills.

Most students are interested in German, French, Italian and Spanish. These are most commonly offered elective courses at universities. The results of market research show that English, German, French are also mostly demanded languages. Therefore, students' interests closely overlap with the demands in the market.

However, some students seem to be not interested in other foreign languages apart from English. These students can be encouraged to master a second foriegn language as their C language.

When we observe results of the study, we can see that not many students think that they use information technologies sufficiently in their classes. However, translation industries all over the world are renewing themselves regularly in order to catch up with the stunning improvements in technology. It means that we also need to support the training process with as many practical resources as possible.

Less than half of the students have the required knowledge of technical translation in the market and its job opportunities. This can be due to a lack of collaboration between universities and the translation market. Students need to be guided to gain experiences in the translation market.

Results reveal that students are not so decisive about the issue of who should teach technical translation; academicians only, technical specialists or both in collaboration. Although some students think that technical specialists from the translation market should teach technical translation, all of them agree on the collaboration between academicians and technical specialists. However, they need to experience it in classes specially programmed to try how it will work. As the study reveals, most students are aware of the significance and workload of technical translation in the market.

4.4.2. Results of the Questionnaire Administered to Translation Agencies

Study reveals that technical translators are mostly employed as freelancers. It may be because most technical translators employed in the market are technical specialists and they work as engineers, architects at the same time. The number of translators employed full time or part time is half the number of freelancers. English is the most demanded language for translation in general due to its global use and it is followed by German, French, Russian and Arabic. This also affects translation and interpretation departments to be opened at universities. That's why the number of translation and interpretation departments teaching in English-Turkish, French-Turkish or Arabic-Turkish language pairs are more popular in our country. Demand is similar for technical translation in these languages due to their wide use. Mostly demanded languages can be offered as elective foreign language courses at universities.

Technical translation is one of the most demanded fields of translation as can be understood from stunning change and improvements in technology today. Literary translation has a very specific nature in itself which can only be discovered and treated by writers, poets or others who devoted their lives to literature for years. That's why demand for literary translations in the market is one of the least.

Most technical translators employed in the translation market are technical specialists who usually work as engineers, architects and aren't pure translators. Interestingly, the number of technical translators who are graduates of departments other than translation and interpretation is higher than the graduates of translation

and interpretation. May be translation agencies regard experience as a more important criteria than educational background.

Study reveals that many translation agencies use CAT Tools such as Trados, Across, MemoQ. Being competent in using such tools is an important qualification for translation agencies. Therefore, these skills are to be included in the training of technical translation. Determining most popular types of materials translated in the market can also help to select materials for the training of technical translation.

Translation agencies mostly agree on the required qualifications of technical translators and the training of technical translation at universities.

4.4.3. Interviews with Academists Teaching Technical Translation

While academists think that technical translation courses offered for the department of Translation and Interpretation in their universities are sufficient, they believe that these courses should be improved with collaboration between universities which offer Translation and Interpretation programs and translation bureaus in the market.

Considering the interviewees' responses, they all agree that technical translators and instructors need to have close ties with the translation market, have IT skills and be competent in using CAT Tools. They also state that experiences in real-life practices will make the training process much more productive and effective.

Academists are all of the same opinion that instructors teaching technical translation should collaborate with technical specialists and professionals in the

translation market. They also agree that instructors and technical translators should be competent in using CAT Tools and improve their IT skills.

Regarding the materials and text types used by academists in technical translation classes, most preferred and used materials include user manuals, patents, texts on electrics, electronics, construction, astronomy, physics and mathematics.

V. A SUGGESTED MODEL FOR THE TRAINING OF TECHNICAL TRANSLATION

In this chapter, a suggested model is presented for the training of technical translation considering requirements and demands in the translation market, students' views and the curriculum of translation and interpretation departments of Atılım and Hacettepe University.

5.1. Research in the Translatıon Market

Training of technical translation should be triggered by the needs of the translation market. Otherwise, students graduating from translation and interpretation departments will experience a shock when they cannot find what they have prepared for after all those years. Before deciding on a strict curriculum, a comprehensive research should be carried out in the translation market to determine keystones of the training. The research should seek to obtain data about working conditions and legal rights of technical translators, qualifications of technical translators necessary to be employed, languages in demand for technical translations. The findings of such a research will contribute greatly to the training.

5.2. Needs Analysis for the Students

As future translators, students are to be regarded as an integral part of the training because they are the ones to be trained. However, students start this training with different backgrounds of education, abilities, expectations and aims. So, ignoring all these features means trying to mould them the way we want. Before deciding on the training of technical translation, a comprehensive needs analysis test

should be administered to the students. This analysis test should be a joint work of administrators, instructors and experienced tranlsators in the market. Research in the translation market and needs analysis for students should be compared and evaluated to form a basis for the training.

5.3. Developing Curriculum for the Training of Technical Translation

Taking the research findings and needs analysis into consideration, a curriculum for the training of technical translation should be developed. Constituents of the curriculum should be built strong enough to get better results.

5.3.1. Technical Translation Courses to Offer

Students are not satisfied with 3 credits of technical translation courses offered for only one term at universities. Considering that technical translation is most demanded in translation market and popular all around the world today, limiting the course to one term with 3 credits will probably not be satisfying for the students who wish to improve their skills. So, students should be given the opportunity to attend technical translation courses for more than one term, and they should also be given the opportunity to take classes from other departments they are interested in such as engineering, law, politics, economics.

5.3.2. Languages to Offer as Elective Courses

After a research is carried out in the translation market, most common languages in demand for technical translation should be determined. When students enter university, they may not be decisive from the very beginning as to how they are going to build their careers after they graduate. They need to be guided for what

foreign languages to learn or master during their education. Consiering the demands in the translation market, students should be offered elective foreign languages courses such as German, Russian, Arabic, French. These courses should be consistent for certain period of time.

5.4. Selection of Instructors to Teach Technical Translation

While there is an ongoing debate over who should teach technical translation, students and translation agencies agree on the collaboration between academicians and technical specialists experienced in the translation market. The common practice in universities today is that one of the instructors who has links with the translation agencies and has carried out studies on technical translation teaches this course for one or two terms. However, a collaboration between academicians in translation and interpretation departments, technical specialists experienced in the translation market and administration of the department may well produce better results.

Technical translation does not simply rely on either linguistic competence or vast amount of field knowledge. It requires both of them plus technical writing skills and technical communication skills. Thus, a collaboration between academicians and technical specialists will fill in the gaps.

5.5. Provision of Setting, Materials and Equipment for Training of Technical Translation

Traditional ways of teaching for technical translation have fallen behind our time. The need for technical translation has grown to such extent that technical translators are forced to utilize as many practical tools as possible to catch up with

the demand. Technical translation is home to a vast amount of terminology and field-specific knowledge, which makes simply using dictionaries inefficient. Technical translation and teaching should be computer assisted in order to speed up the process and save more energy. Otherwise, it would take a very long time to produce appropriate technical translations. Universities should provide students with a translation office designed and equipped just like real translation offices in the market. By using this office, students can prepare themselves for actual working conditions. They can assign roles, collaborate and communicate as members of a translation team. Students should also be provided with diferent types of documents to be translated which are most demanded in the translation market.

Figure 4. Suggested Model for the Training of Technical Translation at University Departments of Translation and Interpretation

VI. CONCLUSION

This thesis aims to contribute to the training of technical translation at universities and lay a bridge between the departments of translation and interpretation and translation agencies. Many studies show that an introverted style in teaching technical translation will isolate students from translation market. It can be concluded from this study that most senior students need to improve their skills to specialise in a certain field of translation together with mastering a second foreign language. They need to be encouraged to learn how to make use of computers and other information technologies for technical translation process. It's clear from the findings of the study that while some of the students seem to be determined as to what they want to do for their careers, many others remain undecided.

Students are offered technical translation courses for only one term and they find it insufficient. There is a need to reach a consensus with the steps of school administration and instructors by considering translation market research and needs analysis as indicated previously.

Selection of instructors to teach technical translation is very important since the instructors have a big share in guiding students according to their interests, skills and aims. In addition, an instructor highly competent in translation and languages may lack experience in technical translation or may not have any connections with the translation market. Thus, departments of translation and interpretation will always need to cooperate with experienced agencies or companies in the translation market. It's a two way street: Translation companies will share their experiences with

universities and universities will train future translators to be employed in translation market.

Together with technical translation courses, students need courses to improve their IT skills and learn more about computer assisted translation which are essential for successful technical translations.

It is concluded from this study that translation agencies employ not only graduates of translation and interpretation as technical translators but also engineers or other people with different jobs. There is a common view in translation market that novice translators need to gain experience in a certain field of translation for years after graduation.

Although English, German, French are still among most popular langauges in our country, demand for other languages such as Arabic, Russian, Italian, Japanese and Chinese is considerable. This demand should be taken into consideration when selecting foreign languages for the curriculum.

Both students and translation agencies accept the need to improve technical writing and communication skills, so these skills should also be included in the curriculum, at least as elective courses.

Academists teaching technical translation at university departments of Translation and Interpretation agree on the required qualifications of technical translators and instructors, collaboration between academists and the translation market, competence in using CAT Tools, having IT skills and the materials to be used in technical translation classes.

VII. RECOMMENDATIONS FOR FURTHER STUDIES

Studies on technical translation and translation market are so few that there are a number of debates over the definition of the term, teaching methods, qualifications of translators and instructors. There is also a gap between academic grounds and translation market. By evaluating the results and findings of this study, a more comprehensive research for translation market can be administered to translation agencies and companies in the whole country as well. Besides, all universities offering translation studies in different languages can be included in the research for further data.

In order to facilitate further research and lay a stronger bridge between academic training and translation market, sustainable collaboration is a must. Besides, more experiemental studies should be encouraged.

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ÖZET

ATİLA, Oğuzhan. “A Model for Technical Translation Training in University Departments of Translation and Interpretation in Line with Translation Market Requirements in Turkey”, Yüksek Lisans Tezi, Ankara, 2013

Bilim ve teknolojinin hızlı bir şekilde gelişen ve değişen doğasına paralel olarak teknik çeviri, küresel piyasanın talep ve gereksinimlerini karşılamada öncü bir rol oynamaktadır. Teknik çevirinin bu fonksiyonunun bir dayanağı da üniversitelerdeki teknik çeviri eğitimidir.

Bu çalışmanın amacı, teknik çeviri dinamiğini yakalamada üniversitelerin ve çeviri piyasasının yaşadığı güçlükleri ortaya çıkararak bu ikisi arasında bir köprü görevi niteliğinde bir model sunmaktır. Sonuçların azami düzeyde tatmin edici ve güvenilir nitelikte olması için, üniversitelerdeki mütercim-tercümanlık bölümü son sınıf öğrencilerine ve piyasadaki çeviri bürolarına uygulanmak üzere iki anket kullanılmış, teknik çeviri derslerini veren üç öğretim elemanıyla röportaj yapılmıştır. Elde edilen veriler ışığında kapsamlı bir analiz yapılıp farklı açılardan değerendirilmiştir; çevirmen/tercüman adayı olan öğrencilerin görüşleri ve yaklaşımları, müfredat çerçevesinde teknik çeviri eğitiminin kapsamı, çeviri piyasasının talep ve gereksinimleri. Bu çalışmanın , ileride yapılacak çalışmalara ışık tutacağı beklenmektedir.

Anahtar kelimeler : Teknik Çeviri , Çeviri Piyasası , Teknik Çeviri Eğitimi

ABSTRACT

ATILA, Oguzhan. "A Model for Technical Translation Training in University Departments of Translation and Interpretation in Line with Translation Market Requirements in Turkey", Master's Thesis, Ankara, 2013

In parallel with the rapidly improving and changing nature of science and technology, technical translation has a leading role in meeting the requirements and demands of the global industry. One of the pillars of this function is characterized by technical translation training in universities. This study aims to reveal the challenges experienced in universities and translation market for catching up on technical translation, and to put forward a model as a medium to lay a bridge. In order to get most satisfactory and reliable outcomes, two questionnaires were conducted with senior students at university departments of translation and interpretation, and translators from the translation market. Besides, three instructors teaching technical translation were interviewed to get more reliable results. A comprehensive analysis was carried out in the light of relevant data and the findings were discussed from different perspectives relating to the views and attitudes of future translators / interpreters, the scope of translator training within university curriculum, requirements and demands of the translation market. This study is expected to give rise to futher research in this field.

Key words: Technical Translation, Translation Market, Technical Translation Training

APPENDIX-A

A STUDY ON THE TRANSLATION MARKET AND TRAINING OF TECHNICAL TRANSLATION

(Questionnaire for Senior Students at Translation and Interpretation Departments)

This study aims to suggest a model for Technical Translation Training for university departments of Translation and Interpretation by scrutinizing the significance of technical translation in the light of demands and requirements of translation market . In this sense, I kindly request that you fill in the questionnaire below regarding your views about and attitudes towards training of technical translation and its significance for the translation market. Your responses to the questionnaire will contribute considerably to the translation market, training of technical translation at universities and enhancing the qualifications of technical translators.

Your responses to this questionnaire will be confidential and be used for research purposes only.

Your cooperation and serious consideration are appreciated. Thank you in advance.

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PART – I

Please circle the best alternative (letter) for your responses or if necessary, write your answers in the blanks given.

Example : Do you speak any foreign languages other than English ?

ⓐ Yes (Please specify) : French …
b) No

1. Gender :

a)	Male
b)	Female

2. What type(s) of translation are you interested in most ? You can choose more than one option.

a)	Legal Translation	e)	Subtitling
b)	Medical Translation	f)	Economics / Trade / Banking
c)	Technical Translation	g)	Academic Translations
d)	Literary Translation	h)	Other:

3. Do you speak any foreign languages other than English ?

a)	Yes (Please specify) :
b)	No

PART – II

In this part, please read the statements and **circle** the best option (number) for you.

The scale you're going to use is as follows :

1- Totally Disagree (TD) ***3- Undecided (U)*** ***4- Agree (A)***

2- Disagree (D) ***5-Totally Agree (TA)***

	TD	D	U	A	TA
4. I have the required knowledge of Technical Translation and its job opportunities.	1	2	3	4	5
5. I have the required knowledge of Computer Assisted Translation (CAT) Tools (such as Trados, Across, Wordfast)	1	2	3	4	5
6. I believe that I'm competent enough in technical writing skills which are of great significance for technical translation.	1	2	3	4	5
7. I'm of the opinion that we use Information Technologies sufficiently in our technical translation classes.	1	2	3	4	5
8. I'm of the opinion that technical translation classes offered by the university for 3 credits in one semester is sufficient.	1	2	3	4	5
9. Technical translation requires visual and spatial intelligence.	1	2	3	4	5
10. Becoming skillful at localization in language is a must for successful technical translation.	1	2	3	4	5
11. Students' needs, interests and competencies should be predetermined for technical translation training.	1	2	3	4	5
12. I should be allowed to take classes from other departments depending on my interests and skills.	1	2	3	4	5
13. Training of technical translation should be given by technical specialists from the market rather than academicians.	1	2	3	4	5

14. Training of technical translation should be given by academicians only.	1	2	3	4	5
15. In the training of technical translation, there should be a collaboration between academicians and technical specialists from the market.	1	2	3	4	5
16. Training of technical translation should meet the needs of and demands for technical translation in the market.	1	2	3	4	5
17. Training of technical translation should rely on theoretical knowledge.	1	2	3	4	5
18. Training of technical translation should rely on practice.	1	2	3	4	5
19. Common collaboration between demandant, employer, translator and technical writer should be used in the training of technical translation as well.	1	2	3	4	5
20. Academicians teaching technical translation should have the knowledge and experience to the same degree as specialists in the market.	1	2	3	4	5
21. Academicians teaching technical translation should have a sufficient knowledge of both home and target culture.	1	2	3	4	5
22. Academicians teaching technical translation should have the linguistic proficiency to translate from and into A/B languages.	1	2	3	4	5
23. Academicians teaching technical translation should have effective technical communication skills.	1	2	3	4	5
24. In today's conditions, technical translation is demanded more than other fields of translation in the market.	1	2	3	4	5
25. I'd like to improve myself in technical translation and work as a technical translator after university.	1	2	3	4	5

APPENDIX-B

A STUDY ON THE TRANSLATION MARKET AND TRAINING OF TECHNICAL TRANSLATION

(Questionnaire for Translation Offices)

This study aims to suggest a model for Technical Translation Training for university departments of Translation and Interpretation by scrutinizing the significance of technical translation in the light of demands and requirements of translation market. In this sense, I kindly request that you fill in the questionnaire below regarding your views about and attitudes towards training of technical translation and its significance for the translation market; general information about your translation office; required qualifications for technical translators and demand for technical translation in the market. Your responses to the questionnaire will contribute considerably to the translation market, training of technical translation at universities and enhancing the qualifications of technical translators.

Your responses to this questionnaire will be confidential and be used for research purposes only.

Your cooperation and serious consideration are appreciated. Thank you in advance.

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PART – I

Please circle the best alternative (letter) for your responses or if necessary, write your answers in the blanks given.

Example : Do you make use of Computer Assisted Translation (CAT) Tools during translation process?

ⓐ Yes
b) No

1. How long have you been offering **translation services** as an institution ?

a) 1-5 years	d) 16-20 years
b) 6-10 years	e) 21 years and over
c) 11-15 years	

2. How long have you been offering **technical translation services** as an institution ?

d) 1-5 years	d) 16-20 years
e) 6-10 years	e) 21 years and over
f) 11-15 years	

3. How is the working system of translators in your team ? (You can choose more than one option)

a)	Full time
b)	Part time
c)	Freelancer

4. How is the working system of technical translators in your team ? (You can choose more than one option)

a)	Full time
b)	Part time
c)	Freelancer

5. How often are demands for translation in the languages below ? Please circle the best option (number) for each language pair.

Demanded Language Pairs	**Never**	**Seldom**	**Some times**	**Often**	**Always**
English to Turkish/Turkish to English	1	2	3	4	5
German to Turkish/Turkish to German	1	2	3	4	5
French to Turkish/Turkish to French	1	2	3	4	5
Spanish to Turkish/Turkish to Spanish	1	2	3	4	5
Russian to Turkish/Turkish to Russian	1	2	3	4	5
Arabic to Turkish/Turkish to Arabic	1	2	3	4	5
Japanese to Turkish/Turkish to Japanese	1	2	3	4	5
Chinese to Turkish/Turkish to Chinese	1	2	3	4	5
Italian to Turkish/Turkish to Italian	1	2	3	4	5
Persian to Turkish/Turkish to Persian	1	2	3	4	5
Hindi to Turkish/Turkish to Hindi	1	2	3	4	5
Portuguese to Turkish/Turkish to Portuguese	1	2	3	4	5

6. How often are demands for technical translation in the languages below ? Please circle the best option (number) for each language pair.

Demanded Language Pairs	**Never**	**Seldom**	**Some times**	**Often**	**Always**
English to Turkish/Turkish to English	1	2	3	4	5
German to Turkish/Turkish to German	1	2	3	4	5
French to Turkish/Turkish to French	1	2	3	4	5
Spanish to Turkish/Turkish to Spanish	1	2	3	4	5
Russian to Turkish/Turkish to Russian	1	2	3	4	5
Arabic to Turkish/Turkish to Arabic	1	2	3	4	5
Japanese to Turkish/Turkish to Japanese	1	2	3	4	5
Chinese to Turkish/Turkish to Chinese	1	2	3	4	5
Italian to Turkish/Turkish to Italian	1	2	3	4	5
Persian to Turkish/Turkish to Persian	1	2	3	4	5
Hindi to Turkish/Turkish to Hindi	1	2	3	4	5
Portuguese to Turkish/Turkish to Portuguese	1	2	3	4	5

7. How often are demands for the types of translation below ? Please circle the best option (number) for each category.

Types of Translation	**Never**	**Seldom**	**Some times**	**Often**	**always**
Legal Translation	1	2	3	4	5
Medical	1	2	3	4	5
Technical Translation	1	2	3	4	5
Literary Translation	1	2	3	4	5
Subtitling	1	2	3	4	5
Academic Translations	1	2	3	4	5
Economics / Trade / Banking	1	2	3	4	5
Translation for General Purposes	1	2	3	4	5

8. What is the educational background of technical translators working in your team ? (You can choose more than one option).

a)	Technical Specialist (Experienced in the related field)
b)	Technical Translator (Graduate of Translation and Interpretation)
c)	Technical Translator (Graduate of other departments)
d)	Other :

9. Do you make use of Computer Assisted Translation (CAT) Tools during technical translation process ?

a)	Yes
b)	No

- ***If your answer is "Yes", please continue with the next question; If your answer is "No", then you can skip the next question and move on to the 11th.***

10. What CAT Tool(s) do you use during technical translation process ? (You can choose more than one option).

a) SDL Trados	e) Global Sight	i) Passolo
b) Across	f) Meta Texis	j) Virtaal
c) Wordfast	g) Omega T	k) Gtranslator
d) Lokalize	h) MemoQ	l) Other :

11. What types of documents or materials do the technical translation demands usually include ? (You can choose more than one option).

a) Books or Encyclopedias	b) Essays / Articles
c) Manuals	d) Patent Applications
e) Reports and Minutes	f) Brochures / Catalogues
g) Contracts / Declarations	h) Web Sites / Software
i) Other (Please Specify) :	

PART – II

This part includes statements about qualifications of technical translators, training of technical translation at universities, qualifications of instructors and requirements of technical translation. Please read the statements below and circle the best option (number) for each item. The scale you're going to use is as follows :

1- Totally Disagree (TD) ***3- Undecided (U)*** ***4- Agree (A)***

2- Disagree (D) ***5-Totally Agree (TA)***

	TD	D	U	A	TA
12. Technical translators should have the linguistic proficiency to translate from and into A/B languages.	1	2	3	4	5
13. Technical translators should have a sufficient knowledge of both home and target culture.	1	2	3	4	5
14. Technical translators should be competent and experienced in Computer Assisted Translation (CAT) Tools	1	2	3	4	5
15. Technical translators should have the knowledge and experience to the same degree as specialists of the related field.	1	2	3	4	5
16. Technical translators should have effective technical communication skills.	1	2	3	4	5
17. Technical translators have more work load compared to other types of translations in the market.	1	2	3	4	5
18. Technical translation requires visual and spatial intelligence.	1	2	3	4	5
19. Training of technical translation should be given by technical specialists from the market rather than academicians.	1	2	3	4	5
20. Training of technical translation should be given by academicians only.	1	2	3	4	5
21. In the training of technical translation, there should be a collaboration between academicians and technical specialists from the market.	1	2	3	4	5
22. Training of technical translation should meet the needs of and demands for technical translation in the market.	1	2	3	4	5
23. Training of technical translation should rely on theoretical knowledge.	1	2	3	4	5
24. Training of technical translation should rely on practice.	1	2	3	4	5
25. Training of technical translation should include improving technical writing skills as well.	1	2	3	4	5

APPENDIX – C

INTERVIEW QUESTIONS

1- Do you think technical translation classes offered for the department of Translation and Interpretation in Atılım/Hacettepe University are sufficient ? If not, how can it be improved or changed ?

2- What do you think are required qualifications for the instructors of technical translation and for technical translators ?

3- Do you think the academists teaching technical translation should collaborate with technical specialists or translation offices in the translation market ? If yes, in what ways and how ?

4- Do you carry out Needs Analysis for your students or research in the translation market before deciding on the curriculum and teaching process ? Is it necessary ?

5- What's your opinion about the use of Computer Assisted Translation (CAT) Tools in technical translation and training ? Do you think teachnical translators should be competent in using such tools for translation ?

6- What type of materials or text types do you use in technical translation classes ?