REBUPLIC OF TURKEY
ÇUKUROVA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
DEPARTMENT OF ENGLISH LANGUAGE TEACHING

A CORPUS-BASED STUDY ON THE ENGLISH USED IN AUTOMOTIVE ENGINEERING: IMPLICATIONS FOR TEACHING ENGLISH FOR SPECIFIC PURPOSES

Seda BANLI

PhD. DISSERTATION

ADANA / 2020

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PhD. DISSERTATION

ADANA / 2020

To Çukurova University Institute of Social Sciences,

We certify that this dissertation is satisfactory for the award of the degree Doctor of Philosophy in the Department of English Language Teaching.

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I certify that this dissertation confirms to the formal standards of the Institute of Social Sciences. ...../…. /2020

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ETİK BEYANI

Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Tez Yazım Kurallarına uygun olarak hazırladığım bu tez çalışmasında;

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- Tüm bilgi, belge, değerlendirme ve sonuçları bilimsel etik ve ahlak kurallarına uygun olarak sunduğumu,
- Tez çalışmasında yararlandığım eserlerin tümüne uygun atıfta bulunarak kaynak gösterdiğimi,
- Kullanılan verilerde ve ortaya çıkan sonuçlarda herhangi bir değişiklik yapmadığımı,
- Bu tezde sunduğum çalışmanın özgün olduğunu,

bildirir, aksi bir durumda aleyhime doğabilecek tüm hak kayıplarını kabullendiğimi beyan ederim. …. /….. / 2020

Seda BANLI

To mum…

ÖZET

OTOMOTİV MÜHENDİSLİĞİ İNGİLİZCESİNDE KULLANILAN DİL ÜZERİNE DERLEM TEMELLİ BİR ÇALIŞMA: ÖZEL AMAÇLI İNGİLİZCE İÇİN SEZDİRİMLER

Seda BANLI

Doktora Tezi, İngiliz Dili Eğitimi Ana Bilim Dalı
Danışman: Prof. Dr. Zuhal OKAN
Temmuz 2020, 168 sayfa

Son yıllarda, *Özel Amaçlı İngilizce* (ÖAİ) ortamlarındaki sınıf uygulamalarına derlem verilerini dâhil etme eğilimi, derlemin tür-tabanlı öğretime katkısının yükseköğretimde yaygın olarak kabul görmesinden sonra hız kazanmıştır. Flowerdew'in (2015) de belirttiği gibi "eğitim söz konusu olduğunda, derlemlerin, doğrudan uygulamalardan daha çok sözlükler ve dilbilgisi gibi referans çalışmalar olan dolaylı uygulamalar üzerinde çok daha büyük bir etkisi olmuştur" (s. 100). Bu çalışma temelde, derlem araştırmalarının ÖAİ öğretimine olası faydasını artırmak, dolayısıyla da öğrencileri dolaylı değil de doğrudan derlem uygulamaları aracılığıyla *veri güdümlü öğrenme*ye yönlendirmek amacıyla, *Otomotiv Mühendisliği İngilizcesi* dersinin içeriğinin iyileştirilmesini ve uygulanabilir ihtiyaç temelli, derlem odaklı bir ders programı oluşturmayı amaçlamaktadır. İkincil amaç olarak ise, çalışma otomotiv mühendisliği öğrencilerinin ilerideki iş ortamlarında kullanacakları otomotivle ilişkili sözcüksel öğelere aşina olmalarını ve sonuç olarak mesleki becerilerini artırmayı hedeflemektedir. Son olarak, bu çalışmanın, ÖAİ öğrencilerine olan faydalarının yanı sıra, ÖAİ uygulayıcılarına, materyal geliştiricilerine ve öğretim programı tasarımcılarına yarar sağlaması da öngörülmektedir. Bu amaçlar doğrultusunda, her şeyden önce Türkiye'deki bir devlet üniversitesinin otomotiv mühendisliği bölümü örnek seçilerek, sürece katılan 168 katılımcının; yani otomotiv mühendisliği öğrencilerinin, ÖAİ öğretmenlerinin, branş öğretmenlerinin ve mühendislerin, İngilizce gereksinimleri ve beklentileri araştırılmıştır. ÖAİ öğretiminin mevcut durumunu göstermeye yardımcı olan bu gereksinim çözümlemesi evresi, *Otomotiv Mühendisliği İngilizcesi Derlemi*'nin oluşturulmasıyla genişletilmiştir. Toplam 114 çeşitli yazılı otomotiv metinlerinden oluşan bu derlem,

2,160,512 sözcüklük boyutuyla özel amaçlı bir derlem niteliğindedir. İngilizce'nin özelleştirilmiş bu kesitini pedagojik amaçlar için yansıtmak amacıyla, derlemdeki sözcüklerin sıklıkları dikkate alınarak, *Otomotiv Mühendisliği Teknik Kelime Listesi* ve *Otomotiv Mühendisliği Teknik Tanıklı Dizin Listesi* oluşturulmuştur. Çalışmada yürütülen gereksinim ve derlem çözümlemeleri sayesinde, ÖAİ dersinin geleneksel sınıf uygulamalarından arınmış ve daha çok üretici beceriler üzerine odaklanacağı hedefe yönelik yeni bir öğretim modeline acil ihtiyaç duyulduğu açıkça gözler önüne serilmiştir. Gereksinim ve derlem çözümlemelerinden elde edilen nitel ve nicel bulguların sentezi, örnek bir tür-tabanlı ÖAİ ders programının ve buna bağlı geliştirilecek deneme niteliğinde küçük ölçekli bir öğretim ders planının hazırlanmasını olası kılmıştır. Sonuç olarak, bu olgu çalışması, öğrenci-merkezli eğitim felsefesi çerçevesinde ortaya koymuş olduğu sonuçlar bakımından oldukça önemli ve ileriye dönük sezdirimler önermektedir.

Anahtar kelimeler: Özel Amaçlı İngilizce, derlem,veri güdümlü öğrenme, veri güdümlü öğretim, tür tabanlı öğretim.

ABSTRACT

A CORPUS-BASED STUDY ON THE ENGLISH USED IN AUTOMOTIVE ENGINEERING: IMPLICATIONS FOR TEACHING ENGLISH FOR SPECIFIC PURPOSES

Seda BANLI

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The trend of incorporating corpus data with classroom applications in ESP (English for Specific Purposes) settings has accelerated in recent years since its contribution into genre-based instruction was widely recognized at tertiary education. Until then, as Flowerdew (2015) points out, "as far as pedagogy is concerned, corpora have had far more impact on indirect applications, that is, on reference works such as dictionaries and grammars, than on direct ones" (p.100). In order to increase the potential benefits of corpus research into ESP instruction, thereby encouraging learners towards DDL (data-driven learning) through direct corpus applications rather than indirect ones, the present study mainly aims to improve the content of *English for Automotive Engineering* course and construct an applicable needs-driven and corpus-informed syllabus. As a secondary purpose, the study intends to familiarize AE students with technically relevant lexical items they are going to utilize in their future workplaces, which will ultimately heighten their occupational skills. Lastly, in addition to its benefits to ESP learners, it is anticipated that the study will provide assistance to ESP practitioners, material developers, and syllabus designers correspondingly. In accordance with these purposes, first and foremost, by taking Automotive Engineering department in a state university in Turkey as a case, the study explores language needs and expectations of 168 participants involved in the process; namely AE (Automotive Engineering) students, ESP practitioners in the setting, subject matter teachers and automotive engineers. This needs-analysis phase which aids to take a snapshot of the status quo of ESP instruction is extended by the creation of *Automotive Engineering English Corpus*. AEEC, which consists of 114 written automotive texts is a customized corpus with 2,160,512 running words. In order to represent this

specialized register of English for pedagogical purposes, an Automotive Engineering Technical Word List (AETWL) and an Automotive Engineering Technical Collocation List (AETCL) were extracted by calculating the frequencies of lexical items in AEEC into account. Owing to both needs analysis and corpus analysis conducted in this study, it is explicitly revealed that there is an urgent need for a novel instructional approach to the ESP lesson based on productive skills and free from traditional classroom applications. Besides, corpus analysis results demonstrate that AEEC includes relatively more technical items when compared to its counterparts. The synthesis of both quantitative and qualitative findings from needs analysis and corpus analysis has enabled the preparation of a sample genre-based ESP syllabus and a tentative micro-teaching lesson plan accordingly. In conclusion, this case study promises highly significant and proactive measures in terms of the results it has provided in line with the philosopy of learner-centredness.

Keywords: English for Specific Purposes, corpus, data-driven learning, data-driven teaching, genre-based instruction.

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LIST OF ABBREVIATIONS

AE : Automotive Engineering

AEE : Automotive Engineering English

AEEC : Automotive Engineering English Corpus

AETWL: Automotive Enginnering Technical Word List

AETCL: Automotive Enginnering Technical Collocation List

BNC : British National Corpus

CA : Corpus Analysis

CL : Corpus Linguistics

CLIL : Content-Language Integrated Learning

CNP : Communication Needs Processor

DDL : Data-Driven Learning

EAP : English for Academic Purposes

ECTS : European Credit Transfer and Accumulation System

EFL : English as a Foreign Language

EIL : English as an International Language

ELF : English as a Lingua Franca

ELT : English Language Teaching

EMI : English Medium Instruction

ESP : English for Specific Purposes

GSL : General Service List

LSA : Learning Situation Analysis

MICASE: Michigan Corpus of Academic Spoken English

NA : Needs Analysis

PSA: Present Situation Analysis

SkE: SketchEngine

TSA: Target Situation Analysis

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CHAPTER I

INTRODUCTION

1.1. Introduction

This study titled "A corpus-based study on the English used in Automotive Engineering: Implications for Teaching English for Specific Purposes" is intended to manifest English for Specific Purposes (ESP) instruction in Turkey by benefiting from corpus analysis (CA). Supported by the help of needs-analysis (NA) procedures with the stakeholders, it has been ultimately aimed to suggest a sound, pre-determined, and context-specific sample syllabus of Automotive Engineering English (AEE from now on) based on clearly-stated objectives, which is currently nonexistent in the researcher's own setting.

ESP literature embodies a number of small-scale context-bound studies (Daloğlu & Taş, 2007; Tasic, 2009; Atay, Kaşlıoğlu &Kurt, 2010; Hatam & Shafiei, 2012; Sothan, 2015); comparatively larger-scale and intensive studies (Wang, Liang & Ge, 2008; Coxhead & Demecheleer, 2018), or considerably extensive studies (Coxhead, 2000; Boulton, Carter-Thomas & Rowley-Jolivet, 2012). Although each of these works touches upon ESP problems, those restricted to national context have been unable to suffice to introduce novelty to ESP instruction, its reflections in Turkish higher education, and its implementations. This study, on the other hand, aims to bring a fresh impetus to ESP instruction due to its endeavor of offering rational solutions to a real-life problem. The scarcity of similar studies that basically shed light on a context-bound problem as well as the absence of content-specific materials has given impetus to conducting such a highly challenging task. In addition, the comparison of theory (classroom) and practice (workplaces) as well as the combination of various analyses methods, namely NA and CA render this dissertation study both multidimensional and systematic.

1.2. Background of the Study

English for Specific Purposes is one of the far-reaching, yet demanding areas in EFL settings in terms of the difficulties in course content, implementation, teacher-training, syllabus, assessment, and so forth. There have been so many discussions as such awaiting to be addressed since the introduction of ESP courses for a few decades in Turkey. It is

still controversial what to teach, how to teach, and whom to teach by for these courses. Each of these parameters has been dealt with in earlier studies (Dinçay, 2010; Savaş, 2009; Gündüz, 2016). However, no promising advance in the field has been reached so far due to the complexity of the issue. ESP courses today are not only deprived of clear, pre-set syllabus consisting of sound objectives for the target group of learners but they also lack in authentic materials for that specific academic discourse.

When considering the shortcomings in ESP instruction in general, the term ESP itself might have been theoretically misconceived, thereby misinterpreted by the practitioners. In a broad sense, Dudley-Evans and St. John's (1998) define ESP as the study of the English language in a specific discourse such as medicine, engineering, business and so forth. From this perspective, ESP courses are expected to offer distinctive objectives than General English since the needs of that specific discourse community are to be taken into consideration. However, although it is named differently in various academic programs such as Technical English or Vocational English in Turkish Higher Education today, conducting Technical English courses has resulted in covering technical terms within miscellaneous translation activities. The fact that these courses have to be implemented with unrealistic goals and deprived of authentic materials has led them to end up with to be General English courses since they fail to boost the learners in terms of the required language abilities for their future jobs. Most often, they complete their studies without having competencies in language structures and terminology to be encountered in their workplaces. This leads to a significant discrepancy between the classroom and work settings in terms of the language taught and desired. Only after all these issues are carefully and systematically handled, can ESP instruction fulfill the goals it has intended to achieve.

1.3. Statement of the Problem

Nowadays, there is an urgent need for qualified employees having a good command of English since "the increased number of immigrants in English-speaking countries and the demand for MBA (Master of Business Administration) courses in all parts of the world have increased the demand for Professional and Business English, Vocational English, and English in the workplace programs" (Savaş, 2009, p.395). Likewise, "the growth of international business and increased occupational mobility has resulted in a need for knowledge of English beyond Basic English which was a sufficient

common medium of communication" (Gündüz, 2016, p.648). Thus, such massive demand for the employees with a good command of English (now as lingua franca) led Higher Education to include Vocational or Business English courses in their curricula. Today, many undergraduate programs at Turkish universities- regardless of disciplines- offer at least one term Technical or Vocational English. In spite of this growing trend, it is highly surprising that ESP is one of the immature fields failing to yield positive results.

Vocational English courses have encountered a number of problems since their inclusion into the curriculum in Turkey. First, the available academic programs at universities clearly have no needs-based syllabi nor do they have sound realistic goals to be able to prepare the students for prospective purposes. Moreover, the way that they are implemented at universities is so one-size-fits-all that the course promises no more than that of General English. On the other hand, the debate over the responsible practitioner for these courses; that is, either the highly skillful English language teacher or the subject matter lecturer with a good command of English, is now clearly a vicious circle. Needless to say, what type of materials to be covered is another long-lasting debate. Today, in many programs, ESP practitioners either utilize textbooks far from the expectancy of the target audience or they struggle to compile their own hand-made materials composed of articles, reports, and other documents they were able to obtain. Due to the scarcity of sources appealing right to the target in that academic discourse, textbooks that are specially designed with respect to the needs of the students and consider their long-term goals can hardly be found. The ones, if any, are harshly criticized for their irrelevant content with the field and for some other reasons. As a widespread problem, Anthony (1998) also reproaches:

> Instead of conducting interviews with specialists in the field, analyzing the language that is required in the profession, or even conducting students' needs analysis, many ESP teachers have become slaves of the published textbooks available, unable to evaluate their suitability based on personal experience, and unwilling to do the necessary analysis of difficult specialist texts to verify their contents. (p. 2)

Mostly, for fear of the burden that ESP syllabus design is likely to load on teachers or the lack of know-how in what to teach and how to teach those learners, the success of the implementation has been disrupted. Nevertheless, in recent years, the advancements in technology have enabled these problems to be tackled to some extent. For example, in

order to decrease the abovementioned inconsistency between the language content in the classroom and workplaces, corpus approach in which the data is obtained from authentic resources is considered to be an alternative solution. In this respect, the fact that corpus is a quite useful tool to has been revealed in several other studies (Boulton, 2010; Römer, 2010) suggesting that using corpora in language teaching enhances language awareness and it forms a complement for classroom materials by representing native speaker norms. Despite some doubts about the usefulness of corpora into teaching because of the interpretational ambiguities of frequency and authenticity issues (McEnery & Xiao, 2010), "corpora of specialized texts seem a very useful instrument in isolating and providing indications about key lexical, grammatical or textual issues to deal with in ESP classes" (Gavioli, 1996, p.5).

Although it is exposed to such controversies, the use of corpus linguistic for pedagogic purposes has started to gain momentum in language studies. Being convinced by the influence of the corpus as a reference tool, teachers or ESP practitioners are likely to benefit from it in order to raise their students' language awareness. Correspondingly, the number of the studies emphasizing the need for corpus use in ESP teaching is substantial (Nesi, 2013; Gotti & Giannoni, 2014; Jablonkai & Cebron, 2017).

1.4. Purpose of the Study

ESP teaching has also been exposed to many criticisms in that it fails to meet the needs of the field in terms of the required language competencies. Most of these claims put the emphasis on the fact that what is taught in the classroom does not comply with what is used in workplaces. Therefore, the overall objective of this study is to reveal the *status quo* in Turkey in terms of ESP teaching by taking Automotive Engineering context in Mersin University (as is Tarsus University) as a sample. Second, the study has the purpose of composing the content of Vocational English with course materials for AE department and the resources related to automotive sector by using a corpus-based analysis.

In a broader sense, considering the accomplishments of students, the current study aims to prepare them for their academic discourse and to enlighten for further academic studies. In addition, the corpus dimension of the study enables students to be familiar with lexical items they will utilize in their future workplaces, thereby heightening their occupational skills. From the ESP practitioners' perspective, which is another

controversial issue in the field (Strevens, 1988; Cotter, 2006**;** Atay, Kaşlıoğlu & Kurt, 2010; Gündüz, 2016; Stewart, 2018), the study is expected to provide assistance to them in designing their course.

In line with these overall objectives, the researcher firstly aims to explore the needs of the stakeholders namely, students, ESP practitioners, subject specialist teachers, and engineers from the Vocational English courses. For such a study, needs-analysis is the major step to be taken since it is regarded as:

> the systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of particular institutions that influence the learning and teaching situation. (Brown, 1995, p. 36)

Secondly, the content of the language used in Vocational English courses in the AE department is sought for through corpus analysis of automotive-related textbooks and available written materials (articles, books, assignments) used in this context.

In the next stage, similarly, the written resources such as reports, handbooks, repair manuals, user manuals, etc. are investigated through corpus analysis in terms of the common use of English in those workplaces. The primary purpose here is to compose the content of the language (AEE) with special reference to:

a. technical vocabulary
b. collocations

Upon completion of the analyses of the needs and AEE corpus, an applicable and context-specific ESP syllabus specifically designed for AE students is offered.

1.5. Research Questions

In the light of the aforementioned objectives, the study tries to find answers to the following research questions:

1. What are the needs and expectations of the stakeholders (students, teachers, ESP practitioners, professional engineers) from the content of Vocational English course?
2. What constitutes the language content of Vocational English course in terms of technical vocabulary and collocations?
3. How can a needs-based syllabus be designed on the basis of corpus analysis for *English for Automotive Engineering*?

1.6. Significance of the Study

The last few decades have witnessed an educational reform by the help of the modern technology. With the advent of the computers and the boom of Internet use, language classrooms are now becoming more digitalized. In this new era, in order to keep up with all these innovations teachers inevitably need "to update the methodology of teaching and learning a language by making use of technology and by bringing it closer to the learners' needs" (Chirobocea, 2017, p. 364).

CL is one way of achieving this goal. Practical corpus applications for diagnosing learners' needs and thereby the need of integration of corpora into ESP classrooms have been articulated in a number of recent studies (Boulton, 2012; Nesi, 2012; Boulton, 2016; Belegu-Caka, 2018). Thus, computerized novelties such as corpus use in language classrooms necessarily shifted the traditional methodologies and as Granger (2003) also highlights, "corpus-based analyses have led to a new inductive teaching methodology, called data-driven learning (DDL)" (p. 24). Despite the prominence of DDL, Boulton (2011) implies that the theory of DDL in which the learners are in pursuit of language data themselves through discovery learning has not been put into application deservedly.

In the light of this DDL theory, the contribution of the present study into the domain is twofold. First, since the study is based on the authentic data gathered from NA and AEEC analysis, it is intended to provide implications for the improvement of Vocational English course in AE department (narrow scope) of Tarsus University. Moreover, the fact that the study will also reveal the required language competencies of automotive sector is likely to create a state of win-win for both settings. Thus, in terms of addressing a real-life problem, it is obvious that the study is to fill the gap and serve as a model for other divisions.

Second, when broader scope is taken into consideration, the study will supply feedback for ESP teaching in Turkey. Although generalizing the results of such a context-bound study to the whole is rather difficult, the study conducted in Automotive Engineering will provide insights to the content of the Vocational courses for its counterparts. In other words, the long-lasting question of what-to-teach or how to teach ESP learners may be addressed to and resolved to some extent in this study.

1.7. Limitations of the Study

In this section, various limitations that the study has faced will be presented. First of all, the study is restricted to the setting it has been conducted (Automotive Engineering department of Tarsus University); therefore, the results are unique and hardly generalizable to other contexts.

Second, the other trivet that this dissertation study is settled on, namely automotive companies, has failed to supply the essential data and refrained from providing the documents that they had promised to do so due to the confidentiality policies of their working environment. Thus, the authenticity of the materials that the researcher has intended to work on might have been affected by it, which in turn raised the issues of representativeness of the intended AE corpus. Yet, in order to compensate this limitation, resources with irrelevant content have been removed and replaced the publicly online and computerized documents.

Third, in terms of the corpus analysis, the lack of identical corpora in this highly specific domain has led the researcher resort to other leading corpora such as BNC (British National Corpus), BNC Spoken and Cambridge Academic Corpus for reference. The results might have differed if AE were to be compared to its equivalents.

The last limitation to be addressed is that the researcher of this dissertation study is the only EFL instructor in the setting where the study has been conducted. Thus, her presence as a researcher might have affected the responses gathered from the participants especially throughout the NA procedures.

1.8. Definitions of Key Concepts

This section introduces the definitions of some key concepts and terms that lay the foundation of this dissertation study so as to avoid any confusion in the readers' minds.

Corpus: “It is a large collection of authentic texts that has been deliberately sampled to be representative of any type of language one is interested in” (Boulton, 2016, p.2).

Corpus Linguistics: It is “a whole system of methods and principles of how to apply corpora into language studies and teaching/learning” (McEnery, Xiao, Tono, 2006, p.7).

Data-Driven Learning (DDL): It is a term coined by (Johns, 1991) in order to describe “a method in which learners read large amounts of authentic language and try to discover linguistic patterns and rules by themselves” (Talai & Fotovatnia, 2012, p.1526).

English for Specific Purposes (ESP): It is “an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning" (Hutchinson & Waters, 1987, p.19).

Needs-Analysis (NA): Iawi, Kondo, Limm, Ray, Shimizu and Brown (1999) describe NA as “the activities that are involved in collecting information that will serve as the basis for developing a curriculum that will meet the needs of a particular group of students” (p. 6).

Present Situation Analysis (PSA): It analyzes “learner’s present situation and shows the gap between the present and target” (Li, 2014, p. 1870).

Target Situation Analysis (TSA): It is **“**the analysis of what the learner needs to do in the target situation**”** (Hutchinson & Waters, 1987, p. 54).

Learning Situation Analysis (LSA): It is subjective, felt and process-oriented needs according to Dudley-Evans, & St. John’s (1998) definition.

1.9. Organization of the Dissertation Study

This study is composed of six chapters. Chapter 2 mainly covers the theoretical background of ESP, CL, and the blend of these two notions respectively. Tracing back to its emergence, first ESP and the key concepts such as NA and ESP course design specifications have been dealt with thoroughly. In addition to this, the concept has been elaborated with the examples from Turkish Higher Education. Then, the chapter includes CL issues that need to be addressed such as its theoretical basis; that is; DDL, corpus compilation considerations as well as miscellaneous corpus-based ESP studies. In Chapter 3, the methodology that the current dissertation study rests on has been explicated. The research design, participants, settings, data collection instruments, and

data analysis procedures are all presented in detail. In Chapter 4, the findings obtained from close and open-ended NA questionnaires and interviews as well as the AEE corpus analysis have been presented and tabulated. Chapter 5 offers the discussion of the results of both analyses, namely NA and corpus analysis, with special reference to the literature reviewed and the research questions of the study. Finally, Chapter 6 summarizes conclusions by suggesting implications and further research in the field.

CHAPTER II

LITERATURE REVIEW

2.1. Introduction

This chapter introduces theoretical background of ESP and CL by presenting a blend of wide variety of applications carried out in both fields. While the first part of the chapter touches upon various dimensions of the related subject such as its history, implementation, and challenges, the second part draws the framework of CL and the theoretical notions that the present study depends on. The last part of the literature is dedicated to the synthesis of both ESP and CL by merging these two notions and boosting it with similar former corpus-based ESP studies in this domain.

2.2. English for Specific Purposes

ESP, acknowledged as a learning-centered approach, actually has no deep-rooted history as a research field. Dating back to 1960s, the emergence of ESP has been connected to the demands of an increasingly globalized world after the World War II since when the technology and commerce became dominating forces in the world. To serve the purposes of these two forces, English took to the stage because of the superpower role of the USA in the world arena (Hutchinson & Waters, 1987). According to Johns and Dudley-Evans (1991), "the international community recognized the importance of learning English not only as a means to achieve the transmission of knowledge and communication but also as a neutral language to be used in international communication" (pp. 301-302). "With emerging developments in technology and economics a new form of learner who had their own specific reasons and motives for learning English came to the fore" (Kırkgöz & Dikilitaş, 2018, p.2). Therefore, English language learning was settled on the guiding principle that *"Tell me what you need English for and I will tell you the English that you need"* (Hutchinson & Waters, 1987, p.8). To put in another way, the emergence of ESP was itself an outcome of totally different motivation than that of General English. In this new movement, identifying learners and their needs within a learning-centered, process-oriented teaching setting by taking their target needs into consideration (Widdowson, 1983; Celce-Murcia, 2001) has become apparent. As Ramirez (2015) also highlights, ESP owns the mission of "fulfilling

the specific needs of target learners to satisfy either their professional or vocational demands" (p. 380). In other words, the reason why it has been adopted as an effective way of learning English was its emphasis on the learner needs.

Rodgers (1969 as cited in Hutchinson & Waters, 1987) states that "developments in educational psychology also contributed to the rise of ESP, by emphasizing the central importance of the learners and their attitudes towards learning English" (p. 8). Owing to the motivational contributions to the learning process, the learner-centeredness has been justified by many leading researchers such as Nunan (1988) who advocates the importance of teaching the language items learners basically need. According to those and many humanistic thinkers, ESP is likely to increase motivation and learning in that it is tailored to accommodate learners' specific needs. Different learners mean different needs and interests creating important influence on their own motivation to learn and thereby, on the effectiveness of their learning. Thus, ESP has been regarded as an approach upon which the syllabus, materials, and assessment are all determined according to the learners' needs. Strevens (1988) identified the absolute and variable characteristics of ESP as follows:

I. Absolute characteristics:

ESP consists of English language teaching which is:

- designed to meet specified needs of the learner;
- related in content (i.e. in its themes and topics) to particular disciplines, occupations and activities;
- centered on the language appropriate to those activities in syntax, lexis, discourse, semantics, etc., and analysis of this discourse;
- in contrast with General English.

II. Variable characteristics:

ESP may be, but is not necessarily:

- restricted as to the language skills to be learned (e.g. reading only);
- not taught according to any pre-ordained methodology (pp.1-2).

2.2.1. ESP vs. General English

By its very nature, ESP differs from General English in terms of some key points such as its focus, content, learner, teacher, and so forth. First, taking its focus into

account, “ESP centers more on language in context than on teaching grammar and language structures” (Rahman, 2015, p.24). Unlike General English where the content, objectives, instructional materials, and even the assessment are predetermined by an authorized board of the institutions, ESP *is*, as Strevens (1988) labels, more operational than instructional and “deals mainly with conversational purposes and communicative situations” (Tasić, 2009, p.103). According to Rahman (2015), another distinctive characteristic of ESP is “a needs analysis that determines which language skills are most needed by the learners, and the syllabus is designed accordingly” (p. 24). Secondly, some studies on ESP (Jablonkai, 2010; Rahman, 2015) emphasize the distinguishing features of the learner. Compared to others, ESP learners could be distinctively characterized as the learners who “are usually adults, who already have some acquaintance with English, and learn the language so as to communicate a set of professional skills and to perform particular profession-related activities” (Rahman, 2015, p. 24). Therefore, it is obvious that ESP learners are more aware of their needs and expectations about language learning processes.

In terms of the language itself, however, Hutchinson and Waters (1987) demark the notion as follows:

> ESP is not a matter of teaching specialized varieties of English. The fact that language is used for a specific purpose does not imply that it is a special form of the language, different in kind from other forms. Certainly, there are some features which can be identified as 'typical' of a particular context of use and which, therefore, the learner is more likely to meet in the target situation. But these differences should not be allowed to obscure the far larger area of common ground that underlies all English use, and indeed, all language use. (p.18)

Compared to General English, an ESP course is expected to be composed of some essential steps. Strevens (1988) lists them as follows:

1. conducting needs-analysis
2. designing an appropriate syllabus
3. preparing suitable materials
4. meeting and getting to know students
5. teaching the course

6. devising and administering appropriate tests

To sum up, English for a special discourse, whatever the context is, has to be initiated with the needs-analysis stage acknowledged as "key essence of ESP" (Rahman, 2015, p. 24). Students, teachers, administrators, and all the stakeholders of the discourse community need to be involved in the process so that their needs and expectations from the course can be clearly defined and the syllabus and the materials can be meticulously tailored according to those needs.

2.2.2. Needs Analysis (NA)

Needs analysis, "carried out to establish the 'what' and the 'how' of a course, is the first stage in ESP course development, followed by curriculum design, materials selection, methodology, assessment, and evaluation" (Flowerdew, 2013, p. 325). As Sothan (2015) puts it, "NA must be conducted at the beginning of the program in order to get more ideas on what to be incorporated into the planned syllabus" (p. 88). Dudley-Evans and St. John (1998) discuss two approaches to NA process: linear vs. cyclical (p.121).

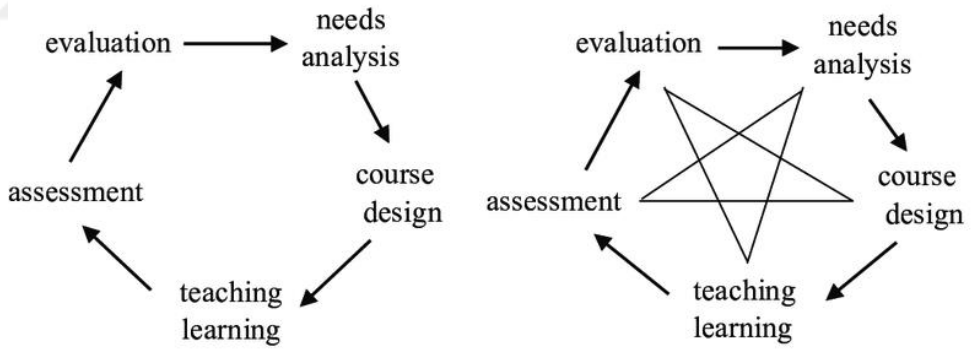

Figure 1. *Linear vs. Cyclical Needs analysis*

The comparative diagram in Figure 1 illustrates the essential steps in NA, namely *needs analysis, course design, teaching-learning, assessment and evaluation* by focusing on the differences between both approaches. The former is conventionally arranged where each subsequent step is informed by its predecessor. Unlike the linear process, cyclical NA reveals the interdependent nature of the steps where they both follow each other and have in touch with every single step individually.

In the literature, there are some NA studies questioning the skills required for the special discourse. NA is a highly essential step in ESP studies since the needs of the

stakeholders of the same discourse community may differ as in Sothan's study (2015) on needs of undergraduate students and employers in Cambodia. The study resulted in the priority of different skills stressed by them, namely speaking and reading for students whereas writing by the employers.

Without such an investigation into the ESP course, its applicability and consistency with the real environment would be questionable. In this sense, as Nesi (2015) states, NA is,

> an art rather than a science, because of the choices that have to be made at the data gathering stage, when situations, participants and texts are selected, and the degree of interpretation required at the analysis stage, when meaning is attributed to the data. (p. 68).

When chronologically ordered, seven influential NA models of ESP are remarkably confronted:

1. Munby's Communicative Syllabus Design (1978)
2. McDonough's NA model (1984)
3. Hutchinson and Water's ESP NA (1987)
4. Robinson's Needs Analysis (1991)
5. West's NA Model (1994)
6. Jordan's NA Model (1997)
7. Dudley-Evan and St. John's NA Model (1998)

Amongst these, Munby, regarded as the originator of NA models with his inspiring notion of Communicative Syllabus Design (1978) consisting of a thorough set of procedures for discovering target situation needs, has been widely acknowledged by his precedents. These procedures were named as *Communicative Needs Processors* (CNP) which consist of a list of questions for communication variables (topic, participants, medium etc.) in order to identify the target language needs of learners (Munby, 1981). Although its root traces back to 1970s and NA has undergone a series of modifications, the core of it has remained the same since then. No matter how sophisticated and elaborated it has become with some slight changes in time, NA basically rests on three main tenets, that is, target situation analysis, learning situation analysis, and present situation analysis (Figure 2).

TSA Target Situation Analysis	objective, perceived and product-oriented needs, e.g.: ☐ *I have occasional meetings with British colleagues.* ☐ *Student X needs to read more widely.* ☐ *I have to write reports.*
LSA Learning Situation Analysis	subjective, felt and process-oriented needs, e.g.: ☐ *I need to see vocabulary written down.* ☐ *I pick things up by listening.* ☐ *I like problem solving.* ☐ *I hate group work.*
PSA Present Situation Analysis	strengths and weaknesses in language, skills, learning experiences, e.g.: ☐ *I find it difficult to write persuasively* ☐ *I get my tenses mixed up.* ☐ *My problem is finding the right word.*

Figure 2. *Needs analysis*

Source: Dudley-Evans & St John, 1998

2.2.2.1. Target Situation Analysis (TSA)

TSA, which can be simply defined as the necessities of the learners for the target domain, "investigate what the students should be able to do in the ESP at the end of instruction" (Brown, 2016, p.18). Therefore, the purpose of such analysis is to collect information about what learners need to learn and continue learning in that specific ESP community. According to Mohammed (2012), TSA enables "to take students' existing knowledge and set it on a scientific basis, by establishing procedures for relating language analysis more closely to the learners' actual needs" (p. 506).

As much inspiring as Munby's NA model, Hutchinson and Waters' (1987) comprehensive TSA framework (Figure 3) simultaneously referring to Munby's Communicative Needs Processor briefly explicates the issues to be addressed during this analysis. The framework consists of five main revisited *wh-* questions each of which coincides with Munby's CNP (1978) as well. In the first question, *Why is the language needed?* the learners' subjective purposes of learning English is sought for. Secondly, the instruments such as medium, channel or type of texts that will be used are examined through the question *How will the language be used?* As a third question, they specify the communicative domain ESP is likely to be utilized by asking *What will the content areas be?* In the next step, physical and psychological considerations are investigated with the question of *Where will the language be used?* The last question *When will the language be used?* refers to the time of language usage.

1. Why is language needed? • for study; • for work; • for training; • for a combination of these; • for some other purposes, e.g. status, examination, promotion	*cf.* Munbian purposive domain
2. How will the language be used? • Medium: speaking, writing, reading, etc.; • Channel: e.g. telephone, face to face; • Types of text or discourse: e.g. academic text, lectures, catalogues, etc.	*cf.* Munbian instrumentality
3. What will the content areas be? • Subjects: e.g. medicine, biology, commerce, shipping, etc.; • Level: technician, craftsman, postgraduate, etc.	*cf.* Munbian Communicative event
4. Where will the language be used? • Physical setting: e.g. office, lecture theater, hotel, workshop, library; • Human context: alone, meetings, demonstrations, on telephone; • Linguistic context: e.g. in own country, abroad.	*cf.* Munbian Setting (physical and psychological)
5. When will the language be used? • Concurrently with the ESP course or subsequently; • Frequently, seldom, in small amounts, in large chunks.	

Figure 3. *Hutchinson and Waters' (1987) comprehensive TSA framework*

2.2.2.2. Present Situation Analysis (PSA)

PSA mainly examines what learners are able to do; that is, their strengths and weaknesses in terms of the relevant target-situation use, linguistic or learning abilities at the beginning of the instruction (Robinson, 1991; Rahman, 2015; Brown, 2016; Niemiec, 2016). According to Richterich and Chancerel (1980), the students themselves, the language-teaching establishment, and the 'user-institution' such as the students' place of work can provide invaluable source of information in PSA including "the learners' social and educational background, age and occupation, the gap between the current and target proficiency, preferred learning and teaching styles, availability (time constraints) aptitude for learning and motivation to learn the language" (Niemiec, 2016, p. 77).

2.2.2.3. Learning Situation Analysis (LSA)

Learning Situation Analysis (LSA) refers to subjective, felt and process-oriented needs (Dudley-Evans & St. John, 1998). The aim of this analysis is to reveal not only what students really want to learn but also why they want to learn. Dudley-Evans and St. John (1998) also illuminate that "subjective and felt needs are derived from insiders and correspond to cognitive and affective factors" (p.123). LSA also "concerns the learners' process-oriented needs that is their idea of language learning, what their best strategies, techniques of learning a foreign language are" (Niemiec, 2016, p. 77).

In sum, just as Rezaee and Kazempourian (2017) summarizes the issue of NA within their ESP study, the impact of NA on ESP could be summarized as follows:

> In order to establish a fruitful educational setting and make students ready for their future workplace, promote the employability chance of *engineering* students and graduates, and bridge the gap between corporate/industry English language expectations and university syllabus and curriculum offerings, implementing a thorough needs analysis is of great importance before designing an effective language course. (p.78)

2.2.3. ESP in Turkish Higher Education

In Turkey, the understanding that ESP teaching is a different approach involving a different methodology than General English settled only during 1990s (Baştürkmen, 1998; Demiray Akbulut, 2016); that is, many decades after the emergence of it. "In the 80's, teachers would rarely apply a needs analysis to discover what was really needed or necessary to be able to actually accomplish the objective" (Bilokçuoğlu, 2012, p.80). Then, ESP used to be based on "translating numerous texts, teaching special vocabulary without giving importance to communicative competences, intercultural communication and needs analysis of the students" (Demiray Akbulut, 2016, p.186). After this period, specific academic and professional competence has been prioritized for the future career opportunities (Baştürkmen, 1998). "Since today English is the number one language of communication in the whole world, even among non-native speakers of the language, there has been a great impact on the type of ESP syllabus provided" (Bilokçuoğlu, 2012, p.89).

Upon the widespread recognition of needs-based curricula for ESP learners around the world, in Turkey too "English is deemed necessary in both the academic

sphere and in business life" (Ayas & Kırkgöz, 2014, p.39). Today in almost all of Turkish universities, ESP has been integrated into the curriculum of faculties such as Engineering, Economic and Administrative Sciences, Architecture, and so forth.

Nevertheless, in partnership with the Ministry of National Education in Turkey and the Economic Policy Research Foundation (TEPAV), the British Council conducted an extensive study titled '*The state of English in higher education in Turkey'* which was published in 2015. This comprehensive study over teaching English in Turkish state universities at tertiary level revealed highly striking results both for General English and ESP/EAP. For example, in terms of teaching English in departmental context, one of the findings obtained was that *"most teachers have little or no training in the teaching of EAP/ ESP and consequently they lack the skills to develop needs-based EGAP curricula or to customise materials and activities to fit the specialist academic disciplines of students".* In the same report, it was recommended that "*all English teachers should undergo a short, intensive training programme in EAP/ESP, and some teachers in each university should be offered longer-term training such as that available by distance from some universities*". In this respect, Akın (2011) also highlights the ESP teacher issue by attributing the failures of ESP teaching in Turkey to insufficient number of qualified ESP teacher; the absence of materials and equipment; and the lack of student motivation.

So as to address the abovementioned issues, there have been a number of empirical research on ESP in Turkish Higher Education each of which handles various dimensions of ESP instruction in different contexts. For instance, Ateş (2012) investigated the effectiveness of ESP business course on improving students' language skills along with their thinking and decision-making skills. Another recent study by Mede, Koparan, and Atay (2018) aimed to explore the perceptions of Turkish students, teachers and graduates on the English course specially designed for Aviation Cabin Crew Members. In a similar former study, Sullivan and Girginer (2002) had also examined the Aviation English in their own context in order to enhance ESP teacher knowledge. On the other hand, as a case-study Kaza and Mede (2015) tried to reveal the target needs of Turkish students in the Faculty of Fine Arts. Another case study conducted by Ekici (2003) focused on the tour guidance students' needs of English language at a Turkish university. Much of these works has been conducted in order to contribute to the field of ESP in Turkey and to remediate the implementation of special-purpose English for the stated academic domains.

2.2.3.1. Automotive Engineering (AE) Division in Turkish Universities

The field of Automotive, the focal point of this research, is subordinate to Mechanical Engineering which ranks among the five acknowledged branches under the major discipline of engineering (Figure 4). For this reason, it is considered as a highly specific domain together with energy, thermodynamics, construction and manufacturing, mechanics, and machine theory and dynamics. The curriculum of AE mainly encompasses the concepts of vehicle technology, brake systems, brake fluids, fuel, engine, internal combustion engines, diesel engines, transmission, GDI (gasoline direct injection), gear box, vehicle electronics, steering wheel.

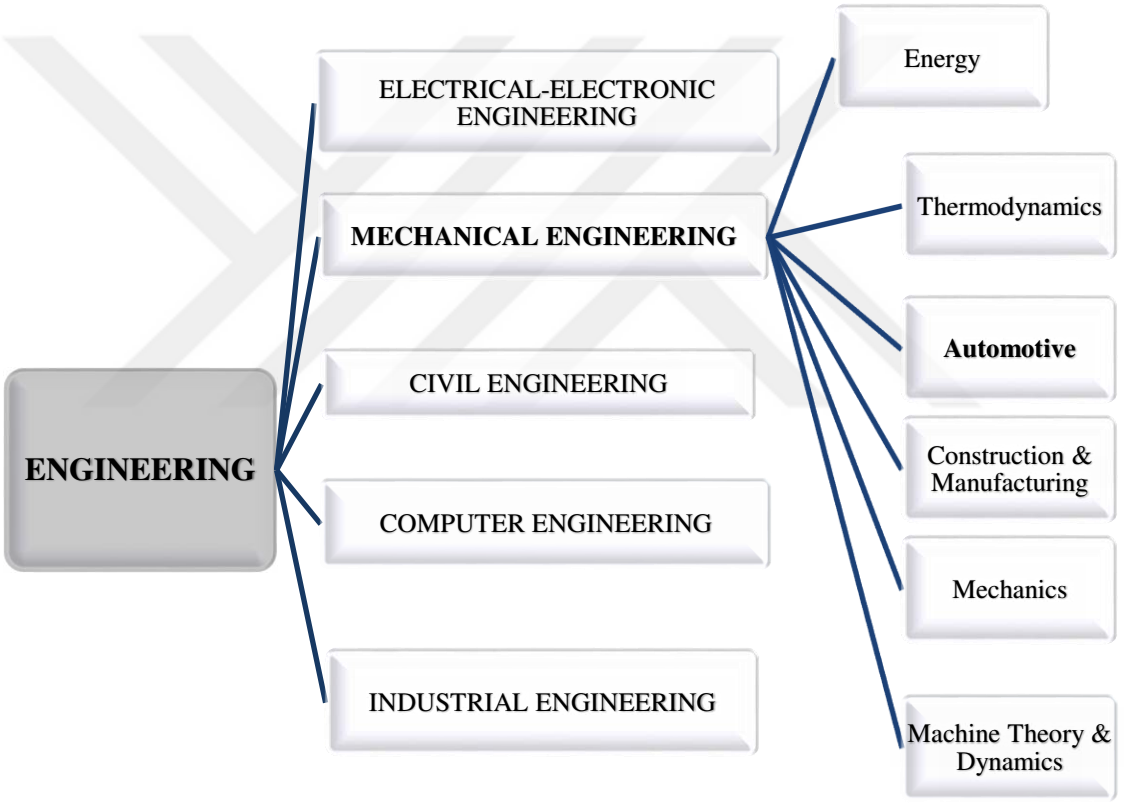

Figure 4. *The place of automotive in the hierarchy of engineering*

Based on the data retrieved from Council of Higher Education in Turkey (https://yokatlas.yok.gov.tr/), Automotive Engineering division as an undergraduate program takes place in 12 state and 4 foundation universities in Turkey including North Cyprus (Table 1). Most of these programs are within the structure of Engineering Faculty whereas some of them exist under the name of Technology Faculty. Out of 16 universities, only four foundation universities as well as one leading state university offer

English Medium Instruction (EMI) where the content is presented through English while some other universities such as Çukurova University offer one-year compulsory English preparatory program. The rest of the universities, however, contain three or four hours of General English a week for freshman students throughout one academic year, which is mostly followed by an ESP course in the following term or year. In accordance with the universities' own regulations, rules, and principles, these courses have been conducted either compulsorily or optionally and they might be named differently such as Vocational, Business, Academic or Technical English in different settings.

Table 1.

The Overview of Automotive Engineering in Turkish Universities (retrieved from Council of Higher Education/YÖK)

	UNIVERSITY NAME	**FACULTY**
1	Hacettepe University	Engineering
2	Atılım University*	Engineering
3	Okan University *	Engineering
4	Işık University *	Engineering
5	Uludağ University	Engineering
6	Gazi University	Technology
7	Kocaeli University	Technology
8	Çukurova University	Engineering
9	Pamukkale University	Technology
10	Süleyman Demirel University	Engineering
11	Karabük University	N.I.**
12	Afyon Kocatepe University	Technology
13	Tarsus University	Technology
14	Cumhuriyet University	Technology
15	Fırat University	Technology
16	Yakın Doğu University*	Engineering

**Private/foundation universities.*

***No information gathered.*

2.2.4. Challenges in ESP

The fact that ESP instruction and implementation has not fully settled because of a number of reasons has also been justified in some other studies (Baştürkmen, 1998; Kırkgöz & Dikilitaş, 2018). The scarcity of finding authentic and up-to-date materials tailored and targeted with respect to the audience of ESP has been one of the major challenges that ESP teachers have faced. More complicated than the other issues such as the syllabus, ESP learner, and so forth, the debate over ESP teacher occupies a considerable amount of space in the literature (Strevens, 1988; Cotter, 2006**;** Atay, Kaşlıoğlu & Kurt, 2010; Gündüz, 2016; Stewart, 2018); however, the '*who to teach*' dichotomy- whether a skillful English language teacher or a subject-specialist teacher who has a good command of English- has yet to be resolved. There has been a preconception that "ELT teachers do not have the essential knowledge of the subject matter, and therefore, they may not be able to express the ideas that contribute to understanding the intended learning outcomes" (Mohammed, 2012, p. 505). Comparing an ESP teacher to that of General English, Strevens (1988) points out that "becoming an effective teacher of ESP requires *more* experience, *additional* training, *extra* effort, a fresh *commitment*" (p. 43). Furthermore, "unlike general language instructors, who have fairly detailed curricula and national guidelines, ESP teachers need to construct their own goals, objectives, and learning materials" (Belyaeva, 2015, p. 73). Cotter (2006) approaches this issue as follows:

> Since ESP teachers are rarely experts in the learners' field of knowledge and sometimes they are not native speakers of the language, they will be faced with two types of problems: producing examples in a language that is foreign to them and in a field of knowledge that they do not master. (p. 500)

An alternative solution for language teachers is suggested by Chung and Nation (2003) that "teachers can provide learners with the tools for dealing with technical words. In this way teachers need not get involved in trying to teach in a technical area, but can direct their attention to vocabulary strategies" (p. 114). In addition to the idea of short and intensive training programs and workshops for teachers, as suggested above (British Council's Report), in order to overcome the conflict arisen from the lack of field knowledge, a more comprehensive and longer-term solution is a collaboration between teachers of English and subject specialists; that is, *team teaching/team work*, offered as a

remedy in a number of studies as well (Strevens, 1988; Sullivan & Girginer, 2002; Atay et al., 2010; Mohammed, 2012; Stewart, 2018). In other words, an amalgamation of the content knowledge with the language is a highly demanded solution of the problem.

From the learners' perspective, however, one minor criticism towards ESP courses is that they "become non-generative and form non-transferable skills; they enable learners to operate only in a formulaic or semi-formulaic way" (Belyaeva, 2015, p. 75). In this respect, in order to make ESP process more manageable and meaningful for students, Chung and Nation (2003) suggest that teachers can assist students to cope with technical vocabulary by "helping learners gain the more general skills of recognizing technical words, interpreting definitions, relating senses to a core meaning, and learning word parts" (p.114).

2.3. Corpus Linguistics (CL)

Growing modern and digitalized technology has extended the use of corpus in a wide range of fields from education to criminology. Due to the convenience of data retrieval, language studies have also resorted to corpus applications in recent years. In terms of linguistic studies, corpus has been benefited in various subfields such as semantics, syntax, lexis, sociolinguistics, and the like.

Being dominantly considered as an empirical approach rather than a theory, a language corpus is "designed for linguistic analysis: selected according to a sociolinguistic theory of language variation to provide a sample of specific text-types or a broad and balanced sample of a language" (Stubbs, 2004, p. 106). The Corpus Approach (Biber, Conrad, & Reppen, 1998, p. 4) is comprised of four major characteristics:

- It is empirical, analyzing the actual patterns of language use in natural texts.
- It utilizes a large and principled collection of natural texts as the basis for analysis.
- It makes extensive use of computers for analysis.
- It depends on both quantitative and qualitative analytical techniques.

For this reason, data driven by corpus are regarded to be essential for accurately describing language use as it shows the interaction among the lexis, grammar, and semantics (Stubbs, 2004). However, in this respect Sinclair (1991) coined the term

"lexicogrammar" in which he suggests that "there is no difference between lexis and grammar, or that lexis and grammar are so closely intertwined that they cannot be productively studied separately. Certain lexical items fall in certain patterns and certain patterns contain certain lexical items" (p. 20). On the other hand, depending on the purpose and the scope of the studies to be conducted, corpora can take various forms (Table 2).

Table 2.

Types of Corpus

1.	Reference Corpora fixed, not expandable (e.g. BNC)	Monitor Corpora continuously being added (e.g.Bank of English)
2.	Whole text design	Sample text design
3.	General (e.g. American National Corpus)	Specialized (MICASE)
4.	Written	Spoken
5.	monolingual	multilingual

Despite representing authentic language used in the field, the corpus approach raises issues for some researchers acclaiming that the data in the corpora do not actually show the natural use of language because of their decontextualized representation (Granger, 1998). In addition, Flowerdew (2015) questions that "the corpus is based on naturally-occurring attested language, and is usually not simplified as is often the case in traditional materials, especially for lower level proficiency students" (p.16).

2.3.1. Customized, Specialized, or Micro Corpora

In addition to general purpose use of corpora, as Talai and Fotovatnia (2012) state, "the advent of computers has made us able to search for special words and patterns among corpora much faster and easier" (p. 1526). Apart from the corpora that serve for general purposes such as BNC (British National Corpus), a specialized also-called as a micro or customized corpus, is recommended in ESP studies as this type of corpora includes texts of a certain type and aims to be representative of the language. The size of such corpora differs; small or large but they are all created to answer quite specific questions. For example, Michigan Corpus of Academic Spoken English (MICASE) contains only

spoken language from a university setting, whereas CHILDES contains language used by children. Specialized corpora, as its name suggests, started to be utilized in ESP/EAP settings for ESP or similar target-based studies. To name a few, comparatively much smaller in size, Hong Kong University of Science and Technology (HKUST) consisting of 1.000.000 running words of computer science English was compiled from English textbooks used in the field. The intended goal with this special corpus was to assist the teaching of English for computer science students. Similarly, Jiao Tong University Corpus for English in Science and Technology (JTEST) was developed to facilitate lexical analysis of particular registers. The corpus was composed of 1.000.000 words from written English texts in the physical science, engineering and technology. On the essence of building of specialized corpora, Pearson (1998) explicates as follows:

> out of the many different types of corpora, it seemed logical to design what has been called 'special purpose corpus' since general reference corpora are rather meant to be representative of all relevant varieties of the language and not of a technical or professional field in particular. (p.46)

On the other hand, the fact that specialized corpora raise doubts in terms of their narrower scope; limited results they provide; and their unfeasibility in certain type of lexicography analysis has been intensely discussed in CL literature (Pearson, 1998; Sinclair, 2004; Koester, 2010; Lee, 2010). In this regard, even though they are subjected to harsh criticisms of validity and reliability, Koester (2010) gives the credit of them as "they allow a much closer link with between the corpus and the contexts in which the texts were produced" (p.67). Thus, in order to ensure the reliability, Pearson (1998) highlights some considerations such as technicality, audience, origin, intended outcome, factuality, setting, topic, text type/genre which are needed to be taken into account to build a special corpus. Alternatively, according to Koester (2010), a small sub-corpus is expected to include more than five text samples to ensure the reliable results.

2.3.2. Criteria for Corpus Design: Balance, Size, and Representativeness

In order for a corpus to serve its intended purpose, three interrelated tenets, namely balance, size, and representativeness, are proposed. In terms of the size of a corpus, the literature of CL encompasses a wide variety of debates over the optimality criteria (Biber, 1993; Granger, 1998; Nelson, 2010). The size is "central to recent corpus development,

and there has been the overriding belief among many corpus creators that 'biggest is best'" (Nelson, 2010, p. 54). Similarly, Nesi (2013) justifies the idea of bigger size by considering that "a corpus needs to be large enough to represent a given language variety or type of text" (p. 408). Koester (2010) elucidates that "while larger corpora were compiled for research into general phenomena, specialized corpora are often designed to answer specific research questions" (p. 71). According to Conrad (2002), "corpus design (size of the corpus, types of texts included, number of texts, the sampling procedure, etc.) is crucial in order to achieve reliable results" (p.77). Nevertheless, as Flowerdew also (2004) sums, "there is no ideal size for a corpus, it all depends on what the corpus contains and what is being investigated" (p. 18).

Balance and representativeness are two intertwined terms in corpus design. Clearly saying, balance means "the range of text categories included in the corpus" (McEnery et al., 2006, p. 16) whereas representativeness is defined as "the extent to which a sample includes the full range of variability in a population" (Biber, 1993, p. 243). These two related criteria of a corpus are considered to be more important than the size. "For most corpora, representativeness is typically achieved by balancing, i.e. covering a wide variety of frequent and important text categories that are proportionally sampled from the target population" (McEnery et al., 2006, p. 21). In terms of the reliability issues of specialized corpora, Lee (2010) proposes that "the greater homogeneity among texts in a specialized area confers the advantage of fewer texts being required for the corpus to be representative of that language variety" (p. 114). Thus, to guarantee the criterion of representativeness of that particular domain, Biber (1993) explicates that:

> the representativeness of a corpus depends on the extent to which it includes the range of linguistic distributions in the population; i.e. different linguistic features are differently distributed (within texts, across texts, across text types), and a representative corpus must enable analysis of these various distributions. This condition of linguistic representativeness depends on the first condition; i.e. if a corpus does not represent the range of text types in a population, it will not represent the range of linguistic distributions. (p.243)

2.4. Corpus-driven ESP Instruction

Throughout the years, ESP through corpus applications has evolved so immensely that after some time a specialized language began to be jointly related to the use of information technology (Rowley-Jolivet & Carter-Thomas, 2005). According to Gavioli

(2005), “corpus tools or corpus-based approaches are part of growing amalgamation of technology and language learning for specific purposes” (p.17). Likewise, Chirobocea (2017) states that “corpus is nowhere more important than in the teaching and learning of specialized language” (p. 368). In this respect, Nesi (2013) also advocates the use of corpora in ESP studies since “they help make stronger and statistically supported claims” (p.420). Indeed, **“**one advantage of corpus studies is being able to gather and analyze a large amount of text including texts which actual learners and teachers use in their classrooms and courses” (Coxhead & Demecheleer, 2018, p. 87). McEnery and Xiao (2010) acknowledge the role of corpora in language education in that they “provide more realistic examples of language usage that reflect the complexities and nuances of natural language” (p. 367). “A corpus-driven approach involves a bottom-up methodology, beginning by selecting unedited examples from the corpus, identifying their shared and individual features, and only then grouping them for the purpose of lexicographic presentation” (Krishnamurthy, 2008, p. 231).

The reason why the corpora needs to be used in ESP studies is further explicated by Nesi (2013) acclaiming that “ESP practitioners are not always conversant with the professions and disciplines of their students, and may not have much intuitive understanding of the way language is used in certain specified domains” (p. 407). McEnery and Xiao (2010) state two kinds of contributions of corpora to language teaching: direct and indirect and they claim to be the superiority of the latter, which is more concerned with reference publishing, materials development, language testing, and teacher development (Figure 5). From the learners’ perspective, however, “the integration of the lexical approach with a corpus linguistics methodology can enrich the learners’ language experience and raise their language awareness, bringing out the researcher in them” (Mudraya, 2006, p. 235). Thus, one of the assets that corpus-based teaching provides is that it aids learners to take charge of their own learning process, thereby becoming autonomous.

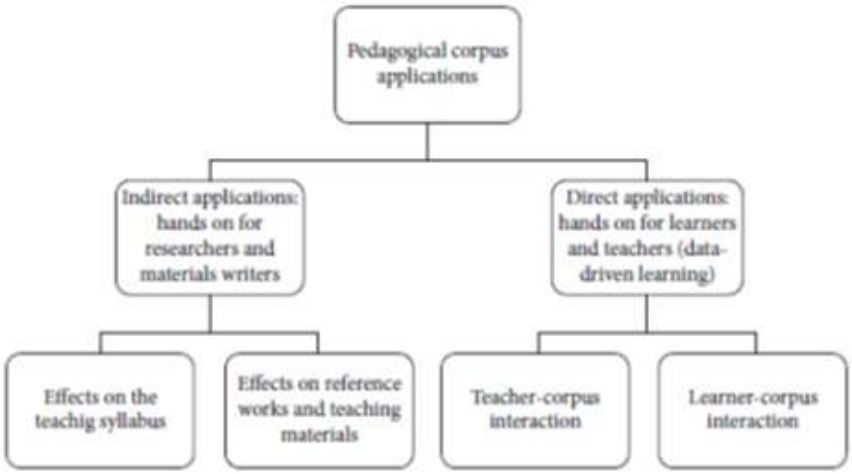

Figure 5. *Pedagogical corpus applications*

Source: Römer, 2011, p.207

Finally, in terms of Second Language Acquisition, Myles (2005) clarifies the relationship between SLA and corpora as follows:

> If we are to make generalizations about learner development, we need to be able to capture the various stages that learners go through. For this we either need longitudinal data of a number of learners over a lengthy period of time, or we need very large cross-sectional datasets, so that the number of learners in each well-defined stage is big enough for us to be confident that the results of the analysis are generalizable. (p. 374)

2.4.1. Data-Driven Learning (DDL)

Originated from the motto ‘every student a Sherlock Holmes’, Johns (1991) coined the term data-driven learning in which “students were supposed to learn directly from the linguistic data” (Lenko-Szynmanska & Boulton, 2015, p. 2). Boulton (2009) clarifies that “DDL typically involves exposing learners to large quantities of authentic data – the electronic corpus – so that they can play an active role in exploring the language and detecting patterns” (p. 2). Moreover, as Mudraya (2006) points out, “via corpus-based teaching and learning, learners become exposed to authentic real-life language use and no longer rely solely on published instructional material, much of which is inauthentic” (p. 244).

On the similarity and the association between DDL and ESP, Chirobocea (2017) states that “neither rely on a textbook, they are both innovative and rather new in the context of English teaching, and both examine data and make use of corpora” (p. 370).

2.4.1.1. Theories underpining Data-Driven Learning

The background of DDL traces back to two different theories. One is the Firth's (1957) 'contextual theory of meaning' (a linguistic theory) and the other is the socio-constructivist theory of learning (scaffolding) by Vygotsky (1978). Adopting the Firthian framework of the 'contextual theory of meaning', the central tenet of the theory is excerpted as follows:

> We must take our facts from speech sequences, verbally complete in themselves and operating in contexts of situation which are typical, recurrent, and repeatedly observable. Such contexts of situation should themselves be placed in categories of some sort, sociological, and linguistic, within the wider context of culture. (Firth, 1957, p. 35)

On the other hand, Johns' DDL is in conformity with current theories and practices of SLA, namely the noticing hypothesis, constructivist theory in that "students apply their general cognitive problem-solving mechanisms and existing background knowledge to foster an understanding of new data" (Flowerdew, 2015, p.18)" as well as Vygotskian socio-cultural theory with scaffolding and other related learner-centered approaches to language acquisition (Tognini-Bonelli, 2001; Corino & Onesti, 2019). The theory also emphasizes the essence of inductive learning, "a key tenet of constructivist learning" (Flowerdew, 2015, p. 29). As Corino and Onesti (2019) recently highlight, "it underpins the mandate in contemporary communicative language instruction for the use of authentic language materials and for the development of metalinguistic knowledge and learner autonomy" (p. 1). Tognini-Bonelli (2001) further claims that "when we bring corpus evidence into the classroom, it is important to understand the double role of corpus linguistics, entailing the methodological innovation and a theoretical one, because together they will account for a new way of teaching" (p.14).

2.4.2. Corpus-Informed ESP Syllabus Design

According to Belyaeva (2015), "ESP course syllabi are seldom based on one particular model; most courses combined several of the presented models, such as content- and method-based or content-and-skills-based ones" (p. 78). In order to overcome the challenges arising from the inadequacy of pedagogic materials for ESP courses, the integration of corpus into language teaching as a reference guide has been

suggested in recent years. For instance, in the pursuit of a renewal of ESP curriculum, Kırkgöz (2006) affirms that "an objective way to obtain lexical needs of learners is through the use of computerized corpora" (p.281). The rationale behind the boom of corpus use rests on the fact that "in the hands of experts, corpora can be useful in preparing all kinds of pedagogical materials and resources, from general to specialized dictionaries to grammar books and usage manuals, from syllabus design to testing, from wordlists to course books" (Boulton, 2016, p.3). For this reason, in line with the rise of corpus use in language teaching "many ESP teachers have direct involvement in designing courses and material as published courses and materials tend not to be directly relevant to the needs of their specialized groups of learners" (Baştürkmen & Bocanegra-Valle, 2018, p.14). To illustrate, Nation (2001) offers teachers alternative classroom activities on how to reinforce low-frequency words in reading texts by the help of computer programmes *VocabProfile* as well as the ways to move students' receptive vocabulary knowledge to productive use.

On the other hand, while preparing a sample syllabus of ESP "conducting some form of investigation into the meaning and uses of vocabulary in disciplinary or professional contexts, and searching for appropriate authentic texts and thinking of real-world tasks appeared to be important design considerations" (Baştürkmen & Bocanegra-Valle, 2018, p.14). According to Quero and Coxhead (2018), "ESP students need to know or need to learn large numbers of words to be able to meet the lexical demands of discipline-specific texts, and gain good reading comprehension of this kind of texts at university level" (p. 53).

2.4.2.1. Technical Vocabulary

Since the students of ESP already possess the basic general vocabulary, what is anticipated for those learners is to gain the domain-specific and job-related jargon. However, from the teachers' perspective, teaching technical vocabulary to students is a demanding task in some senses. For instance, as Chung and Nation (2003) highlight, it is quite challenging for an English teacher to be equipped with specialized knowledge about that specific discourse. A content teacher, on the other hand, has to decide the technicality of words that could be counted as the term of that discipline and need to be learnt by the students.

In broad sense, terms are "words or phrases which are considered to form part of the special vocabulary of a particular subject domain" (Pearson, 1996, p. 33). A great deal of nomenclatures has been confronted in the literature such as technical vocabulary, semi-technical vocabulary, non-technical vocabulary, academic vocabulary, and so forth. Dudley-Evans and St. John (1998) distinguish technical and semi-technical vocabulary in that the latter is likely more frequently encountered in the specialist discourse although it is also used in general language. According to Thurstun and Candlin (1998), it is the "academic vocabulary" that is found to be hard to learn by the students rather than domain-specific vocabulary. Wang et al. (2008) point out that **"**proficient use of academic vocabulary is one of the most challenging tasks in ESP students' word expansion" (p. 443). Although they are often uttered interchangeably, technical, semi-technical, non-technical or academic vocabulary refer to highly sophisticated concepts which often overlap. Thus, making a clear-cut division between these expressions might be confusing. Considering Wang et al.'s (2008) definition, academic vocabulary or semi-technical vocabulary refers to "a class of words between technical and non-technical words and usually with technical as well as non-technical implications" (p.451). No matter how it is named, vocabulary is considered to be "one of the major impediments to reading comprehension" (Shamsudin, Manan & Husin, 2013, p.1289). What is more, this hardship becomes more complicated in disciplinary texts. The ESP literature embodies some debates over the notion of technicality of words. For instance, in the pursuit of compiling a technical wordlist of Plumbing, Coxhead and Demecheleer (2018) stress the need of unfamiliarity of the words to learners to be counted as technical; that is, if a learner knows that word, it is not technical. In order to identify a word and name it as technical, Chung and Nation (2004) clarify that it has to be "subject related, occurs in a specialist domain, and is part of a system of subject knowledge" (p. 252). Coxhead and Demecheleer (2018) suggest three ways of identification of technicality of words in their study on called "*Investigating the technical vocabulary of Plumbing"*. These are asking experts, using a scale and consulting a corpus.

It is noteworthy to mention that frequency of occurrence of words in domain-specific texts leads to controversy in some cases. The views on this issue in the literature (Thurstun & Candlin, 1998; Mudraya, 2006; Wang et al., 2008) are rather perplexing so as to draw the conclusion of technicality of vocabulary. Beyond being whether a technical word or not, the discussion has even shifted dimension in the direction of technicality degree of a word. To illustrate, "strictly technical words are characterized by the absence

of exact synonyms, resistance to semantic change, and a very narrow range; e.g., words such as *urethane* or *vulcanise*" (Mudraya, 2006, p. 239). However, Nation (2001) suggests that "words that occur often in a wide range of language uses are much more generally useful for a language user to know than words which occur rarely and in a limited range of area" (p. 32). Chung and Nation (2004) concordantly put an end to the debate as follows:

> Little is known about such vocabulary, largely because there are no well-established approaches for deciding which words are technical terms and which are not, and there are virtually no studies that compare the effectiveness of approaches. The major difficulty is that technicalness is a functional aspect of a word and thus the particular use of a word must be taken into account when deciding whether it is a technical term or not. (p. 251)

To put it in a nutshell, within the scope of supplying a standardization, it would be wise to gather all these denotations under a single roof and name them as 'technical terms'. Taking ESP into consideration, a technical word list that "focuses on the frequent lexical elements that are specific for the given field is more useful for course and materials design" (Jablonkai, 2010, p. 2) and should be integrated into syllabi on the grounds that what constitutes a term depends on the communicative setting (Pearson, 1998).

2.4.2.2. Collocation

Similar to the debates over the technicality of the words, the literature comprises substantial amount of studies attempting to specify the framework of being 'collocation'. Although collocations can be simply defined as multi-word units that often go together, the notion has been elaborated by different scholars (Firth, 1957; Halliday & Hasan, 1976; Hausmann, 1985; Sinclair, 1991) who handle the phenomenon from frequency-based, structural, and semantic perspectives. Therefore, former studies embody abundant definitions of collocations most of which take their roots from *neo-Firthian* approach-within the British Contextualism-that considers collocations as the "habitual cooccurrence of words" (Firth, 1957). The fact that Firth's definition of collocation simply originated from the frequent use of two or more words was rather unconvincing for other scholars. Rather than incidentally co-occurring units, Halliday and Hasan (1976) delineate the theme of collocation as "semantically related lexical items" (p. 284) and "as

a subset of formulaic sequences, collocations are considered to be a central aspect of communicative competence" (Henriksen, 2013, p. 29).

On the other hand, while McEnery and Hardie (2011) suggest that "a collocation is a co-occurrence pattern that exists between two items that frequently occur in proximity to one another – but not necessarily adjacently or, indeed, in any fixed order" (p.123), Nesselhauf (2003) addresses two main characteristics for classifying collocation namely, position and frequency. As Walker (2011) highlights, the investigation of collocations through corpora is a requirement from many aspects:

> A corpus-based study of the collocational behaviour of a word can identify the different meanings or uses of that word and whether it is associated with negative prosody or similar connotational association; information that is invaluable to the lexicographer, materials writer, classroom teacher and language learner. (p. 111)

In terms of pedagogical applications, Coxhead and Demecheleer (2018) stress teachers' task of awareness raising in teaching collocations to students owing to the fact that **"**by identifying and studying collocations learners will form their mental lexicon not only from isolated independent units, but also from pre-combined units, thus consolidating a conceptual system that will allow them to become more proficient at an initial stage of learning" (Cotter, 2006, p. 501).

CHAPTER III

METHODOLOGY

3.1. Introduction

This section presents the methodology administered in the study with the participants, research design as well as the context where the study was conducted, the instruments used, and the data analysis procedure.

In line with the objectives of the current study which are to investigate English language needs of the stakeholders in the automotive domain and to compose the language content of English for Automotive Engineering course respectively, the study raises three research questions that require systematic handling in methodology:

1. What are the needs and expectations of the stakeholders (students, teachers, ESP practitioners, professional engineers) from the content of Vocational English course?
2. What constitutes the language content of Vocational English course in terms of technical vocabulary and collocations?
3. How can a needs-based syllabus be designed on the basis of corpus analysis for *English for Automotive Engineering*?

3.2. Participants

Parallel to the abovementioned objectives and to answer the research questions properly, participants of this study were targeted with respect to the automotive domain and they were divided into four groups (Table 3). In order to be able to conduct a sound NA procedure, all the stakeholders of the process were intended to be involved. The students in all years of Automotive Engineering of Tarsus Technology Faculty, subject-specialist teachers of the same faculty, two ESP practitioners, and professional engineers participated in the study.

Table 3.

Participants of the Study

	code	groups		n
1	S	Students	Year 1	48
			Year 2	51
			Year 3	21
			Year 4	24
2	ST	Subject Specialist Teachers		10
3	ESPT	ESP Teachers		2
4	E	Engineers		12
		Total		**168**

The first group (Table 3) is composed of Automotive Engineering students in all four years (n=144) who study at Tarsus Technology Faculty of Mersin University (as is Tarsus University). In terms of gender distribution, 131 (90,9%) of the students are male and the remaining 13 (9,9%) are female. The students' ages are mostly between 18-21 (76,9%). In line with the purpose of the research, all the students in each year were encouraged to participate in the study. Actually, it was initially anticipated that the graduates would have made the most valuable contribution to the NA phase. However, none of the them responded in spite of recurrent attempts to contact them. For this reason, they had to be excluded from the research process.

The second group constitutes the lecturers of Technology Faculty (n=10) who are responsible for teaching the content of Automotive Engineering to students rather than English. The mean age of subject-specialists is 42. Three of them are female and the rest seven teachers are male. The lecturers are from various disciplines such as Mechanical Engineering, Physics, and Chemistry. Each of the subject-specialist teachers was contacted in-person to get their consent. They all voluntarily participated in the study and shared their sincere ideas throughout NA. The lecturers also stated their own English proficiency level depending on the scores they got from national language exams. Half of the teachers (50%) identified their success level as *very good.*

As a third group, apart from the subject-specialist teachers, the researcher interviewed two ESP practitioners of the faculty both of whom were responsible for giving Vocational English course. The first ESP teacher (ESPT1) who is also the Dean of the Faculty is a professor in the field of Mechanical Engineering with 30 years of teaching

experience at various universities in Turkey. He willingly accepted to participate in the study and provided valuable feedback. He was interviewed face-to-face in his office and the whole interview was audiotaped by the researcher for further transcription. The second ESP teacher (ESPT2) is an English language instructor who has been working in the same Faculty for approximately 10 years with a whole 15-year experience in total. She was interviewed by another language instructor at university and her answers were recorded in the same way.

The last group is composed of professional engineers (n=12) from three automotive companies in Turkey. At the beginning of the study, it was anticipated that leading companies in Çukurova region would be the first to contact; however, they were reluctant to be included in the study. Thus, in spite of the researcher's vigorous efforts to reach as many engineers as possible, the number was limited to 12. Eleven of them are male and one is female. The mean age of the participant engineers is 36 and the majority (66,6%) of the professionals identified their English level as *very good*.

3.3. Research Design

By its very nature, the present study owns the characteristics of a case study since it portrays the ESP instruction in one particular setting, namely Automotive Engineering division of Tarsus Technology Faculty. In this respect, Cohen, Manion, and Morrison (2007) highlight that "a case study is a unique example of real people in real situations, enabling reader to understand ideas more clearly than simply by presenting them with abstract theories or principles" (p. 253). In order to answer research questions as well as "providing a more complete understanding of research problems than does the use of either approach alone" (Fraenkel, Wallen & Hyun, 2012, p.557), the mixed method was administered and both qualitative and quantitative data were gathered. Hence, in the NA phase of the study, the students', teachers' and professionals' needs and expectations were investigated through both quantitatively and qualitatively (Table 4).

Table 4.

Research Data

Quantitative Data		**Qualitative Data**	
Instrument	**Data analysis**	**Instrument**	**Data analysis**
A close-ended NA questionnaire	SPSS	Open-ended NA questionnaires	Content analysis
		Interviews	Content analysis
AEE Corpus	Corpus analysis	AEE Corpus	Interpretative

Table 4 shows the type of the data collected in the study. The quantitative data was gathered through a close-ended NA questionnaire and it was analyzed via SPSS software whereas NA with teachers and engineers was completed with open-ended questionnaires and they were interpreted through content analysis method. In terms of the analysis procedures of AEE corpus, it can be acclaimed that the corpus data was both quantitative and qualitative. Therefore, the present study was completed in 4 four main phases (Table 5). In phase 1, the needs of the participants in both contexts, namely school and workplaces, were investigated through different data collection tools. The students in all years were distributed a needs-analysis questionnaire with close-ended questions (Appendix 1), whereas subject-specialist teachers and professional engineers were sent an open-ended semi-structured questionnaire (Appendices 2 & 3). On the other hand, face-to-face interviews were conducted with two ESP teachers and the answers to the questions (Appendix 4) were recorded and transcribed afterwards. In the second phase, the researcher's task was to collect the written English texts from both settings which were considered to serve for the purposes of the study. Having consulted the experts' and lecturers' opinions, all the materials, namely the textbooks, articles, reports, assignments in English that were adopted as classroom materials were collected. Similarly, official but non-confidential documents in English such as some official correspondences, business letters, manuals, or job advertisements that have been used in workplaces were requested from RD departments of automotive companies as well.

Table 5.

Phases of the Study

Phase 1	Needs analysis	• A needs-analysis questionnaire with students • An interview with ESP teachers of the Faculty • A semi-structured questionnaire with subject specialist teachers • A semi-structured questionnaire with professional engineers
Phase 2	Data Collection	• Classroom context: written documents; textbook, articles, reports, assignments etc. used in the classroom • Workplaces context: written documents; reports, manuals, repair manuals, catalogues etc. used in the workplaces
Phase 3	Corpus Compilation	• Compiling and preparing of Automotive Engineering English Corpus (AEEC) • Interpretation and evaluation of the data with respect to needs analysis and interview stages
Phase 4	Preparing a Sample Syllabus	• Based on data synthesized from needs-analysis and AEE corpus analysis

Since these companies were rather reluctant to cooperate and they were cautious about sharing their documents for fear of the violation of confidentiality policy of their companies, the researcher had to resort experts' opinions in the corpus field around the world. Upon the experts' suggestions, the data collection process which was restricted to three automotive companies in Turkey was extended by adding publicly-available online automotive sources such as user manuals and repair manuals because the total sum of the data could not suffice to compose the AEEC.

In phase 3, data obtained from both sources were compiled, categorized with respect to the genres (textbooks, manuals, assignments, etc) and computerized by a special corpus software, *SketchEngine*. Technical word list and collocations were extracted based on the collected texts manually. Then, the results and findings were quantitatively calculated and qualitatively interpreted. In the final phase, within the light

of all the information gathered from the needs-analysis and corpus analysis, a sample AEE syllabus was suggested by presenting a detailed micro teaching lesson plan.

3.4. Setting

Automotive Engineering Division of Tarsus University

The study was conducted with Automotive Engineering Division of Tarsus Technology Faculty, which was formerly within the body of Mersin University. However, with a law issued on 18 May 2018, Tarsus University has gained an independent corporate identity and started to be acknowledged with this name since then. Technology Faculty that has been continuing the teaching-learning in this highly fresh environment currently includes two main disciplines, namely Automotive Engineering and Energy Systems Engineering.

Automotive Engineering department, the focal point of this study, admits approximately 40 students each year. Unlike some other counterparts in Turkey, (see Table 1 in Chapter 2), this department does not offer one-year intensive English preparatory program to the students. Instead, in its curriculum, the students are supposed to take General English in the first two semesters and Vocational English course is compulsory for one semester in their second year apart from the disciplinary courses without any prerequisites.

Within the framework of ECTS (European Credit Transfer and Accumulation System), Automotive Engineering Vocational English Lesson Teaching Plan (Table 6) is readily available (officially announced on www.mersin.edu.tr/obs). As seen in Table 6, Vocational English course in Automotive Engineering program has a 16-week teaching syllabus where the objectives, the content, the subjects, materials, assessment and methodology are all identified. The objectives to be accomplished by the AE students are pre-set as to teach the basic concepts and the rules of knowledge of foreign languages concerning with AE program. In terms of the content, students are presented General English grammar review, English reading, translation of texts, the materials used in engineering, manufacturing methods applied in automotive engineering. The subjects to be taught are listed week by week starting from the revision of General English information for the first three weeks; going on teaching terms, words, and concepts used in AE as well as the materials and methods in this domain; and ending the term with translation and reading activities. For all the subjects, the lecturing method are adopted.

Table 6.

Automotive Engineering Vocational English Lesson Teaching Plan (currently used)

Objectives		To teach the basic concepts and the rules of knowledge of foreign languages concerning with automotive engineering program.	
Content		General English grammar review, English reading, translation of texts, the materials used in engineering, manufacturing methods used in automotive engineering.	
Weekly Lesson Plan		Subjects	Teaching Methodology
	1	General English information	Lecture
	2	General English information	Lecture
	3	General English information	Lecture
	4	Terms, words and concepts used in automotive engineering	Lecture
	5	Terms, words and concepts used in automotive engineering	Lecture
	6	Materials and methods used in automotive engineering	Lecture
	7	Materials and methods used in automotive engineering	Lecture
	8	Midterm Exam	
	9	Translations, pronunciations and reading practices	Lecture
	10	Translations, pronunciations and reading practices	Lecture
	11	Translations, pronunciations and reading practices	Lecture
	12	Translations, pronunciations and reading practices	Lecture
	13	Translations, pronunciations and reading practices	Lecture
	14	Translations, pronunciations and reading practices	Lecture
	15	Translations, pronunciations and reading practices	Lecture
	16	Final Exam	
Sources		• MEGEP • Fundamentals of modern manufacturing, Mikell P. Groover, Fourth Edition, John Wiley & Sons, Inc, 2010	
Assessment		Midterm Exam 40 % Final Exam 60 %	

As a classroom material, MEGEP and a textbook called *Fundamentals of Modern Manufacturing* are used. Lastly, judging by the assessment procedure, the students are given one mid-term (40%) and one final (60%) exam at the end of the term.

Workplaces

In order to compose the authentic content of *English for Automotive Engineering* course via AEEC, three leading automotive companies in Turkey were contacted in person and the written texts in English such as reports, catalogues, manuals, repair manuals that were being used in the company were requested. In conformity with the companies' confidentiality policies, none of their names mentioned anywhere in this study.

The companies situated in Turkey compete in the global market with their manufacture. Companies 1 and 2 are located in Çukurova region and Company 3 is settled in Marmara Region. Company 1 being one of the leading automotive companies in manufacturing motor vehicles has been operating for more than five decades in the region. The company that has a quite huge workshop imports and exports automotive equipments. In addition, it operates in a wide range of areas encompassing motor vehicles, construction industry, engineering, marketing and foreign trade. Similarly, Company 2 who has approximately same historical background owns a market share in world's leading economies due to its contribution to automotive manufacturing. Except Turkey, it operates in more than 70 other countries worldwide. Company 3 whose manufacturing plant is located in Marmara region operates with its more than 2000 labourers. It manufactures buses in transportation; light-duty trucks in logistics; and wheeled armoured vehicles and tracked armoured vehicles for defense industry. The company has a mission to design, manufacture and market its products globally.

The fact that these workplaces have international connection with their customers was the main reason for preference to involve them in the study. Because of the easiness of transportation, two of the companies around Çukurova region were contacted in-person at first; however, their contribution did not suffice to conduct the study. As an alternative solution suggested by the experts, the third automotive company was included. In terms of engineers employed in these workplaces to participate in the NA process voluntarily as well as their supplying written automotive texts to AEEC, it is probable to state that these three companies have made considerable amount of contribution to this study.

3.5. Data Collection Tools

Parallel to the objectives of the research, both quantitative and qualitative data was collected via various tools in the study. The numerical data was analyzed by the help

of different software whereas the data gathered through interviews and open-ended questionnaires was interpreted by the researcher herself.

3.5.1. A Close-ended Needs Analysis questionnaire

Considering the large population of the students (n=144) in Tarsus Technology Faculty, a close-ended questionnaire (Appendix 1) which was used in Hossain's (2013) similar study (*ESP Needs Analysis for Engineering Students: A learner-centered approach*) as an instrument was requested. However, 4 out of 20 items were excluded (items 4, 8, 10, 12) and they were replaced with the items numbered 5, 6, 11, 12 in order to fit it into *the Hutchinson and Waters' TSA framework* (see the framework in Chapter 2) as well as *Communication Needs Processor (CNP) parameters* by Munby (1978) whose aim is to "find as thoroughly as possible the linguistic form a prospective ESP learner is likely to use in various situations in his target working environment" (Songhori, 2008, p.7). According to this framework, there are some vital wh- questions (why, how, what, where, and when respectively) to be asked in the needs-analysis process of ESP learners. This step is considered to be the essential part of such studies as needs analysis is, with Brown's (1995) definition,

> the systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of particular institutions that influence the learning and teaching situation. (p. 36)

Among the remaining 16 items, the researcher made slight modifications to adapt the questionnaire to the automotive engineering discourse. Having eliminated the irrelevant items in the original questionnaire and replaced them with the items referring to the *wh-* questions in the framework, the questionnaire was administered to a small group of AE students as piloting. The final questionnaire items were re-organized and re-ordered with respect to the TSA, PSA, and LSA. Thus, students' ultimately composed NA questionnaire included 20 items in total each of which corresponded TSA, PSA, and LSA (Table 7).

Table 7.

Questionnaire items by NA

NA type	Item numbers
TSA	5, 7, 12,14,16, 18
PSA	4, 13
LSA	1, 2, 3, 6, 8, 9,10,11, 15, 17,19, 20

All the items were in the form of multiple choice format and the respondents could circle more than one option (# 1, 2, 3, 7, 8,13) in six questions. The questionnaire was administered to the whole Faculty simultaneously by allocating one lesson hour during their mid-term week in the fall term of 2018-2019 academic year. Upon completion of the administration of the questionnaire to the whole AE students, quantitative data of the research; that is, arithmetic means, percentage, and frequency distribution were calculated in the data analysis phase.

3.5.2. Semi-Structured Questionnaires with Subject-Specialist Teachers

Through open-ended questions by which Cohen et al. (2007) suggest that "authenticity, richness, depth of response, honesty and candour" (p. 330) could be ensured best in qualitative studies, the opinions and expectations of 10 out of 19 academics at AE department in Tarsus University were sought for. They openheartedly expressed their thoughts and opinions about ESP instruction in their own setting. The teachers from various academic backgrounds were delivered a semi-structured questionnaire (Appendix 2) by e-mail. The questionnaire was composed of 7 items each of which was anticipated to meet the expectations of NA.

3.5.3. Semi-Structured Questionnaires with Engineers

As in the same way with subject-specialist teachers, a very limited number of engineers (n=12) from automotive companies showed interest in the study and agreed to share their opinions. They were also sent a questionnaire (Appendix 3) that was composed of questions under three main sections. In the first part, the engineers' English language background, their attitudes towards English language, and their previous experiences of English language usage were investigated with sub-questions. In the second part, the place and importance of English language knowledge in the workplace was examined

carefully by the help of guided questions. In the last part, their coping strategies as an engineer in an international company were asked. The completion and returning of questionnaires to the researcher took approximately two months.

3.5.4. Interviews with ESP Practitioners

Stake (2010) stresses that the interviews are invaluable sources of gathering data collection in order to attain the essential information by the interviewer. Therefore, in order to clarify ESP instruction process in the Faculty, the opinions of two ESP practitioners –former and present- were consulted. The first ESP teacher (ESPT1) who was also the Dean of the Faculty and the second teacher, ESPT2 were interviewed in their offices. They were asked approximately 12 guided questions each of which sought for their academic background in ESP or automotive engineering; their involvement in ESP process; their decision-making processes throughout ESP instruction; the barriers they came across, and their overcoming strategies as a teacher. Both interviews were held in their mother tongue and took about 40 minutes. They were recorded and transcribed afterwards (Appendix 4).

3.5.5. Automotive Engineering English Corpus (AEEC) Compilation

According to Koster (2010), "as specialised corpora are carefully targeted, they are more likely to reliably represent a particular register or genre than general corpora" (p. 67). In order to supply the representativeness of AE domain, the researcher meticulously pursued the steps of creating a sub-corpus such as the sampling and the size.

AEEC Sampling

AEEC was compiled by gathering the sources and written materials used in both classroom and automotive sector. To illustrate, one of the ESP teachers shared AE students' assignments as corpus data. In these assignments (n=46), the students were supposed to introduce a special brand car with its specifications. They were all in PowerPoint format so the same standardization process was applied to them. In addition, 14 textbooks (Appendix 5) which are either available online in PDF format or adopted as a classroom material used in Automotive Engineering field together with those suggested by the experts in the field were either requested or downloaded. In addition, subject-specialist teachers and ESP practitioners supplied 34 articles in English language that

were used in AE classrooms. These articles (Appendix 6) that were based on automotive engineering topics were carefully selected in order to meet the native speaker norms in corpus compilation. In other words, those whose authors were non-native speakers of English were excluded from the sampling.

Amongst the limited workplace text types, two of the companies in contact agreed to share two manuals that had been once used for employees in the companies. One of the companies also sent four handbooks on Hydraulics used in their own setting. Two of the automotive companies which are run as a subsidiary of international brands regularly give presentations to their shareholders. Even though they might have supplied quite a lot of fruitful authentic data in this domain, the documents gained in this genre were limited to 4. This limited corpus size was expanded with online repair manuals of a number of automotive companies. Having been compiled, all the texts (n=114) were categorized into their genres as in Table 8 and the standardization of the texts was completed.

On the other hand, in the sampling procedure, some manuals about sales and marketing that the companies supplied did not exactly represent the automotive domain in content; therefore, nearly 15 texts as such had to be excluded from sampling.

Table 8.

AEEC Size With Respect to Text Genres

code	genre	# of texts	word tokens	word types
AS	assignments	46	10881	2726
TB	textbooks	14	1658153	31386
ART	articles	34	173983	10259
MN	manuals	2	30916	3116
HB	handbooks	3	31278	3370
RP	reports	4	5981	1626
RM	repair manuals	11	463639	18744
	TOTAL	**114**	**2.374.831**	

3.6. Data Analysis

3.6.1. Statistical Packages for the Social Sciences (SPSS)

Quantitative data gathered by the NA questionnaire with the students was keyed into SPSS manually by the researcher. Descriptive statistics with numerical data such as

arithmetic mean, frequency, and percentages were calculated via SPSS. The outputs of the items, especially those with multiple-response options were crosschecked with a statistician from Mersin University. The overall analysis of the questionnaire and that of the items individually were tabulated with their frequencies and percentages and they were all interpreted in the subsequent chapter.

3.6.2. Content Analysis

Rather than being an independent methodology, the fact that content analysis of qualitative data is a complementary method for other research methods has been discussed earlier (Fraenkel et al., 2012; Cohen et al., 2007). The utility of this kind of analysis in order to reveal the interaction between text and context in such smaller-scope studies is best emphasized by Krippendorff (2003) who clarifies that "content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p. 18). Indeed, case studies necessitate in-depth interpretational analysis. Accordingly, the interviews and semi-structured questionnaires of present study were operationalized to content analysis procedure where common themes and sub-categories were identified after coding the texts.

3.6.3. Corpus Analysis

The systematic flow of the corpus analysis employed in this study is explicated in Table 9. The process was initiated with collecting and categorizing the texts into their genres, which was then followed by the standardization procedure. It was executed by the removal of tables, graphs, charts, and such visual information as well as preface, content, references, appendices, acronyms and other additional sections. Afterwards, all the texts were converted to .txt format and made ready for uploading into *SketchEngine* software (Figure 6).

Table 9.

AEEC Analysis Stages

	AEEC Analysis Stages	
1	Collecting and classifying written AE texts by genres	
2	Standardization of texts	
3	Uploading texts into *SketchEngine*	
4	Automatic generation of frequency list of words	Automatic generation of frequency list of multi-word units
5	Removal of non-technical items - determiners, pronouns, articles - proper nouns, GSL words* - function words	
6	Application of statistical analyses across reference corpora	Application of statistical analyses across reference corpora
7	Composing AE Technical Word List (AETWL)	Composing AE Technical Collocation List (AETCL)

**West's (1953) General Service List*

Sketch Engine (SkE)

In corpus-based studies, it is essential to resort to a reliable computer software or tool to draw empirical conclusions during data analysis. Amongst a number of corpus analysis tools, *Sketch Engine (SkE)* was adopted in that it "can provide very detailed descriptions of the contexts in which a word is found" (Nesi, 2013, p. 413). Beyond basic analyses of frequent occurrences of words, this software made important contributions to the corpus compilation owing to its multitasking ability. As Smith (2009) states,

> these include Word Sketches, one-page, automatic, corpus-derived summaries of a word's grammatical and collocational behaviour; a distributional thesaurus, which shows which words commonly occur in the same context as a user-supplied keyword, and are likely to be near synonyms, and the sketch differences module, which shows how the collocational behaviour of two user-supplied keywords differs. (p.5)

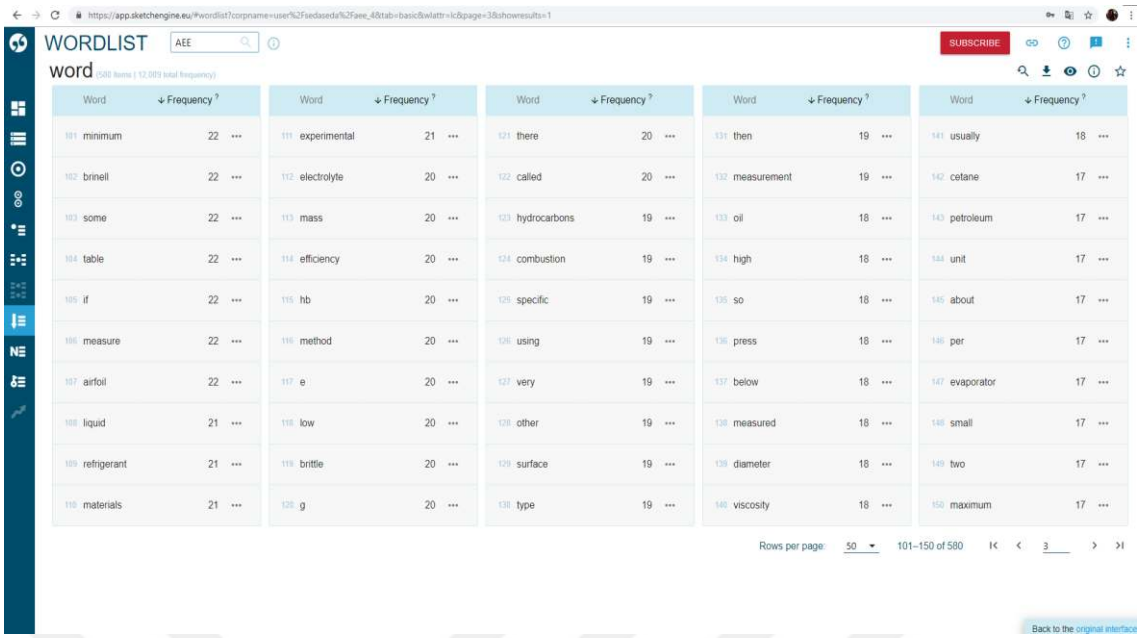

Figure 6. *A screenshot of SketchEngine software*

SketchEngine (SkE) software which "offers a number of other features which were devised principally with the lexicographer in mind, but which nevertheless could make a language learners DDL experience richer and more fun than reliance on raw corpora" (Smith, 2009, p.5) generated the most frequent occurrence of words and by expanding the word-combinations as multi-word units, frequently used lexical collocations in AE were listed. This randomly listed corpus data was consecutively analyzed by eliminating articles, determiners, quantifiers, prepositions, function words, proper nouns, and GSL words until the technicality of the words in automotive domain was ensured. Following that, the obtained data was crosschecked in comparison to two reference corpora; BNC and BNC Spoken Corpus in order to supply the representativeness of AEEC. Since both of these corpora are for general purposes, the words or multiword units that are high in occurrence in AEEC are comparatively among the less frequent words in reference corpora, which would guarantee the technicality of words/multiword units for this highly specialized domain.

Cut-off

Cut-off point for the analysis of specialized corpora, in other words, optimal threshold of occurrences is a controversial concept. To illustrate, in his lexical bundle study, Biber (2006) determined the cut-off point as ten times per million words whereas Cortes (2004) set the cut-off point as twenty times in one million words. Because of the

disagreement on the cut-off point for specialized corpora, it is rational to determine cut-off point with respect to the corpus size and objectives of the research. Considering the size and the quality of AEEC, the researcher of this study set the cut-off as 50 occurrences.

Keyness

Keyness simply refers to how distinctive the word is in the selected domain. "The keyness of a keyword represents the value of loglikelihood or Chi-square statistics; in other words, it provides an indicator of a keyword's importance as a content descriptor for the appeal." (Biber, Connor & Upton, 2007, p. 138). In this highly specialized corpus, in addition to the frequency of items, keyness score of the words were also taken into consideration in interpreting the results.

AEE Technical Word Selection

Coxhead (2000) in her detailed study of composing Academic Word List (AWL) touches upon three tenets of word selection in corpus design: *special occurrence* means being outside the first 2000 most frequently occurring words represented in GSL or any other general corpus; *frequency* refers to how many times the word occurs in the selected texts; and lastly *range* is defined by Wang et al. (2008) as the ratio of occurrence of a word in total number of texts (e.g. 16 occurrences out of 32 texts [50%]).

In AEEC, however, frequency and keyness are of prime importance in technical word selection since the selection of texts were particularly made on the basis of automotive domain. While determining the technical words and collocations, first of all, the words up to 50 occurrences were investigated. Having excluded the articles, pronouns, determiners, function words and proper nouns, the words combined with their word families (e.g. brake, braking, braked) were extracted (Appendix 8). Since AEEC serves for technical purposes, the words were not lemmatized (base form) and the most frequent word of that family was kept as the headword such as *indicator* from indicate. On the other hand, compound words such as *airbag, headlights*, *spark-ignition* as well as acronyms (e.g. HC, FMEA, ISO) and abbreviations (see the full list in Appendix 10) were also treated as single words; therefore, they were all in the AEE technical wordlist.

Parallel to the research objectives, the second consideration was the words used together in those technical texts. These multi-word units in automotive field are highly important since they show the interaction of the special terms with respect to automotive

contexts. The lexical collocating words were automatically processed by the software SkE and the list was composed and listed in Appendix 9.

3.7. A Sample AEE Syllabus Plan

Upon the findings and interpretation of NA with all the stakeholders as well as the corpus analysis results, the researcher designed a 14-week (one semester) AEE sample syllabus driven from Taba (1971) model of curriculum. This inductive curriculum was expected to be composed of:

- Overall objectives
- Content
- Weekly lesson plans with their methodology
- Resources
- Assessment

Each of the steps in this needs-based AEE syllabus were designed according to the data from NA with the stakeholders by elaborating them with AEEC.

3.8. Ethical Considerations

There are a number of ethical issues to be considered during data collection and analysis stages. First of all, the names of the automotive companies that made valuable contributions to the study were kept confidential throughout the whole research process. Accordingly, when taking the authenticity of the materials into consideration they presented, international correspondences could supply the native-speaker norms more than all the materials gathered. Although the researcher managed to reach 63 documents in the form of correspondences, the documents of such kind had to be excluded from workplace data because of the confidentiality issue. As Nesi (2013) also states, “unfortunately interview data and other related texts such as field notes, prepublication drafts, reviewers’ comments and so on are rarely included in corpus documentations, perhaps for reasons of confidentiality” (p.417).

CHAPTER IV

FINDINGS AND RESULTS

4.1. Introduction

This chapter examines both qualitative and quantitative data sets gathered through NA instruments and corpus analysis by presenting the descriptive and interpretive results thoroughly and clearly.

4.2. Findings from Students' NA questionnaire

The overall results of the NA questionnaire administered to the AE faculty students (n=144) are shown in Appendix 7. The questionnaire which included 20 items was divided into three main sections in order for the analysis to be more organized; thereby enabling the interpretation to be more comprehensive and understandable.

Out of 144 students that are involved in the study, 128 of them are male and the rest of them (n= 16) are female. Their ages are mostly (76,9%) between 18-21, whereas 20,3% of them are between the ages of 22-25. A very small minority of them (2,8%) are above 25. The respondents were also invited to self-assess their English language levels. Chart 1 below demonstrates the distribution of their level. As shown in Chart 1, 40% of the students had an average level of English while only 1 % assessed themselves as excellent user of English.

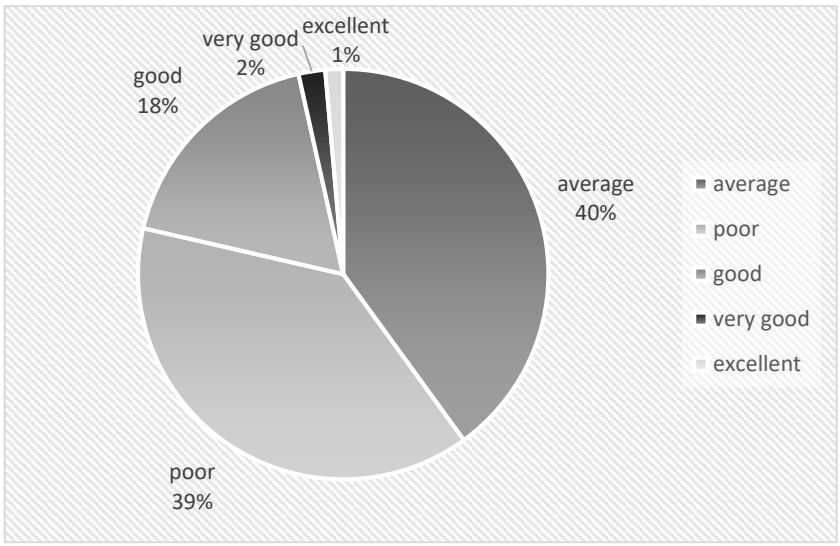

Chart 1. *Students' self-assessed English language levels*

In addition to the full representation of results in Appendix 7, the researcher categorized the items of NA questionnaire and examined them meticulously with respect to Target Situation Analysis, Present Situation Analysis, and Learning Situation Analysis afterwards. As stated previously (Table 7), items numbered 5, 7, 12, 14, 16, and 18 were attributed to TSA whereas items 4 and 13 were evaluated within PSA and items 1, 2, 3, 6, 8, 9,10,11, 15, 17,19, 20 were examined on the basis of LSA.

4.2.1. Target Situation Analysis (TSA) of the Questionnaire

TSA are conducted to reveal the language requirements of the learners in occupational settings. In line with this purpose, the students' responses to six questions were categorized under the title of TSA depending on the fact that "TSA includes objective, perceived and product-oriented needs. The objective and perceived needs are derived by outsiders from facts, from what is known and can be verified" (Dudley-Evans &St. John, 1998, p. 124).

Table 10 illustrates these objective and perceived needs gathered from the responses to TSA items. In item 5 where AE students were asked *"Do you think if a student's level of English is not good, it can have _____ on his academic success?",* a great majority of them (85,8 %) replied as bad effect while the rest equally answered either good effect (7,1%) or no effect (7,1%). In Item 7, students were asked to choose the skills or areas mostly emphasized in the classes. Since this was a multi-response item, the responses were scattered but most of them (20,6%) pointed to all skills *reading +writing +listening +speaking +grammar +vocabulary.* A small number of participants (3,7%) chose *grammar + vocabulary* separately as the least emphasized areas. In terms of the effect of limited general English knowledge on students' academic success, they were asked to respond to item 12 *"Do the students in your class face difficulty in content subjects because of their poor English?".* 56,7% of the respondents stated that they had *a little difficulty* during those lessons. On the other hand, the targets of the students for taking the course Vocational English were questioned in item 14 *"Why are you taking Vocational English course?"* Although the frequency of the responses was quite close to each other, the highest ranked (33,8%) response was *to develop professional communication in writing and speaking,* which was followed by *to develop skill in writing business correspondences* (25,6%) and *to improve the skills in job interviews and presentations* (9%), respectively. Item 16, *"Are the resources for the Vocational English*

course sufficient?", investigated the students' perception of the qualification and adequacy of the physical conditions of the course for their occupational settings. More than half of the students (52,8%) replied as *no*. Lastly, they were asked to reply item 18 "*What type of materials do you think the course should include?"* and 45,7% of the respondents chose all of the responses (since it was also a multi-response item) without any discrimination, herewith they supported visual, audial, written, and authentic materials to be used in this course.

Table 10.

Questionnaire items by TSA

#	Item	Response	*f*	%
5	Do you think if a student's level of English is not good, it can have _____ on his academic success?	bad effect	121	85,8
7*	Which areas are emphasized in the class?	grammar, vocabulary, writing, speaking, listening, reading	26	20,6
		vocabulary	14	10,3
12	Do the students in your class face difficulty in content subjects because of their poor English?	a little	77	56,7
14*	Why are you taking Vocational English course?	to develop professional comm. in writing and speaking	45	33,8
		to develop skill in writing business correspondences	34	25,6
		to improve the skills in job interviews /presentations	12	9
16	Are the resources for the Vocational English course sufficient?	No	75	52,8
18	What type of materials do you think the course should include?	all of them	64	45,7
		coursebook, videos, etc.	43	30,7
		material downloaded from the Internet	17	12,1
		workplace materials	13	9,3

4.2.2. Present Situation Analysis (PSA) of the Questionnaire

Table 11.

Questionnaire items by PSA

#	Item	Response	*f*	%
4	What do you think of the improvement of your English?	not improving	58	40,8
		not sure	46	32,4
		improving	38	26,8
13	Which key job skills do you lack?	job interviews	35	28,5
		presentations in a meeting	33	26,8
		job application & resume	19	15,4
		writing business letters	10	8,1

In PSA (Table 11) of the questionnaire administered to the students, it was intended to reveal their strengths and weaknesses. Thus, items 4 and 13 were considered to address this purpose in that they sought for their awareness towards their own English learning process and their weaknesses. For example, in item 4 *"What do you think of the improvement of your English?"*, the students were invited to evaluate themselves. Strikingly, 58 (40,8%) of the students confessed that it was not improving whereas only 38 (26,8%) students thought that it was improving. A substantial number (32,4%) of them were not even confident about their own improvement.

Item 13 *"Which key job skills do you lack?"* was a multi-response question where they could choose more than one option. Amongst all the answers, namely job application and resume writing, job interviews, presentations, correspondence writing, *job interviews* ranked as the first lacked skill (28,5%) and correspondence writing was the last (8,1%).

4.2.3. Learning Situation Analysis (LSA) of the Questionnaire

Twelve out of 20 questionnaire items (Table 12) prioritizing students' preferences and wants were evaluated under LSA since they aimed to serve for the students' "subjective, felt, and process oriented needs" (Dudley-Evans & St. John, 1998, p.128).

AE students were initially asked about their subjective reasons for studying English with item 1 *"Why do you need to study English?".* More than half of them (66,9%) agreed to have *success for future profession.* Then, they ranked their current English usage times with item 2 "*When do you use English?"* and the responses proved

that they used English more in social life (42,1%) than in studying (25,4%). Although they seemed to need English for socializing, they were actually aware of the occupational importance of English as the responses were densely accumulated in *job/career* (65,7%) in item 3 "In the future *I will be using English for _____."* Likewise, item 6 *"Would you like English to be taken away school curriculum because you don't find the present syllabus and the way of classroom teaching helpful in fulfilling your needs of English?"* was another awareness question towards the importance of English in which 45,1% of the respondents *strongly reject*ed this idea. Judging by their preferences of English skills to be acquired in item 8, *speaking* (26%) separately or together with other skills was by far the most important skill for the respondents to have. When students' instructional preferences were investigated through item 9 *"What kind of English class do you like?"* almost all of them (92,7%) made a selection of *a class with a lot of activities, pair/group work and projects* over a conventional classroom; moreover, 83,2% of the students preferred *working in pairs and groups* during classroom activities when asked in item 10 *"How do you prefer to do learning activities in the class?".* Concordantly, in terms of the teacher's role, a great majority of the respondents (93,4%) agreed on *a teacher as a facilitator and guide* as a reply to the item 11 "*What kind of role do you like your teacher to have?"* On the other hand, most of the students (55,5%) preferred the instructional materials being delivered *both face-to-face and through Internet and multimedia* in item 15. Additionally, instead of traditional classrooms students' (76,6%) preference for the physical environment while learning English was a *classroom with Internet and multimedia facilitated with visual info* in item 17. Despite this, in item 19, a great majority of the students (69%) think that attendance to this course should be *optional.* Lastly, when asked the exact timing of this course with item 20 "*When do you think you should enroll in this course?"* 62 % of them replied as *from the very first term on.*

Table 12.

Questionnaire items by LSA

	Items	**Response**	***f***	**%**
1	Why do you need to study English?	success for future profession	95	66,9
2*	When do you use English?	in social life	53	42,1
		when studying	32	25,4
3	In the future I will be using English for _____.	job/career	94	65,7
6	Would you like English to be taken away school curriculum because you don't find the present syllabus and the way of classroom teaching helpful in fulfilling your needs of English?	strongly disagree	64	45,1
8*	Which of the following areas do you wish to develop more?	speaking	26	19
9	What kind of English class do you like?	a class with a lot of activities, pair/group work, and projects	127	92,7
10	How do you prefer to do learning activities in the class?	working in pairs and groups	114	83,2
11	What kind of role do you like your teacher to have?	a teacher as a facilitator and guide	128	93,4
15	How do you want the instructional materials to be delivered?	both face-to-face and using Internet and multimedia	76	55,5
17	What type of classroom do you want Vocational English course to be held in?	Internet & multimedia facilitated with sound system	108	76,6
19	What do you think of the nature of attendance in the course?	optional	98	69
20	When do you think you should enroll in this course?	from the very first term on	88	62

4.3. Content Analysis of the Questionnaire with Subject Specialist Teachers

In order to clarify the expectations of all the stakeholders from this course, secondly, subject-specialist teachers (n=10) in Tarsus Technology Faculty were contacted in-person. Three of the teachers are female and seven of them are male. Their mean age is 42,1. The teachers have similar academic backgrounds, namely Machine Training (2), Chemistry (1), Mechanical Engineering (2), Physics (2), Physics Engineering and Education (2), and Chemical Engineering (1). All of them are holding an academic title and they all have at least high-intermediate level of English except for ST10 who is low-intermediate.

Table 13 summarizes the content analysis of the questionnaire conducted with subject-teachers at AE department of Tarsus Technology Faculty. Common themes emerged have been enumerated and the subcategories have been determined accordingly. *The reason for learning English:* Almost all the subject teachers implicitly stressed the importance of English language knowledge in this domain. When asked their opinions about the specific reasons, five out of 10 teachers stated that English was indispensable for following the trends in their field as in the following excerpts;

> *"English is highly crucial in terms of following the trends and advancements especially in Research & Development units of this sector…" ST1*
>
> *"English is essential…to follow the trends from up-to-date resources originally written in English…" ST10*

In addition to this, globalization and the integration with today's globalized world through language was another striking rationale for the teachers to learn English. ST8 together with the other four teachers touched upon this issue as in the following excerpts:

> *"…It has become a must to conduct the studies in this field cooperatively with other countries. In this sense, English is the lingua franca of this cooperation…" ST8*
>
> *"In the last decade, developing technology created a more globalized world. So, the integration of our engineering students into the globalized world when they graduate will undoubtedly depend on their English language skills…" ST5*

Table 13.

Content Analysis of the Questionnaire with Subject-Specialists

Themes	**Subcategories**	***n***
The reason for learning English	• following the trends	5
	• globalization	5
	• exchange programs	1
Necessary skills to acquire	• productive skills	7
	• technical terms in English	4
	• proficiency in all four skills	3
Course content	• activities based on oral skills	10
	• translation tasks	7
	• correspondence writing	5
	• technical terms and concepts	4
Learners' Weaknesses	• lack of practice	4
	• lack of interest/ unwillingness	3
	• limited vocabulary	2
	• unawareness of the importance of English	2
ESP teacher quality	• subject teacher	5
	• language teacher	3
	• collaborative work	2
Suggestions	• updated technical English syllabus/materials	5
	• assessment through debates	2
	• more assignments	2

Necessary skills to acquire: The results gathered from the interviews contributed to gain an insight about the necessary skills to acquire in order to become an automotive engineer. More than half of the teachers (n=7) were in concurrence of improving productive skills more than the receptive ones and indirectly emphasized the urgency of having a good command of spoken English; moreover, four of them articulated the priority of expressing

oneself fluently in English. Following excerpts taken from ST4 and ST6 vividly exemplify this notion:

> *"...In order for an engineer to express himself clearly, the speaking ability has to be improved…" ST4*
> *"...Engineers are mostly employed in technology companies which have international relations with foreign firms. In this respect, as it is the engineers' task to provide communication with them, speaking and writing abilities have shared values..." ST6*

Additionally, four out of ten teachers stressed the importance of building a professional domain-specific language within their students' language learning processes. According to them, the students have to be equipped with the technical terms and be familiar with the concepts to be encountered in their future workplaces as mentioned in the following excerpt:

> *"First of all, automotive engineers of the future must know technical terms in English used in their own field…" ST2*

Three teachers stressed the importance of all four skills and they stated that these skills should be equally covered. ST5 emphasized that:

> *"Engineers should pay attention to reading, writing, speaking and listening skills in English equally…" ST5*

<u>*AEE course content:*</u> All the teachers (n=10) without any exception are congruent on the priority of the activities and tasks based on oral skills. They all agreed on dismissing grammar-based lessons and encouraging students to speak through debates, presentations, and discussions. ST9, in this respect, stated that:

> *"The AEE course content should be composed of authentic tasks in which the students might have a chance of expressing themselves and solving real-life problems through debates in the classroom…" ST9*

In addition to speaking tasks in the classroom, more than half of the teachers (n=7) pointed out the necessity of integrating translation activities into the course content.

> *"...The students' ability to translate from one language to the other should be improved..." ST4*

As an occupational skill, the need for correspondence writing was also mentioned by the half of the subject teachers as in the excerpts below:

> *"An engineer is expected to express the problems that he is likely to encounter in his job through correspondences..." ST3*
> *"...Correspondence writing which will be frequently used in their field should be included into English course content..."ST6*

Additionally, four teachers acknowledge the importance of technical lexical items in English for this domain and they mentioned the need for teaching them in the course.

> *"...This course should be predominantly composed of technical terms..." ST2*
> *"...When ordered of importance, the content should be composed of technical terms and phrases, first of all..." ST4*
> *"While composing the course content, first of all, equivalents of technical terms need to be included and taught..." ST8*

<u>*Students' weaknesses:*</u> Amongst a considerable amount of points that subject-teachers noticed in their students' use of English, the most remarkable ones were lack of practice, lack of interest or willingness, their limited vocabulary knowledge and their being unaware of the importance of English at workplaces. Four out of ten teachers attributed the failure in English lessons to the students' lack of practice. ST5 explicated this issue thoroughly as follows:

> *"...I think our students do not spend enough time for extracurricular English. It is highly important to execute the visual, audial, and oral abilities in the process of learning a foreign language. In this respect, it is essential to watch videos, read*

books, and practice in English. I think our students do not perform all of them sufficiently…" ST5

In addition to this problem, three of the teachers stated the students' lack of willingness and interest to English lessons as in the following lines:

"The most important problem is students' unwillingness, I think." ST4
"Unfortunately, students don't want to speak, nor do they have enough confidence for this." ST3

Apart from these, limited vocabulary was stressed by two of the teachers, namely ST7 and ST10 explicitly. Furthermore, two teachers also stated that students were not aware of the importance of English for their fields.

"The most common problem is that students are not aware of the importance of English for them..." ST8

ESP teacher quality: The analysis of the questionnaires with the subject-teachers enabled to comprehend the judgments of teachers towards the long-lasting debate of ESP teacher quality. Parallel to the ESP literature, it was not surprising to come up with three stances emerging from the answers. Five of the teachers insisted on being taught by subject-specialists whereas three of them supported the dominance of language teachers over the content teachers. The rest two teachers suggested a collaborative work. The following excerpts from the questionnaire show each of these three stances respectively:

"I think the course should be given by a content teacher who has a command of English because the teacher has to know both the field and English equally for this course."ST3
"An English language teacher should give the course because, in my opinion, even if it is English for vocational purposes, the matter is *the teaching how to use that language. To know or speak a language is not enough to teach. I think it requires a different expertise." ST6*

"I think a cooperation is needed. English equivalents can be taught by language teachers while teaching of concepts should be conducted by content teachers." ST8

<u>*Suggestions:*</u> Half of the content teachers stated the need for a renewal in both materials used in the classroom and the AEE syllabus. For example, ST6 and ST7 suggested that:

"I think the syllabus needs to be updated with respect to the feedbacks and views of the subject teachers and experts in this domain." ST6
"Course materials should be renewed according to the content of the course" ST7

Apart from the syllabus and materials of the course, the teachers shared their opinions about the assessment and assignments as well:

"Methodology and the assessment of the course can change from one lesson to another. Rather than just testing the students with an end-of-term exam, they can be assigned speaking and writing tasks throughout the term…" ST9
"After giving the basics of the course, the subject can be discussed with questions and answers. What's more, in the assessment phase tasks such as debates can be done with students." ST1
"Maximum amount of assignments on translation or technical writing must be given to students." ST4

4.4. Content Analysis of the Questionnaire with Engineers

The third phase of NA was conducted with 12 engineers who have been working in three leading automotive companies in Turkey. Eleven of them are male and one of them is female. The mean age of the engineers is 36. When they were asked to self-assess their English proficiency level, eight out of 12 engineers selected *very good.* Two engineers evaluated themselves as *poor* and the rest are as *average.*

Open-ended questionnaire with engineers yielded substantial amount of information about the requirements of the working field and expectations of the prospective employers. Common themes were extracted from data sets and they were tabulated with their subcategories in Table 14.

Table 14.

Content Analysis Findings of NA questionnaire with Engineers

Themes	**Subcategories**	***n***
Attitudes towards speaking English at workplace	• comfortable	7
	• anxious	5
Benefits of English at workplace	• financial benefits	11
	• correct solutions on time	9
	• speed	2
Negative Results of lack of English	• delays	9
	• dependence on others	9
	• inconveniences (misinterpretation, comm. breakdown)	3
Coping strategies	• in-service training	9
	• practising English all the time	2
English tasks at workplace	• correspondences	6
	• answering questions in e-mails and phone calls	5
	• translating catalogues to other employees	3

<u>*Attitudes towards speaking English at workplace:*</u> By the help of the guided questions, the engineers were asked to express how they felt in the case of speaking English in the workplace. More than half of the respondents (n=7) expressed that they were comfortable enough in those situations as in the following excerpts:

> *"...I felt a bit reserved at first but now I am pretty comfortable while speaking English…" E2*
>
> *"...as I took English courses abroad, I had no difficulty. I not only understand the other side very well but I also express myself clearly…" E3*

Benefits of English at workplace: As an encouragement, some international companies support their employees financially. Except for one engineer, all the engineers (n=11) admitted to be supported financially owing to their English language knowledge.

In addition to this, the engineers in international companies are expected to have a good command of at least one foreign language. When the engineers were invited to share their opinions of the benefits of English language knowledge at workplace, 9 out of 12 engineers stated that it helped them solve the problems on time as in the following excerpt:

> *"...It always helped to solve the problem on your own..." E4*

Additionally, the knowledge of English at workplace aided to perform tasks much faster according to two engineers:

> *"...Having a good command of English makes you progress the job at hand smoothly..." E10*

Negative results of lack of English: By the help of the questionnaire, the engineers' views on the lack of English at workplace were sought for. Nearly all of them (n=9) agreed on the disturbance it led. In addition to its slowing down the flow of the process, this problem also caused inconveniences such as misunderstanding as well as dependence on others at workplace as stated in the following excerpts:

> *"Due to consulting others, we are experiencing loss of time..." E4*
>
> *"Lack of English knowledge causes misinterpretation constantly..." E1*
>
> *"Since my English is poor, I have to stop and ask help from others in some cases..." E6*
>
> *"...Those who are not good at English ask help from the same people again and again, so they cause a loss of time..." E11*

Coping strategies: Engineers from three different settings shared how they coped with the problems caused by lack of English knowledge. The engineers articulated the need for in-service training (n=9) and continuous practice (n=2) in their workplaces as in the following excerpts:

"...Updated and continuous training on English may be a solution..." E10

"...The continuity of communication in English must be established..." E6

<u>*English tasks at workplace:*</u> When engineers were asked to specify the tasks that they were supposed to conduct in English, six of them stated that they had to know *correspondence writing*. *Answering e-mails and phone calls* was also articulated by five engineers. Lastly, three of them stated that they had to *translate the catalogues* in English to other employees.

"...we are looking over the catalogues and exchanging correspondences with other firms" E10

"...we have to provide contact with foreign suppliers both in written form and verbally ..." E12

4.5. Content Analysis of the Questionnaire with ESP Teachers

The last phase of NA was completed upon the interviews with two ESP teachers in the Technology Faculty. ESPT1 holds an academic title in Mechanical Engineering and he has approximately 30 years of experience at various universities in Turkey. On the other hand, ESPT2 has been working as an English language teacher at the same faculty for 11 years with 15 years of experience in total. Table 15 illustrates the findings from the interviews conducted with both ESP teachers who have diverse academic backgrounds.

Table 15.

Content Analysis Findings of the Interviews with ESP teachers

Themes	**Subcategories**
Cooperation	consulting colleagues
	collaborating with colleagues
Skills to accomplish	to express yourself
	a general automotive terminology
	competence in all four skills
Tasks in the classroom	authentic activities
Assessment	presentation
	all four skills
Challenges	lack of sources
	students' poor English background
Coping strategies	being prepared beforehand

Cooperation: During the interviews, interestingly both teachers stressed the importance of exchanging information between content and language teachers. They stated that they had consulted other teachers in different phases of course preparation as in the following excerpts:

> *"I tried to compose the course content by myself and I asked my colleagues' opinions about what to add more or remove etc." ESPT1*
> *"In the preparation phase, I contacted with the head of the department. I didn't know what was expected me to make students accomplish. We brainstormed and also I asked other teachers' help and opinions" ESPT2*

Skills to accomplish: In terms of the required skills to make students acquire as an automotive engineer, two teachers with diverse academic backgrounds handled the concepts differently. While ESPT1 focused on speaking ability on its own, ESPT2 asserted the requirement of a proficiency in various skills as follows:

> *"One has to have a good command of speaking ability in English to express himself in his job." ESPT1*

"I think one has to accomplish all 4 skills. He has to have strong communication skills, express himself, have a good command of technical terms and expressions, and obtain the skills of making presentations and writing reports." ESPT2

Tasks in the classroom: When asked the tasks they used in the classroom, ESPT1 stated that he had been making use of the Internet to show the content of the lesson. He explicated it as follows:

"I make use of simulations of automobile components, there are so many videos or recordings of various firms that are in clear and fluent English. They really help us…" ESPT1

On the other hand, ESPT2 expressed that she had prepared various tasks that were oriented to develop their four skills

"Actually, what I'm trying to do is improve their language skills -no matter what the content is- through task-based activities in the classroom. For example, if my aim is to make them understand process writing, let's say, 'how the ventilation system in cars works' is just a means for me. So, I design the activities according to this..." ESPT2

Challenges: Both teachers mentioned the scarcity of sources targeted for automotive engineering department. Additionally, ESPT2 also touched upon the readiness level of students to take this course by addressing the imbalance in students' dispersion as in the following excerpt:

"…I really had difficulty because of the gap between the students' English levels. There was not a homogenous dispersion..." ESPT2

Coping strategies: In order to be able to deal with the stated problems during lessons, both teachers expressed that they were making preparations before the sessions. For instance, ESPT1 uttered:

"…Sometimes there are new words that I don't know the meaning, something terminological… I try to go to the classroom by looking them up if possible…"

Similarly, ESPT2 explains her coping strategies in finding a suitable material for the course as follows:

> *"Although I had hard times in finding sufficient materials for my students, I tried to solve it by consulting the subject teachers and borrowing resources from them before my sessions…" ESPT2*

4.6. AEE Corpus Analysis

Selection of texts in automotive genre, ensuring its balance and representativeness, and lastly the comparison to reference corpora enabled the creation of a micro-size specialized corpus, AEEC, to be utilized in the automotive domain.

4.6.1. Automotive Engineering English Corpus (AEEC)

AEEC, containing 2,160,512 running words is a highly specialized corpus that is composed of written, free-accessed, and computerized AE texts. It has 2,532,496 tokens and 101,448 sentences. This micro corpus is the product of balanced sampling of the automotive domain since it consists of a substantial number of textbooks, articles, reports, manuals, repair manuals, handbooks, catalogues, and student assignments. More importantly, AEEC is also highly representative of automotive domain since the sampling is targeted to a specific genre. The procedure of the comparison of AEEC with two reference corpora- BNC and BNC Spoken-, conducted to crosscheck the technicality of the items, verifies that "as specialized corpora are carefully targeted, they are more likely to reliably represent a particular register or genre than general corpora" (Koester, 2010, p. 67). Owing to its micro size, balanced sampling, and representativeness criteria, AEEC has successfully fulfilled the design considerations of being a sub-corpus.

4.6.2. AEE Technical Wordlist (AETWL)

In order to attain an AETWL to be utilized as a reference for pedagogical purposes, first of all, words below 50 occurrences in AEEC were eliminated. Upon the removal of articles, determiners, pronouns, function words, proper names, and everyday words from AEEC, the words were counted together with their word families such as *indicate, indication, indicative, indicator, indicators* and etc. Instead of lemmatizing

(base form) the words, the most frequent member of each family (e.g., *indicator* in this case) was determined as the headword. The compound words such as *windshield, flywheel* or *tire-road;* the units such as *hz* or *kW; and* acronyms (full list in Appendix 10) such as *ABS, HC* or *FMEA* were treated as single words; thereby included into the AEE technical word list. Ultimately, AETWL consisting of 934 words frequently occurred in automotive context was composed (Appendix 8).

Table 16.

50 most frequent Technical Words in AEEC

	headword	***f***	***keyness score***
1	vehicle	14617	418,89
2	system	13419	78,36
3	engine	12751	205,37
4	brake	8584	242,11
5	pressure	8156	55,32
6	fuel	7281	119,87
7	control	5417	35,35
8	speed	4804	43,44
9	tire	4682	154,66
10	temperature	4487	90,15
11	display	4215	77,77
12	wheel	4019	48,72
13	design	3975	120,3
14	operate	3898	77,13
15	seat	3815	97,04
16	valve	3675	348,63
17	cylinder	3574	550,64
18	increase	3359	73,33
19	force	3336	35,31
20	model	3218	282,56
21	position	3064	28,39
22	product	3008	28,65
23	ignition	2995	748,74
24	process	2976	26,87
25	condition	2931	52,65
26	combustion	2919	810,28
27	heat	2876	26,86
28	gas	2875	37,91
29	loading	2766	114,56
30	driver	2766	47,72
31	flow	2717	56,03
32	indicator	2587	128,08
33	electrical	2536	59,47
34	power	2455	47,66
35	battery	2434	90,67
36	lock	2431	37,71
37	sensor	2412	394,83
38	exhaust	2407	78,35
39	function	2385	78,66
40	component	2356	166,49
41	injection	2302	263,22

42	rear	2284	214,83
43	switch	2225	54,46
44	surface	1898	84,72
45	belt	1893	43,59
46	coolant	1851	283,04
47	mixture	1840	60,25
48	diesel	1797	64,81
49	steer	1797	78,08
50	emission	1790	294,45

The list was ordered by frequency; however, keyness scores of the words showing the distinctiveness of that word in that specific discourse were supplied on the far right of tables. The higher the score is, the more distinctive the word for automotive engineering field. Table 16 above lists most frequent 50 words that were encountered in automotive texts. As shown in this list, vehicle, system, engine, brake, and pressure are the top 5 words by their frequencies in automotive domain. Next to the frequency data column, keyness scores of items were supplied. In-depth analysis of this table illustrates that the word system, in spite of its high frequency with 13419 occurrences is a less distinctive word than combustion for AE. In the same way, although the word ignition has the second highest keyness score (748,74) in the corpus, it is less frequent than the words with lower keyness scores such as display (77,77). By taking the keyness score as a reference, this time, combustion, ignition, cylinder, vehicle, and sensor are respectively the top 5 distinctive words in AE.

4.6.3. AEE Technical Collocations List (AETCL)

Similar to technical word analysis in AEE, SketchEngine software also enabled to reach the words that were used together in automotive domain. As in the same way with word list, non-technical items were removed from the corpus and two or more lexical word combinations were provided. Thus, a final AETCL composed of 1000 items (Appendix 9) and ranked by their frequencies was obtained. The list not only included two-word combinations such as *ignition switch* but it also encompassed more than two word items such as *supplemental restraint system* or *tire-road friction coefficient.*

Table 17 illustrates 50 frequently encountered multi-words in automotive texts. According to this table, *steering wheel, combustion chamber, diesel engine, seat belt* and *engine speed* are respectively the top 5 collocations in AE. With respect to keyness, however, *combustion chamber, diesel engine, engine speed, brake system,* and *engine oil* are respectively the collocations that have the highest scores in AEEC.

Table 17.

50 most frequent collocations in AEEC

	multi-word	***f***	***keyness score***
1	steering wheel	512	84,06
2	combustion chamber	495	196,54
3	diesel engine	489	194,17
4	seat belt	487	113,15
5	engine speed	477	189,43
6	brake system	470	186,66
7	engine oil	395	157,03
8	heat transfer	391	142,88
9	fuel consumption	388	113,94
10	exhaust gas	375	137,07
11	brake force	372	147,95
12	instrument panel	368	146,37
13	equivalence ratio	363	144,39
14	child restraint	359	142,81
15	combustion process	341	135,7
16	cylinder head	332	121,46
17	ignition switch	324	128,99
18	air bag	290	106,21
19	air flow	290	98,18
20	cylinder pressure	289	11,16
21	parking brake	287	114,37
22	rear axle	279	111,21
23	compression ratio	278	110,82
24	control system	275	109,63
25	tire pressure	271	108,05
26	front passenger	266	97,5
27	brake pedal	259	103,31
28	remote control	248	34,59
29	road surface	236	94,22
30	spark plug	232	92,64
31	fuel injection	231	92,25
32	ignition delay	227	90,67
33	vehicle speed	223	89,09
34	flow rate	222	88,69
35	slip angle	220	87,91

36	cruise control	218	40,48
37	control unit	217	73,68
38	master cylinder	214	85,53
39	brake line	212	84,74
40	seat insert	211	84,35
41	cooling system	206	69,99
42	line pressure	197	78,82
43	engine cylinder	192	76,84
44	burned gas	192	76.84
45	crank angle	188	75,26
46	spark-ignition engine	184	73,68
47	fuel tank	177	65,18
48	warning light	177	60,25
49	exhaust system	175	70,13
50	inflation pressure	174	69,73

CHAPTER V

DISCUSSION

5.1. Introduction

This chapter firstly incorporates the findings obtained throughout the study. Then, it discusses the results of the needs-analysis and corpus analysis regarding three research questions by elaborating on them with reference to the similar studies in the field. After synthesizing the sum of the findings with respect to the research problem, a sample AEE syllabus driven from NA and CA has been suggested in the last section. Ultimately, in order to serve as a model and to show how it could be implemented, a tentative lesson plan for *English for Automotive Engineering* course covering one week in the syllabus has been designed and explicated thoroughly.

5.2. Evaluation of Research Questions

RQ1. What are the needs and expectations of the stakeholders (students, teachers, ESP instructors, engineers) from the content of English for Automotive Engineering course?

The first objective of this dissertation study was to specify the expectations of the stakeholders from the *English for Automotive Engineering* course. In line with this aim, the results of the NA questionnaires and interviews administered to 144 AE students, 10 subject teachers, 12 engineers and two ESP teachers were interpreted and their responses provided clues about students' awareness, required language skills, instructional preferences, AEE course content and the debate over ESP teacher.

Raising Awareness: First of all, while the close-ended questionnaire with AE students revealed their subjective and objective needs, the multi-dimensional needs analysis procedure by involving all the participants provided valuable information about the awareness of the learners. Unlike the common view of other stakeholders, PSA of the students showed that they were actually not only conscious of the importance of English language for their future work life but they also knew their weaknesses. Similar to Tasic's (2009) findings with Mechanical Engineering students in Niš, AE students were fully aware of the essence of English language knowledge so as to attain a better position in their careers. The results of questionnaire items seeking for their both subjective and

objective needs confirmed that AE students actually possessed sufficient intrinsic and extrinsic motivation to learn English. When examined from this aspect, the teachers' preconceptions of students' ignorance of English actually contradicted with the students' attitudes towards English.

From this point on, what other stakeholders might do is to raise awareness towards English at workplaces. To illustrate, for undergraduate AE students, engineers could organize workshops at faculties; moreover, in-service training to employees in which real-life workplace problem solving tasks could be simulated in English language at workplaces can be conducted at regular intervals.

Productive skills: Students' questionnaire items exploring the required skills revealed that *speaking* either separately or in tandem with writing was by far the most desired skill to be improved. The detailed analysis of objective and subjective needs showed that AE students needed to develop professional communication in writing and speaking and to develop skill in writing business correspondences. Mechanical Engineering students' NA analysis in Izidi and Zitouni's (2017) study conducted in an Algerian university showed resemblance with the current study in that Algerian ESP students ranked *speaking* skill as the first in order of importance just like their Turkish counterparts. These results also conformed with Daloğlu and Taş's (2007) study findings on English language learners' needs and lacks in which students also ranked *speaking* and *writing* as the most important skills for their future careers.

Productive skills over receptive ones were often highlighted in the content analyses of other stakeholders as well. The majority of the subject teachers and both of the ESP teachers were in agreement with improving students' verbal and written communication skills through tasks. On the other hand, the findings from engineers' questionnaire were in compliance with Spence and Liu's (2013) case study on Engineering English where they explored the skills and tasks at workplaces. Similar to their findings, the engineers in this study also stated the improvement of productive skills as they mostly *answered phone calls and emails* at workplaces. This was also in conformity with Sothan's (2015) NA findings of undergraduate students and employers in Cambodia where they stated that *making and receiving phone calls* was the top rated organizational task to be performed at workplaces.

On the basis of these findings, it is obvious that there is an urgent need for a novelty in the curriculum of ESP courses. In this respect, it would be reasonable to direct syllabus designers towards a new understanding of course plan based on task-based

activities needed to be performed at workplace situations. Product-oriented syllabi which consist of information gap activities and authentic tasks with language at discourse level will not only encourage meaningful learning rather than rote learning but also stimulate more interpersonal interaction.

Instructional novelties: In terms of a desired ESP classroom, students' preferences were also taken into consideration and some striking results emerged. The findings of students' questionnaire showed that AE students were not satisfied with the current physical setting, nor were they with available classroom utilities. Even though facilities were unique to that particular setting, findings from similar studies (Taşçı, 2007; Ayas & Kırkgöz, 2013) conducted in Turkey resembled each other considerably in that all of them stated the need for catering technological equipment in ESP classrooms in order to improve these courses.

In terms of the methodology, however, the majority of the students were also in favor of working in pairs or groups instead of individual work. This result contradicted with that of Atay et al.'s (2010) study to explore the perspectives of ESP students as well as teachers conducted another state university in Turkey. However, the groups of students in both settings were in agreement in timing of the course. AE students stated their dissatisfaction with the correct timing of the course as they were mostly in favor of taking it from the first term on rather than one single term. Interestingly, in spite of such an inclination, they thought that this course needed to be given optionally.

Primacy of subject teacher: In the NA findings with teachers, the ESP teacher dichotomy resulted with the domination of subject teachers over language instructors. However, in order to calibrate language or subject knowledge problems, two teachers' suggestion of collaborative work of both content and language teachers, which was also articulated in Wozniak's (2017) study on ESP teachers' perspectives in Content-Language Integrated Learning (CLIL), was quite plausible. Although the general tendency accumulated around the *content teacher with a good command of English language* corresponded to the common view and it was not unexpected, former studies offered some other applicable ideas such as *team teaching* suggested in Atay et al.'s (2010) study on ESP instruction as well as Mohammed's (2012) study on reversal roles of teachers in ESP. In addition, within the framework of CLIL, the idea of dual effort of both teachers, namely *co-teaching*, has been recently acknowledged. In this respect, Yang (2016) suggests that:

> Universities have to consider the possibilities of co-teaching between language and content teachers in an ESP or a CLIL course, providing suitable CLIL training including language teaching methodology and strategies of language assessment, and also appraising CLIL and ESP teachers' teaching performance in class to offer timely support and advice. (p. 60)

To put in a nutshell, in the settings where the implementation of collaboration is restricted, it would be wise to train content teachers in terms of classroom management and methodologies through pedagogical formation courses since it would be impractical to equip language teachers with content knowledge for ESP students.

All in all, it is now crystal clear that there is no one-size-fits-all methodology for ESP learners and content specifications of each target domain necessitate a disparate English language teaching approach. In other words, it would be a fallacy to simply teach English to engineering students as in the same way with medicine or tourism students. Regarding local needs of those learners, a new and fresh path should be followed in language teaching by taking the theoretical principles of learner-centeredness, the gist of ESP, into account. Acknowledging the global status of English language, this novel and more powerful approach to ESP which will rest on ELF (English as a Lingua Franca) should aim to make the learners reach intercultural communicative competence by considering their local contexts. In terms of the instruction, the actualization of EIL (English as an International Language) pedagogy where global appropriacy and local appropriation (Alptekin, 2002) are emphasized as key elements is likely to be a remedy for localized and contextualized teaching for globalized purposes.

RQ2: What constitutes the language content of English for Automotive Engineering course in terms of technical vocabulary and collocations?

The second objective of the study was to comprise a basis for AEE by the help of corpus. The absence of readily available corpora on automotive sparked the creation of a 2,5-million AEEC by the researcher in order to obtain and classify the lexical elements of automotive domain. Parallel with the criterion of representativeness of micro corpora, AEEC was composed of various genres such as AE textbooks, articles, manuals, handbooks, and repair manuals. In this respect, the comparison of AEEC with two reference corpora, namely BNC and BNC Spoken in Table 18 shows a higher lexical density in the first 40 occurrences.

Table 18.

Comparison of First 40 Occurrences Across Reference Corpora

	BNC SPOKEN		**BNC**		**AEEC**	
	(ca. 10 million)	***f***	**(ca.100 million)**	***f***	**(ca. 2,5 million)**	***f***
1	the	39605	the	61847	the	180986
2	I	29448	of	29391	of	62304
3	you	25957	and	26817	and	55027
4	and	25210	a	21626	to	51013
5	it	24508	in	18214	is	41832
6	a	18637	to	16284	a	41426
7	's	17677	it	10875	in	41093
8	to	14912	is	9982	be	18927
9	of	14550	to	9343	for	18797
10	that	14252	was	9236	on	16632
11	n't	12212	I	8875	are	16398
12	in	11609	for	8412	with	15035
13	we	10448	that	7308	or	14289
14	is	10164	you	6954	as	14100
15	do	9594	he	6810	that	13491
16	they	9333	be	6644	by	12169
17	er	8542	with	6575	**vehicle**	10576
18	was	8097	on	6475	can	10130
19	yeah	7890	by	5096	at	10111
20	have	7488	at	4790	**engine**	9310
21	what	7313	have	4735	**system**	13271
22	he	7277	are	4707	not	8808
23	that	7246	not	4626	from	8734
24	to	6950	this	4623	this	14321
25	but	6366	's	4599	an	8150
26	for	6239	but	4577	it	7278
27	erm	6029	had	4452	will	6538
28	be	5790	they	4332	which	5986
29	on	5659	his	4285	**fuel**	5783

30	this	5627	from	4134	**used**	5458
31	know	5550	she	3801	when	5309
32	well	5310	that	3792	**pressure**	5033
33	so	5067	which	3719	have	4770
34	oh	5052	or	3707	has	4657
35	got	5025	we	3578	may	4641
36	've	4735	's	3490	**brake**	4475
37	not	4693	an	3430	**air**	4159
38	are	4663	~n't	3328	**control**	4128
39	if	4544	were	3227	you	4127
40	with	4446	as	3006	**speed**	4001

This comparative table indicates that out of first 40 occurrences, AEEC included the most lexical items (n= 10) whereas content words did not exist in other two corpora except for the word "*know*". Moreover, these ten content words in AEEC, *vehicle, engine, system, fuel, used, pressure, brake, air, control,* and *speed,* were included in Automotive Engineering Technical Word List (AETWL), which corroborated the representativeness of AEEC for the automotive domain. On the other hand, the first 40 occurrences were also compared to two other general engineering corpora (Table 19) one of which was Mudraya's (2006) *Student Engineering English Corpus (SEEC)* composed of engineering textbooks; and the other was *Hong Kong Engineering Corpus (HKEC)* with around 9 million running words developed by Research Centre for Professional Communication in English of the Hong Kong Polytechnic University.

The percentage analysis of Table 19 showed that the number of lexical items in the first 40 occurrences in AEEC was 10 while it was 7 in SEEC and 4 in HKEC. This proves a higher lexical density of AEEC over two general engineering corpora. In a deeper analysis, these 10 lexical items high in occurrences in AEEC were not only content words but they were also closely associated with the field of AE; therefore, they were included into AETWL. For this reason, AEEC can be considered as more domain-specific owing to its specificity to the target community.

Table 19.

Lexical Density in SEEC, HKEC and AEEC

	SEEC (ca. 2 million)		HKEC (ca. 9 million)		AEEC (ca. 2,5 million)	
rank	**word**	**%**	**word**	**%**	**word**	**%**
1	the	8,50	the	6,8	the	7,23
2	of	4,19	of	3,92	of	2,49
3	a	2,84	and	3,10	and	2,2
4	and	2,72	to	2,38	to	2,04
5	is	2,43	in	1,97	is	1,67
6	in	2,07	a	1,54	a	1,65
7	to	2,06	for	1,37	in	1,64
8	for	1,08	be	1,11	be	0,75
9	are	0,88	is	0,98	for	0,75
10	be	0,83	on	0,70	on	0,66
11	that	0,8	with	0,68	are	0,65
12	at	0,76	by	0,62	with	0,6
13	as	0,75	or	0,6	or	0,57
14	by	0,71	as	0,6	this	0,57
15	with	0,57	are	0,52	as	0,56
16	on	0,5	at	0,5	that	0,53
17	from	0,48	that	0,45	**system**	0,52
18	an	0,47	from	0,43	by	0,48
19	this	0,47	Hong	0,39	**vehicle**	0,42
20	or	0,46	Kong	0,38	can	0,4
21	we	0,42	should	0,32	at	0,4
22	which	0,42	this	0,32	**engine**	0,37
23	it	0,38	shall	0,31	not	0,35
24	if	0,32	will	0,3	from	0,34
25	**figure**	0,31	not	0,29	an	0,32
26	**flow**	0,31	an	0,29	it	0,29
27	can	0,28	it	0,26	will	0,26
28	**determine**	0,27	which	0,25	which	0,23
29	**force**	0,27	**system**	0,23	**fuel**	0,23

30	two	0,26	**water**	0,23	**used**	0,21
31	shown	0,25	was	0,21	when	0,21
32	will	0,25	**building**	0,21	**pressure**	0,2
33	**used**	0,23	no	0,21	have	0,19
34	may	0,22	all	0,2	has	0,18
35	**velocity**	0,22	has	0,2	may	0,18
36	**pressure**	0,22	can	0,2	**brake**	0,17
37	its	0,2	**energy**	0,2	**air**	0,16
38	when	0,2	have	0,19	**control**	0,16
39	have	0,2	may	0,19	you	0,16
40	has	0,19	any	0,18	**speed**	0,16

NA findings enabled us to draw the conclusion of a requirement of a list of subject-specific lexical items for AE learners. Generating a wordlist based on a specialized corpus for pedagogical purposes shows consistency with former studies in ESP literature. To illustrate, Kırkgöz (2006) also pursued a similar procedure in which she designed the lexical component of English for Academic Purposes reading course through corpus data. In this research, however, upon composing AEEC, a 934-item AETWL and AETCL involving 1000 multi-words were created. AETWL mainly covered four of the categories suggested by Coxhead, Parkinson and Tu'amoheloa (2017) in their study of developing bilingual word list of technical vocabulary in trades. These were high-frequency technical words such as *valve, compression*, or *fluid*; everyday words with technical meanings such as *body, shoe,* or *wear*; technical abbreviations such as *EGR (Exhaust Gas Recirculation)* or *TPMS (Tire Pressure Monitoring System)*; and lastly the words that included word parts such as *overheat* or *prechamber*. When compared with Coxhead et al.'s (2017) study, the only remaining category was the technical proper nouns which were discarded in order not to decipher the names of the institutions.

Table 20 shows a section of how the headwords in AETWL were formed and categorized with their ranks, frequencies, and percentages in AEEC.

Table 20.

Formation of Headwords by Word Families in AEEC

rank	**headword**	**cumulative frequency**	**%**	**members of the word family**	
3	***engine***	12751	0,5	engine- 10493	engines - 1789
				engineering- 453	engined- 16
32	***indicator***	2587	0,1	indicator-937	indicated- 540
				indicates- 436	indicate-407
				indication-140	indications- 22
				indicative- 8	

While counting the frequencies, different forms of the items such as derivations and inflections were calculated together in accordance with the Bauer and Nation's (1993) levels of word families except for Level 1 in which each form of the word (engine-engines) are treated as different words. Their level 6 where compound words such as *predevelopment* were joined to the headword *develop* just like in Mudraya's (2006) SEEC slightly differed in AEEC since compound words were treated as distinguishing for automotive domain and they were joined to the list as separate headwords.

On the other hand, Table 21 illustrates first 20 occurrence of word combinations that concurred in automotive engineering texts taken from AETCL which was comprised of 1000 entries and whose aim was to present the frequently used lexical multi-words in automotive domain. When compared to *The Academic Collocation List (ACL)* containing approximately 2500 frequently occurred word combinations in academic texts developed by Ackermann and Chen (2013), the scope of AETCL was restricted to the high frequency multi-word units concurred in AE texts.

Table 21.

First 20 AEE collocations by frequency

	item	***f***
1	steering wheel	512
2	combustion chamber	495
3	diesel engine	489
4	seat belt	487
5	engine speed	477
6	brake system	470
7	engine oil	395
8	heat transfer	391
9	fuel consumption	388
10	exhaust gas	375
11	brake force	372
12	instrument panel	368
13	equivalence ratio	363
14	child restraint	359
15	combustion process	341
16	cylinder head	332
17	ignition switch	324
18	air bag	290
19	air flow	290
20	cylinder pressure	289

In terms of its wider scope and bigger size, ACL offers more extensive data than AETCL since the headwords in ACL are categorized with respect to the pre-collocates and post-collates. In addition, POS (part-of-speech) tagging of lexical units of each collocation provides a chance for the list to be utilized diversely.

No matter how they are compiled, the lists of collocation (academic or technical) represent the formulaic language used in that target community and they *do* have a pedagogical value. Although the concept of true collocation has stirred controversies since Firth (1957) (see Chapter 2.4.2.2) and there might be disagreements among experts about the technicality of items or true collocates as in Ackermann and Chen's (2013) study, the quantitative co-occurrence of words, even if it is by chance, falls into the

classification of *frequency-based* collocations defined in the literature, thereby proving that they are pedagogically relevant for the target domain. As in Coxhead's (2000) Academic Word List (AWL) and Ackermann and Chen's Academic Collocation List (ACL), AETWL and AETCL were composed to prepare teaching materials, establish vocabulary goals for ESP courses, and aid learners concentrate on useful technical vocabulary. The design of AWL was based on three criteria; frequency, range and special occurrence, whereas in this study, a balanced sampling was achieved and the texts that were collected only covered the target domain. Therefore, while composing AETWL and AETCL, the frequency of the items was the primary concern. For this reason, unlike similar studies such as Yi et al. (2013), both lists from AEEC were ordered by frequency rather than alphabetical order. Since the lists covered the most frequent items, West's (1953) GSL words which was considered as one criterion for word selection in Coxhead's AWL were excluded in this study.

To sum up, do ESP teachers have to be trained in application of technical words and collocations only after they have been equipped with an understanding of the importance of these lexical items in language.

RQ3: How can a needs-based AEE syllabus be designed on the basis of needs-analysis and corpus analysis?

The analysis of the first two research questions led to the synthesis of the results and enabled an applicable *English for Automotive Engineering* syllabus. The stages of the current study showed parallelism with the levels of ESP curriculum development suggested by Baştürkmen (2010) who categorized three main levels in a pyramidal order. From bottom to top, these levels are *analyzing needs, investigating specialist discourse,* and *determining the curriculum*. Pursuing a similar route with hers, the study was finalized with the suggestion of an ESP syllabus informed by the results of NA and CA as well as a tentative lesson plan.

Table 22.

The outline of *English for Automotive Engineering* course schedule

OTO 209 ENGLISH FOR AUTOMOTIVE ENGINEERING		
Duration:	3 lesson hours (120 minutes)	
Credit:	3	
Type of lesson:	Face to face	
	Weeks	**Themes**
Weekly Content:	Week 1	*Basics of the Car*
	Week 2	*Vehicle Body*
	Week 3	*Interior Design of the Car*
	Week 4	*Technical Specifications*
	Week 5	*Automotive materials*
	Week 6	*The Engine*
	Week 7	*Chassis*
	Week 8	**MIDTERM**
	Week 9	*The Fuel*
	Week 10	*Emissions*
	Week 11	*Performance*
	Week 12	*Electric and Hybrid Vehicles*
	Week 13	*Vehicle Safety*
	Week 14	*Innovations in Automotive*
	Week 15	*Cars of the Future*
	Week 16	**FINAL EXAM**
Resources:		▪ AEEC (Automotive Engineering English Corpus) ▪ YouTube videos of auto shows, car debuts, crash tests, test drives, trade fairs ▪ TedTalks/ engineering, cars ▪ Podcasts ▪ Car magazines, periodicals ▪ Kavanagh, M. English for the Automobile Industry. Express Series, Oxford, UK.
Assessment:		Midterm 40% Final 60%

In the first stage of content specification, a general overview of the *English for Automotive Engineering* course was outlined (Table 22). Presenting the externally determined guidelines such as lesson hours, course credit, type of the lesson, and the

assessment, a theme-based weekly plan was formed by the researcher. The themes for each week was ranked in order of specificity; that is, from general to specific. In this respect, the appropriacy of the order of the content was confirmed by a subject specialist from the Faculty. This 16-week course outline is likely to guide the learners as well ESP teachers about the content.

In the second step, following the general framework of the course, a more comprehensive sample syllabus exemplifying three weeks was suggested by the researcher. This generic template (Table 23) was prepared to be in accordance with Taba Tyler's (1971) widely acknowledged model of curriculum development. In line with this model, the suggested syllabus was aimed to contain the key elements of Taba model, namely *needs analysis, course objectives, the content, teaching-learning experiences,* and *assessment.* Thus, first of all, AEE course description was written by answering to the questions of *Why, How*, and *What?* Next, the overall objectives of the course which were ordered by complexity; from simple to complex, were determined with reference to Bloom's Taxonomy. These objectives determined with respect to the needs analysis findings included the specific knowledge and skills that were targeted AE learners to acquire.

In terms of the course content, each week in the syllabus was presented thematically. To illustrate, as shown in table 22, week 1 was dedicated to *the Basics of the Car* where the skills as well as subskills to be gained were defined. In accordance with the findings from CA, target lexical items associated with the theme of the unit were selected from AETWL and AETCL. In this respect, the selection criteria for target lexical items were made on the basis of students' level (B1), frequency of items, relevance to the theme, and belonging to different word classes such as verb, noun, adjective. On the other hand, the teaching-learning experiences informed by NA results were clarified parallel to the skills to be gained for that week. The materials and aids to be utilized were also specified and stated in the scheme as well as all the resources to be addressed throughout the term. During the decision-making process of material selection, which was one of the challenging steps, there were many parameters to be taken into account such as the material type (authentic/inauthentic), students' level, students' readiness, the amount of input to be delivered and so forth. In the last section of the template, how AE learners would be assessed was described in line with the demands and suggestions by the stakeholders in NA. Since there seemed to be a consensus on an ongoing assessment for this course, two short quizzes were added to to the midterm and final exams.

Table 23.

A Generic Template for English for Automotive Engineering Course Syllabus

Course name: English For Automotive Engineering **Level: B1 / Intermediate** **Duration: 3 hrs/ week** **Prerequisite: None** **Number of credits : 3**					
Course Description	Employees need to have a good command of workplace English in order to survive within today's globalized and industrialized world. By the help of authentic materials and through debates, discussion and research, students focus on the specific language to prepare them for prospective experiences in automotive domain.				
Overall Objectives	1. Students know Automotive Engineering terminology. 2. Students comprehend written and audial input in order to follow the trends in automotive sector. 3. Students develop professional skills such as emailing, making phone calls, giving presentations in English in automotive engineering. 4. Students improve productive skills in English for occupational purposes. 5. Students express themselves in English in workplaces. 6. Students use Automotive engineering terminology in appropriate situations. 7. Students improve translational skills in automotive domain.				
Weekly Lesson Plan		**Title & Topics**	**Skills /subskills to be covered**	**Target lexical items**	**Methodology**	**Resources Materials/Aids**
	WEEK 1	**BASICS OF THE CAR**	• listening / listen for the gist, notetaking • speaking / turn-taking dialogues with pairs	indicator rear switch gear battery ABS steering wheel instrument panel spark plug spare tire	task-based activities audio-visual activities	YouTube channel/ motor Show 2020 debut

	WEEK 2	**INTERIOR DESIGN OF THE CAR**	Reading - skimming and scanning Writing - sentence combining	display hydraulic deactivate lateral gear box instrument panel child restraint cruise control Vas CR /DC	task-based activities audio-visual activities	AEEC Glossary AutoCar Magazine Customer Reviews
	WEEK 3	**THE ENGINE**	Vocabulary Translation	Combustion torque Injection rotation Ignition coolant combustion chamber fuel consumption cylinder head fuel tank GDI rpm EGR mph	task-based activities audio-visual activities	Youtube video clip on GDI A genuine report on a latest model of X cars with GDI engines
Assessment			Quizzes 20% Vocabulary Translation task	Midterm Role play - presentation 2. Writing : responding customers' technical problem		Final Listening Speaking Reading Writing

As an ultimate product, a needs-driven corpus-informed tentative micro teaching lesson plan (Appendix 11) was constructed comprehensively by the researcher. In the design process, there were a great deal of considerations one of which was students' level, Therefore, first of all, the course was made feasible for the learners in B1 level. It is widely known that according to official CEFR descriptions developed by *Council of Europe*, B1 level corresponds to independent users of the language, i.e. those who have the necessary fluency to communicate without effort with native speakers. The learner at B1 level:

- *is able to understand the main points of clear texts in standard language if they are about topics with which they are familiar, whether in work, study or leisure contexts.*
- *can cope with most of the situations that might arise on a trip to areas where the language is used.*
- *is able to produce simple, coherent texts about topics with which they are familiar or in which they have a personal interest.*
- *can describe experiences, events, wishes and aspirations, as well as briefly justifying opinions or explaining plans.*

Within the framework of these guidelines and by taking the learner-centeredness into consideration, the content was constructed from simple to complicated by following input to output processes; that is, from comprehension to production. Accordingly, the tasks and activities in the sample lesson were arranged and ordered by difficulty, which also ranged from highly controlled to independent activities.

This sample lesson whose duration was anticipated as 120-minute long covered the theme of *Vehicle Safety*, the subject of the eleventh week in the schedule. Through the tasks and activities, the main purpose in this lesson was intended to teach the working principle of ABS (Anti-lock Braking System) in vehicles. Therefore, the specific objectives of the lesson were *to make students comprehend the working principles of ABS; to compare two types of car;* and *to teach students functional language at workplace situations*. In the light of these objectives, learning outcomes were also listed. In addition, target lexical items that were associated with the subject

of safety were identified. Having decided on the authentic course materials and classroom aids, the teaching-learning procedure could be initiated.

During warm-up of the lesson, the students could be invited to brainstorm about the reasons for accidents in order to stimulate the learners to speak; to activate their schemata; to engage all the students; and lastly to connect to future learning. Having elicited the answers and the discussion, so as to attract students' attention to the content and language simultaneously (implicit learning) and to make them familiar with the content to be focused, a lead-in task could be assigned by the help of a genuine fatality report. Owing to this 10-minute true/false task in which they were expected to skim and scan the report to find out the necessary information, students' consciousness was aimed to be raised before the introduction of the content. Next, the content, *ABS in Vehicles* could be presented via video task where students were asked to watch the comparison of two vehicles, one with ABS and the other without ABS. Within this presentation, the target structure, which was *comparatives of adjectives,* was implicitly integrated into the content. In this task, in line with the NA of the students, they were encouraged to work in pairs rather than individually. Following this task, the students were asked to watch the working principle of ABS through a video from YouTube, which was connected to reading and vocabulary tasks subsequently.

In the production section of the lesson, a communicative task was assigned to the students in pairs. First of all, they were given the roles of a visitor and a sales representative at a trade fair. By the help of the useful language given, they were asked to organize a dialogue in which questions addressing to safety features would be specifically highlighted. Optionally, since correspondence writing was also among the skills that NA respondents thought to be improved, another production task could be assigned to the students. In this guided writing task, students were shown some genuine complaints retrieved from customer reviews of car companies and they could be asked to write a reply to those customers by following the instructions.

CHAPTER VI

CONCLUSION

6.1. Introduction

This last chapter of the dissertation study is dedicated to the summary and the conclusions drawn from the whole research process. Next, it offers some pedagogical implications and lastly, it is finalized by suggesting follow-up studies and further research.

6.2. Summary of the Research

Corpus-informed ESP instruction has gained such a tremendous momentum in the last few decades that resorting corpus data for pedagogical purposes has now become widespread for ESP practitioners. According to Boulton et al. (2012), corpus-based ESP analysis is "evolving in promising directions and being gradually enriched by new methods and applications, and, true to its origins, by empirical investigations that have robust theoretical foundations" (p. 3). Owing to the fact that a corpus both enriches the course content and provides more reliable data, its application into the settings which lack readily available syllabus is likely to make a great deal of contribution. This study is originally shaped by this motivation in the researcher's own setting where a needs-driven syllabus for English for Automotive Engineering course is absent. Therefore, it was aimed to compose the content of *English for Automotive Engineering* course in Tarsus Technology Faculty through a bidirectional approach; namely needs analysis and corpus analysis. In the first phase, needs analysis was completed with all the stakeholders separately. Automotive engineering students (n=144), the subject teachers (n=10) in the Faculty, former and latter ESP teachers (n=2) who were assigned to teach this course in the same faculty and lastly 12 engineers from three different automotive companies in Turkey were involved into the process. Utilizing various tools for each group of informants, they were asked their opinions about English language for the career of an automotive engineer as well as workplace English. AE students were distributed a close-ended questionnaire with 20 multiple choice items each of which corresponded to students' subjective or objective needs. The quantitative results were gathered and interpreted with respect to *Target Situation Analysis, Learning Situation Analysis,* and *Present Situation Analysis* each of

which constitutes important components of Needs Analysis. Next, the subject teachers were sent an open-ended questionnaire composed of 7 items via e-mail. Similarly, another open-ended questionnaire was delivered to the engineers in order to explore their expectations and necessary language skills. Lastly, two ESP teachers were interviewed through semi-structured guiding questions. Based on the mixed method research model, quantitative results were analyzed via SPSS while qualitative data was applied content analyses method. Findings from NA explicitly showed that a novel instructional approach to the ESP lesson based on productive skills and free from traditional classroom applications was urgently needed.

The second phase was the creation of an Automotive Engineering English Corpus (AEEC) which was anticipated to serve for pedagogical purposes of automotive domain. To reach this goal, corpus data was collected both from AE classrooms and workplaces. Students' assignments on automotive sector, AE textbooks, and articles written in the related field were collected from classroom setting while reports, manuals, and handbooks were requested from the companies in contact. In the corpus compilation process; however, some of the data had to be excluded since they failed to represent the automotive domain. For example, official correspondences, annual reports, and the exams were removed because of their irrelevant content. The researcher compensated the size of the corpus and its balance by adding publicly online repair manuals. Having completed the data collection process, all of the written texts were uploaded into *SketchEngine* corpus analysis software and ultimately, AEEC which was a corpus of 2,160,512 running words was created. The program listed all the words by their frequencies. However, the words were reorganized manually by the researcher by removing non-technical items (function words, proper names, everyday words, etc.) and adding the word families. Eventually, 934 technical words were listed and the most frequent member of the word family was kept as the headword in the list. In the same way, the multi-word units were determined by the help of the software. Two or more lexical items going together were obtained and a final list composed of 1000 collocations in automotive domain was formed. In order to ensure the technicality of the words and collocations in the list, they were compared with two reference corpora. The keyness score of the items which was also supplied in the list indicated the technicality of the words in automotive domain.

The third phase of this study consisted of merging first two phases in order to design a needs-based corpus-driven AE syllabus. In other words, the NA findings and CA results enlightened the process of AEE syllabus design. The researcher created a generic

template of the syllabus that included the detailed plan of randomly selected three weeks with their content, target vocabulary, methodology, resources and assessment procedures. Since all the components were informed with the findings of this research, the study fulfilled the requirements of a context-bound ESP syllabus. Lastly, as a suggestion of this dissertation, a detailed micro teaching lesson plan of a selected unit from AEE syllabus was proposed. This lesson plan was designed to meet the expectations of the stakeholders in NA phase as well as covering the CA findings.

6.3. Pedagogical Implications

This needs-driven and corpus-informed study provided substantial amount of implications for ESP community not only in the stated context but also for diverse ESP settings. From the teachers' perspective, the current study guides them about how to implement learner-centered ESP courses in the settings where a syllabus is absent or materials are insufficient. In this respect, incorporation of corpus into classroom applications directs them in finding appropriate classroom tasks and activities. In line with the theory of DDL, for instance, simply, direct teaching of vocabulary and collocations which was also proposed in Coxhead's (2000) AWL might be put into practice. AEEC itself as well as AETWL and AETCL may also serve a guidance for teachers to prepare their tasks in order to prioritize the significant lexical items to be touched upon based on the fact that "specialized word lists can help gauge the size of a technical vocabulary in a field, and support teachers and students in guiding decisions on which words to learn, why, and also, in some cases, how" (Nation, Coxhead, Chung & Quero, 2016, p. 146). Therefore, ESP instructors, subject teachers and learners alike might benefit from these lists as a valuable tool since the words are closely associated with automotive field. Regarding this, Coxhead, McLaughlin and Reid (2019) highlight that "knowing the technical vocabulary of a field and being able to use it appropriately is an indication that someone also understands the content of that field" (p. 177). All in all, it is obvious that frequency word lists in a specialized field contribute the ESP learners to reach a competence in their domain.

In a broader scale, the fact that AETWL and AETCL aid sequencing of teaching lexical elements since they are ordered by frequency with respect to automotive domain will be an asset for curriculum developers, syllabus designers, testers, and course book

designers as well. In other words, AEEC might serve as a reference for a lexical syllabus for the automotive domain.

6.4. Further Research

The current study aimed to show the reflections of ESP instruction in a limited context of Turkish Higher Education system. It is highly suggested to disseminate the available research to other ESP contexts so as to reveal the contextual differences. In order to standardize the instruction, yet to maintain the localized needs, a novel approach to ESP teaching needs to be adopted.

Secondly, since the needs analysis conducted with two ESP teachers yielded highly striking results, the investigation of two teachers' preconceptions with diverse academic backgrounds about effective ESP classrooms through rep-grid analysis might generate important deductions about teaching.

It is also probable to expand the scope of corpus study conducted in this research. First of all, since the integration of frequency lists of vocabulary into ESP instruction are now in high demand and they are seen as asset for teaching (Reppen, 2010; Coxhead et al., 2019), new directions can be experimented as follows:

- AETWL can be investigated with respect to their technicality degree and sub-lists can be generated according to the subjects that automotive domain covers such as thermodynamics, engine, fuel, and etc. The lexical units can be ranged from semi- technical to highly technical in order to serve for the related purposes.
- Instead of considering the items above 50 occurrences (cutoff=50), future direction can be concentrated on unique lexical items below 50 occurrences, which would compose the highly technical vocabulary specific to the automotive domain.
- It is also suggested to focus on the lexico-grammatical items in AEEC as well. In-depth linguistic analysis by the help of PoS tagging of the items can enable highly linguistic items to be revealed such as syntactic features. Alternatively, lexical bundles used in automotive texts can also be scrutinized for appropriacy.

In addition to written texts, although data collection is likely to be exposed to some limitations, spoken genre of automotive domain which can be obtained through workplace talks, telephone conversations, board meeting records might be investigated in order to identify the workplace language.

Last but not least, the micro-teaching lesson plan proposed in this study can be applied in the target setting in order to find out the reflections of the students. Moreover, it might be simulated in different automotive engineering departments in Turkey in order to compare the effectiveness of the same lesson plan in different settings. Besides, considering the benefits of direct applications of corpora, the tasks in this lesson plan can be elaborated. From teachers' perspective, corpus data such as concordance lines, distributions, collocates, clusters, and so on can be resorted to create focused activities (Cobb & Boulton, 2015). Depending on the learners' level and profile, corpus-based tasks might be arranged from highly controlled to autonomous activities. To illustrate, after highlighting the essential collocations in the domain, a pairing task in which students are asked to pair the parts of the collocations can be added to the corpus activities. From students' perspectives, after training them on how to use corpora, concordance analysis can be integrated into the classroom tasks in which students search for the target items and analyze the concordance lines in order to see how these items are contextualized and used by native speakers (Al Saeed & Waly, 2009). Moreover, as Cobb and Boulton (2015) suggest, by the help of online corpora, students may check the infrequent patterns related with their domain in a reading text, which will provide more relevant and target-based contexts than can be found in a dictionary.

The final recommendation is that ESP instruction needs to be handled more carefully in language teacher education programs at universities. Teacher candidates who lack in training can be educated about the ESP classrooms as well as ELT during their practicum sessions.

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APPENDICES

Appendix 1. Needs-Anaylsis Questionnaire for AE Students

ESP NEEDS ANALYSIS QUESTIONNAIRE FOR AUTOMOTIVE ENGINEERING STUDENTS

Dear students,

The aim of the questionnaire is to investigate the efficiency of Vocational English course in Automotive Engineering department and to find out the needs of the students for prospective purposes. Please make sure that the information you will provide will be kept confidential since the research has a scientific quality. Please read the questions below carefully and answer them objectively and sincerely.

Thanks for your contributions.

Age: ___ 18-21 ____ 22-25 _____ 26-29 ____ 30+	
Gender: ___ Female ____ Male	
Level of proficiency in English: ___poor ___average ___good ___very good ___excellent	
QUESTIONS	**ANSWERS**
1. Why do you need to study English?	a. for higher education b. success for future profession c. speak to foreigners d. speak to friends and family e. others (clarify) _____
2. When do you use English?	a. when studying b. when socializing c. at work d. others (clarify) _____
3. In the future I will be using English for _____.	a. higher education b. job /career c. socializing d. at home e. others (clarify) _____
4. What do you think of the improvement of your English?	a. My English level is not improving b. My English level is improving c. not sure
5. Do you think if a student's level of English is not good, it can have _____?	a. a good effect on his academic performance b. a bad effect on his academic performance c. no effect on his academic performance
6. Would you like English to be taken away school curriculum because you don't find the present syllabus and the way of classroom teaching helpful in fulfilling your needs of English?	a. strongly disagree b. disagree c. neutral d. agree e. strongly agree
7. Which skills are emphasized in the class? (can be selected more than one)	a. reading b. grammar c. vocabulary d. writing e. speaking f. listening
8. Which of the following areas do you wish to develop more? (can be selected more than one)	a. speaking b. listening c. reading d. vocabulary e. writing f. grammar
9. What kind of English class do you like?	a. a class with a lot of activities, pair/group work, and projects b. teaching only by the teacher and no activities by the students

10. How do you prefer to do learning activities in the class?	a. working in pairs or groups b. working alone
11. What kind of role do you like your teacher to have?	a. the role of the teacher as a facilitator and guide b. traditional role of teacher as someone in control of everything in the class
12. Do students in your class face difficulty in content subjects like the theory of Automotive because of their poor English?	a. Many face a lot of difficulty b. Many face a little difficulty c. They face no difficulty
13. Which key job skills do you lack?	a. job application and resume writing b. job interview c. presentation in a meeting d. business correspondence writing
14. Why are you doing Vocational English course?	a. to develop professional communication in writing and speaking b. to develop skill in writing business correspondence c. to develop job interview skill d. to develop presentation skill
15. How do you want the instructional materials to be delivered?	a. no idea b. traditionally face-to-face c. on-line and multimedia based d. not only face to face, but also using Internet and multimedia presentations with sound system
16. Are the resources for the Vocational English course sufficient? (whiteboard, projector, coursebook, etc.)	a. yes b. no c. no idea
17. What type of classroom do you want Vocational English course to be held in?	a. classroom with white-board and OHP b. multimedia facilitated with sound system c. Internet and multimedia facilitated with sound system and decorated with posters and maps
18. What types of materials do you think the course should include?	a. textbooks, instruction/equipment manuals, CDs, DVDs, videotapes, and other materials used in content courses or to train people for a job b. materials used on a job, such as work forms, charts and samples of relevant course assignments and student papers c. materials from websites like business letters, dialogues, instructions, telephone conversations, pod-casts, vodcasts, etc. d. combination of all of these.
19. What do you think of the nature of attendance in the course?	a. Attendance should be optional b. Attendance should be mandatory c. Attendance should be mandatory and a part of course evaluation d. No idea.
20. When do you think you should enroll in this course?	a. from the very beginning b. in 2^{nd} –4^{th} semester c. in 5^{th} – 7^{th} semester d. last semester

THANK YOU

Appendix 2. NA Questionnaire for Subject-Specialist Teachers

NEEDS-ANALYSIS QUESTIONNAIRE FOR SUBJECT-SPECIALIST TEACHERS [EN]

Your English level: Poor___ Average___ Good__ Verygood__ Proficient___

1. What dou you think about the importance of/need for English lesson in the field you've been teaching (namely Automotive Engineering)?

2. Do you think what skills/qualifications prospective engineering students should have **in terms of English language**? Any priorities? And why?

3. Do you think Vocational English *is* efficient/necessary? If not, why?

4. What are the weaknesses of your students in terms of English?

5. What do you think about the overall content of Vocational English course? (correspondences, translations, presentations, etc.)

6. Do you think who should give the course "Vocational English" ; an English language teacher or a subject specialist teacher who has a good command of English? Why?

7. Do you have any suggestions about the course such as its content, duration, materials, resources, and assessment?

THANK YOU

Appendix 3. Semi-structured Questionnaire with Professional Engineers

A1. Background

1. Have you ever talked to a foreigner in English other than your teacher? If yes, how did you feel?
   - Did you feel you could communicate effectively?
   - What problems did you encounter?
   - What success do you feel you had in communicating?

A2. Consequences and Strategies for Coping with Insufficient language skills

2. To what extent is a lack of English language skills a barrier at _____?
3. What are the potential consequences of this language barrier? (e.g.; reduced profits, delays, reprimands etc.)
4. What are some coping strategies for this language barrier? (problems remain unresolved, using an interpreter etc.)
5. Can you give an example of problems caused by insufficient English language skills at _____?
6. Can you think of an example of benefits brought by sufficient English language skills at _____?

A3. Coping at Work

7. What kind of tasks do you have to perform in English at _____?
8. Does _____support your English studies financially or in some other way?
9. With whom do you most often communicate with in English while at work?

THANK YOU

Appendix 4. Transcriptions of Interviews with ESP Teachers

Transcription of the Interview with ESP Teacher 1

I: Interviewer

ESPT1: ESP Teacher I

ESPT2: ESP Teacher 2

I: Öncelikle Mesleki İngilizce dersini ne kadar zamandır vermektesiniz?

ESPT1: Öncellikle Abant İzzet Baysal Üniversitesinde de benzer dersi vermiştim. 2000 yılın dan bu yana vermekteyim.

I: Peki hocam genel olarak İngilizce seviyenizi değerlendirecek olursanız kendinizi nerede görüyorsunuz?

ESPT1: KPDSye 2 defa katıldım. '94 yılında girdiğimde 74 puan almıştım daha sonra doktora yeterlilik aşamasına geldiğimde '99 yılında tekrar girmek istedim, yenilemek istedim. O zaman da 82 aldım

I: B seviyesi yani?

ESPT1: Evet B seviyesinde aldım. Ve yeterlilik anlamında şöyle; bizler akademik personel olduğumuz için alanımızla ilgili çalışma yapmamız gerekiyor, alanımız ile gelişmeleri hem ülkemizdeki bilim adamlarından hem de yurtdışındakilerinden takip etmemiz gerekiyor. Onların yazmış oldukları makaleleri anadil seviyesinde anlayacak kadar bildiğimi söyleyebilirim. Yine ben de kendi yaptığım çalışmaları makaleye dönüştürmek suretiyle bilimsel dergilerde İngilizce olarak yayınlayabiliyorum. Dolayısıyla şimdiye kadar 52 tane uluslararası makale yayınlamış oldum. Hem yazma hem de okuduğunu anlama konusunda bir eksiğim yok. Bir akademisyenin de şu aşamada eğitim-öğretim dili İngilizce olan yerlerde yeterli oluyor.

Konuşma yeterlilikleri konusuna gelince de 2 defa yurtdışına çıkma fırsatımız oldu. Orada bu edindiğim İngilizce seviyesinin yeterli olduğunu gördüm, anlaşmada konuşmada fazla bir sıkıntı yaşamadım. Bunun haricinde bir de mühendislik derslerinde lisans seviyesinde müfredatların çoğunu İngilizce kaynaklardan takip ediyoruz. Yani öğrencilere ders notu hazırlarken Türkçe kitaplarla beraber çoğunlukla yabancı kaynaklardan da istifade ediyoruz. Bu da günbegün seviyemin daha da gelişmesine katkı sağlıyor.

I: Mesleki İngilizce anlamında bir eğitiminiz var mı? Bu anlamda yeterliliğiniz, özel bir hazırlığınız var mı?

ESPT1: Üniversite lisansta bizim de sizin şu anda verdiğiniz Mesleki İngilizceye benzer Teknik İngilizce dersimiz vardı. Orada teknik konularla ilgili genel bir İngilizce eğitimi almıştık. Belirli bir altyapım oluştu. Daha sonraki aşamalarda yani kariyer yapma ve alanımızda bilgi seviyemizi artırma durumunda olduğu için oradan zaten okumanız gerekiyor. Onu da halen yapıyoruz. Öğrencilere ders notu hazırlarken her hafta en az 2-3 tane makale okuyorum alanımla ilgili. Tabii öğrencilerimizi de öneriyoruz biz bu konuda hem lisans düzeyinde hem de yüksek lisans düzeyinde. En az alanınızla ilgili 2 tane makale okuyun diyoruz. Lisans düzeyindeki öğrencilerimize de şunu diyoruz; dünya globalleşmeye doğru gidiyor, tek dil İngilizce, tüm dünyanın dili. Bunu için de ne yapın edin bu 4 sene içinde ileri bir seviyeye getirin şeklinde tavsiyelerde bulunuyoruz. Biz yapabildiysek herkes yapar diyorum. Çünkü ben lisede İngilizce eğitimi almadım, eğitim dili Fransızca idi. Üniversitede sadece İngilizce vardı. Üniversiteden sonra ben bu aşamaya getirdiğiysem bu öğrencilerimiz daha şanslı, çünkü ilkokul 4. Sınıftan itibaren İngilizce görüyorlar. Yani isteyen öğrenebilir, geliştirilebilir. Bir de sizler gibi yetenekli öğretim elemanları rehberlik yapıyorlar, bizler olsun sizler olsun...Yani bu işin önemini kavramış öğrenciler rahatlıkla ileriye götürebilir.

I: Şimdi Hocam, Makine mühendisliğinden mezun oldunuz değil mi?

ESPT1: Ben Teknik Eğitim Fakültesi Makine Bölümü mezunuyum, teknik öğretmen olarak mezun oldum. Uzmanlığımı Makine Mühendisliği alanında aldım. Doçentlik belgem benim Makine Mühendisliği alanında. Ama Eğitim fakültesi mezunuyum ben, Teknik öğretmen diye söylediğimiz…

Teknik eğitim fakültelerindeki müfredat normal mühendislik programı ile birlikte Eğitim Fakültesinin formasyon programınıda…

I: Birleştirilmiş bir program yani…

ESPT1: Aynen öyle…Normalde biliyorsunuz lisans mezunları 120 kredinin etrafında devam eder. Bizim o zaman mezun olduğumuzda 240 krediyle mezun olduk. İşte diğer 120 de fakülteden gelen kredi sayısı idi.

I: Peki Otomotiv mühendisliği ile ilgili herhangi bir teorik bir geçmişiniz, ders almışlığınız var mı?

ESPT1: Tabii var. Şimdi benim uzmanlık alanım Makine mühendisliği, lisansta teknik eğitimde okuduğum alanda Makine ve Konstrüksiyon alanıydı ve bunlar da otomotiv makinadan ayrı düşünülemez. Ülkemizde otomotiv sektörü ekonomiye en çok katkı yapan kalem. İhracatta en fazla pay sahibi otomotiv. İşte verdiğimiz dersler itibariyle hem makine mühendisliğinde var hem de otomotiv mühendisliğinde var, aynı dersler. Makine

elemanları, Malzeme, İleri imal usulleri, bunlar da tabii sabit bilgiler değil. Her gün yeni teknolojiler gelişiyor bu konuda, yeni malzemeler üretiliyor, daha hafif malzemeler üretiliyor, bazı malzemeler otomotiv için çok önemli… daha sağlam malzemeler… alternatif, işte, yakıt malzemeleri olsun, imal usulleri olsun... O nedenle İngilizceyi bu alanda çalışacak olan mühendisler lisanstan başlayarak çok iyi biliyor olmaları onlar için büyük bir avantaj…

I.: Mesleki İngilizce derisini ilk vermeniz gerektiğinde ne hissettiniz, ne gibi çalışmalar araştırmalar yaptınız?

ESPT1: Ben şöyle bir yol izledim. Öncelikle bizim fakültemizde mesela Otomotiv Mühendisliği ve Enerji sistemleri mühendisliği vardı. Bilgisayar bölümünde de dersler verdim. Karşımdaki topluluğa baktım mesela bilgisayar teknolojileri alanıyla ilgili genel kültür mahiyetinde, mesela bilgisayarın uzmanlık gerektiren kıyıda köşede kalmış bilgileri değil de genel kaynaklarına ulaştım. O kaynaklardan ders kitabı olarak istifade ettim, içeriklerini o şekilde oluşturdum, yani öğrencilerin zaten bilgisayar anlamında bir altyapıları var, Türkçe olarak öğretmenleri anlatıyor. Onlara denk gelen kaynaklardan İngilizce kaynakları oluşturdum. O şekilde yaptım. Otomotive gelince otomotivde de benim kendi kütüphanemde olsun Mersin Üniversitesi kütüphanesinde otomotive yönelik çok güzel kitaplar var, otomotiv teknolojisi ile alakalı olarak. Yine bilgisayarda bilgisayar teknolojisi ile ilgili, enerjide enerji sistemleri ile ilgili... Hani böyle uzmanlık gerektiren değil ama genel kültür mahiyetinde herkesin bilmesi gereken kaynakları alıp onları öğrencilerle paylaştım. İyi de sonuçlar aldım.

I: Bir müfredat var mıydı takip ettiğiniz, hafta hafta?

ESPT1: İçeriği kendimiz oluşturduk, şunları verelim yeterli olur gibi. Bunu da meslektaşlarımla paylaştım. Bu İngilizcenin ders içeriğiyle ilgili başka ne verilebilir, neler eklensin gibisinden. Dolayısıyla bölüm kurulunda bunlar kısmen görüşülüyor, konuşuluyor. Ya da zaten girişi yaparken siz kendi meslektaşlarınızla bilgi alış-verişi yapıyorsunuz. Onların da çok önemli katkıları oluyor. Ben de o şekilde yaptım yani biz kendimizce bir şey hazırladık ama bunu da İngilizce dersi veren hocalarla olsun yine daha önce bu dersi vermiş hocalarla paylaşmak suretiyle onların görüş ve önerilerini almak suretiyle revize ettik. Bizim üniversitede geçen yıllarda öğrencilerin dersi değerlendirme anketleri oluyordu, bunlar çok yararlı oluyordu. Çünkü öğrencilerin de geri dönüşleri günümüzde de öğrencilerden dönüt almak faydalı oluyor. Bu değerlendirmeleri de hocalarla da paylaşmıştık. Bunun da önemli katkıları oluyordu.

I: Geleceğin otomotiv mühendisleri buradan mezun olduktan sonra ne gibi becerilere sahip olmalı, ne gibi niteliklere sahip olmalılar ve hangi özellikler öncelikli İngilizce açısından baktığımızda?

ESPT1: Bir özgeçmiş hazırlıyor, bu özgeçmişi kendisi anlatabilmeli. Çok rahat okuyabiliyorum yazabiliyorum. Kendisini iyi ifade edebilecek seviyede konuşmaya da ağırlık vermesi gerekiyor. Önce bir kendisini anlatabilmeli, ben ne yapabilirim mühendis olarak yeteneklerim neler? Bilgi düzeyim nedir? Otomotivin hangi alanı beni ilgilendiriyor? Yakıtlar mı hafif otomotiv teknolojisi mi, ağır vasıtalar mı? Bunu anlatabilecek düzeyde olmalı, bunun haricinde İngilizceyi de ortanın üzerinde bir İngilizce ile mezun olması gerekiyor. İyi seviyede olabilmeli ki öğrenci bundan istifade edebilsin. Günümüzde artık biliyorsunuz firmalar sadece bulunduğu şehir, ülke için üretmiyorlar, yani eğer bütün dünyaya satabiliyorlarsa ayakta kalabiliyorlar. Bunun da olmazsa olmazı öncelikle İngilizce. O nedenle iyi seviyede İngilizce bilmeleri gerekiyor. Genel otomotiv terminolojisi yeter. Yani uzmanlık alanı geldiğinde biliyorsunuz doktora seviyesi oluyor. Orada zaten öğrenci onu çözüyor ama lisansta öğrencinin genel otomotiv teknolojisi ile ilgili terminoloji ilgili bilgi sahibi olması gerekiyor. Genel bilgiler yani…tanımlayabilecek seviyede olması gerekiyor.

I: Mesleki İngilizce dersleri sırasında ne tür aktiviteler etkinlikler yaptınız öğrencilerle?

ESPT1: Edindiğim kaynakların tamamını öncelikle öğrencilerle paylaştım. Elektronik ortamda topladığım bütün materyalleri ben öğrencilerle paylaştım. Paylaşmakla kalmayıp onları yansıtıp yansıdan da ders işliyorduk onlarla. Otomobilin mesela parçalarının simülasyonları var, çekimleri var çok güzel hazırlanmış farklı firmaların çekimleri oluyor, Nissan'ın, BMW'nin Hyundai'in. Mesela yeni bir motor teknolojisi yapmışlar onu en ince ayrıntısına kadar anlatan videolar var yani siz onu 2D anlatmanız çok zor ama orada zaten hem İngilizce de anlatıyor yani çok akıcı net, teknik İngilizceyi de kullanarak anlaşılır bir dille anlatıyor onun çok faydası oluyor.

I: Görsel materyallerle.

ESPT1: Aynen öyle. Yani mesela motorun pistonu nasıl çalışır, yakıt nasıl alınır bunlarla ilgili çok güzel ders materyalleri var, bunları sınıf ortamına taşıyorum. Faydası oluyor. O esnada öğrenci soruyor, zaman zaman durdurup sorularla konunun ne düzeyde anlaşıldığını irdeliyorduk o aşamada. Yani tepegözü, bilgisayarı, 3D animasyonları kullandık, ders materyali olarak da bulduğum kaynakların hepsini öğrencilerle paylaştım. Son zamanlarda tabii bilgisayar teknolojisi eğitim-öğretimde çok önemli, çok büyük

kolaylık sağlayan bir imkân. Edindiğimiz kaynakların birçoğuna mesela öğrenci ulaşamıyor ya da nerede arayacağını bilmiyor o nedenle hazırladığımız ders notlarını masaüstüne koyuyorum sınıfta, öğrenciler de oradan alıyorlardı.

I: Yani o zaman siz gerçek hayattan (authentic) materyaller kullanıyorsunuz?

ESPT1: tabii tabii, yaşamın kendisinden alıp getirip...öğrencinin de çok ilgisini çekiyor. Doğrudan kendi alanlarıyla ilgili görsel materyalle de desteklediğiniz zaman dinliyorlar.

I: Peki hocam öğrencilerinizi bu süreçten sonra ya da bu süreç boyunca nasıl değerlendirdiniz Mesleki İngilizce dersinde, yani sınav mı sunum mu, yoksa çeviri yaptırarak mı?

ESPT1: Öğrencilere ben sunum yaptırdım, yani ne gibi mesela otomobilin sistemini birisi anlatsın bir ekip 3 veya 4 kişilik ekip konu paylaşımı yaptık. Başkası mesela klima sistemi hazırlayıp getirdiler ders materyali tabii sadece öğrencilere bırakmadık, onlar anlattılar bitirdiler sonra biz anlattık ve öğrencileri soru sormaya teşvik ettik. Olabildiği kadar İngilizce sormaya gayret ettik. Sunuyu yapanlar da gruba soru soruyordu, öğrenciler de anlamadıkları yerleri sormaya gayret ediyorlardı. Konuşturmaya da çalışıyorduk öğrencileri, bu şekilde dersleri işledik. Sınav performans değerlendirmesini de yasalardaki gibi sınavla değerlendirdik. Finalin içinde sunumları da değerlendiriyordum.

I: Herhangi bir zorluk yaşadınız mı bu dersi verirken, şu noktada tıkandım dediğiniz…

ESPT1: Yok ben çok keyif aldım.

I: Ya da baş etme yöntemi olarak ne yaptınız?

ESPT1: Çok keyif alarak ben ders anlattım, ha bazen ne oluyor yeni bir kelime oluyor mesela terminolojik bir şey. Onu da ben mümkün olduğunca bakarak girerim, arada güncelliyorum mesel...Teknoloji değişiyor, yeni örnekler geliyor… Mümkünse öğrenciye bir önceki yılın sorularını sormamaya gayret ediyorum. Soruları da güncellerim. Gramer değil kelime boyutunda dersten önce sözlüğe bakarak eksikleri gidermeye çalışıyoruz.

Transcription of the Interview with ESP Teacher 2

I: Ne kadar zamandır Otomotiv Mühendisliği öğrencilerine İngilizce dersi vermektesiniz?

ESPT2: Yaklaşık 5 yıldır.

I: Öğrencilerin alanı ile ilgili herhangi bir teorik geçmişiniz var mı? Bu alanda ders aldınız mı?

ESPT2: Hayır. Otomotiv mühendisliği ya da herhangi bir temel mühendislik alanı üzerine ders almadım**.**

I: Mesleki/Teknik İngilizce alanında uzmanlığınız var mı? Kendi İngilizce seviyesinizi nasıl değerlendirirsiniz?

ESPT2: 13 yıldır çoğunluğu lisans öğrencileri olmak üzere ilköğretim, hazırlık sınıfları ve önlisans programları gibi eğitim-öğretimin çeşitli kademeleinde ders verdim. Mesleki İngilizce alanında benim bildiğim kadarıyla özel bir ders/eğitim verilmiyor eğitim fakültelerinde İngilizce öğretmenlerine. O nedenle yolumu biraz kendim bulmaya çalıştım bu süreçte sanırım.

I: Mesleki İngilizce dersi (OTO209) dersi size ilk verildiğinde neler hissettiniz?

ESPT2: Biraz tedirgin oldum açıkçası. İlk defa temel İngilizce dışında ve de çok da yetkin olmadığım bir alanda hem de sayısal bir bölümün mesleki İngilizce dersine girmem istenmişti. İlk birkaç ders bocaladım sanıyorum.

I: Öğreteceğiniz bu dersle ilgili ne tür bir ön çalışma/hazırlık yaptınız?

ESPT2: İlk olarak bölüm başkanı ile görüştüm. Benden beklenen ve öğrencilere kazandırmam gereken beceriler tam olarak neydi bilmiyordum. Bunun üzerine müzakerelerde bulunduk. Beraber beyin fırtınası yaptık. Öğrencilerin İngilizce açısından nelere ihtiyacı var sorusundan hareketle ders programını oluşturmaya çalıştım. Daha önceden bu dersi vermiş olan öğretim elemanları ile de görüştüm. Fikir alış-verişinde bulunduk. Ayrıca internet ortamından da bu dersin kazanımlarını araştırdım.

I: Elinizde önceden hazırlanmış bir ders programı (içerik/müfredat) var mıydı? Eğer yoksa ders müfredatını nasıl planladınız? Herhangi bir yardım aldınız mı?

ESPT2: Hayır yoktu. Dediğim gibi fakültedeki öğretim elemanlarından ve ayrıca bu dersi vermiş olabileceğini düşündüğüm meslektaşlarımdan da gerek fikir gerekse de kaynak anlamında yardımlar aldım.

Müfredatı basitten zora, kolaydan karmaşığa, genelden özele gidilecek şekilde planlamaya çalıştım ama açıkçası en zor ksıımlarından biri buydu. Homojen bir öğrenci dağılımı olmadığı için kimi için basit olan kimine zordu. Bazısının da temel İngilizce altyapısı olmadığından bazen bir konu ya da yapı üzerinde fazladan süre harcayabiliyordum.

I:Sizce gleceğin Otomotiv mühendisleri İngilizce açısından hangi beceri ve niteliklere sahip olmalıdır? Hangi özellikler önceliklidir ve neden?

ESPT2: Bence ayırt edilmeksizin 4 beceriyi de (dinleme, konuşma, okuma ve yazma) iyi derecede kazanmış olmalıdır. İletişim becerisi kuvvetli, kendini iyi derecede ifade

edbilen, alanındaki terim ve ifadelere hakim, raporlama ve sunum yapma gibi becerileri de edinmiş olamalıdır.

I: Verdiğiniz İngilizce dersini ne tür göreve ve etkinlikler etrafında topladınız? Neden?

ESPT2: Tek bir beceriye bağlı kalmaksızın öğrencilerin dinleyip/izleyip üzerine konuşabilecekleri, okuyup yazabilecekleri bir teknik kitabı kılavuz alarak aktiviteler ve tasklar planladım. Çünkü İngilizceyi ilgi ve ihtiyaçlarına uygun olarak vermem gerekiyordu.

Aslında yapmaya çalıştığım şey tam olarak konu ya da bölümden bağımsız olarak sınıfta tasklara bağlı aktivitelerle öğrencilerin tüm dil becerilerini geliştirmek. Yani örenğin, diyelim ki öğrencilerin süreç paragrafını yazmalarını istiyorsam, 'araçlarda havalandırma sisteminin nasıl çalıştığı" benim için yalnızca bir araç. Dolayısıyla aktiviteleri buna göre planlıyorum.

I: Bu ders için hangi kaynaklar mevcuttu? Ders materyalleriniz nelerdi?

ESPT2: Bu ders için çok fazla kaynak taradım. Maalesef sınıfta homojen bir dağılım olmadığından hem tüm öğrencilerin seviyesine uyabilecek hem de alanlarına yönelik kitap bulmak zor oldu ama English for Automobile Industry kitabını esas alarak süreç içerisinde de ekstra materyallerle desteklemeyi uygun buldum.

I: Bu dersi verirken ne gibi sorunlarla karşılaştınız? Bu sorunlarla nasıl baş ettiniz?

ESPT2: Öğrenciler arasındaki seviye farkı ve kaynak kitap/materyal azlığı en büyük sorunlardı. Ara sıra teknik konularda zorlansam da bunlar öğretimimin önünde hiç engel teşkil etmedi.

Appendix 5. Automotive Engineering Textbooks

Automotive Engineering textbooks

	Textbook Name	Author
1	Multibody Systems Approach to Vehicle Dynamics	Mike Blundell &Damian Harty
2	Thermodynamics & Fluid Mechanics	**Hutter,** K.& **Wang,** Y.
3	Engineering Design book / Automotive Brake Systems	Rudolf Limpert
4	Intelligent Vehicle Technology / Trends	Richard Bishop
5	Guidelines for Failure Mode & Effects Analysis for Automotive, Aerospace & General Manufacturing Industries	Dyadem Press
6	Gear Drive Systems	Peter Lynwander
7	Automobile Electrical & Electronic System	Tom Denton
8	Internal Combustion Engine Fundamentals	John B. Heywood
9	An Introduction to Modern Vehicle Design	Julian Happian-Smith
10	Advanced Automotive Fault Diagnosis	Tom Denton
11	Motor Vehicle Structures	Jason C. Brown, A. John Robertson, & Stan T. Serpento
12	Modern Diesel Technology: Diesel Engines	Sean Bennett
13	Troubleshooting and Repairing Diesel Engines	Paul Dempsey
14	Automotive Engines Control, Estimation, Statistical Detection	Alexander A. Stotsky

Appendix 6. Automotive Engineering Articles

Automotive Engineering articles

1. Davis, K. J., Platt, G. A., Barnhart, E. P., Hiebert, R., Hyatt, R., Fields, M. W., & Gerlach, R. (2019). Biogenic coal-to-methane conversion can be enhanced with small additions of algal amendment in field-relevant upflow column reactors. *Fuel*, *256*, 115905.
2. Mattson, J., Burnete, N. V., Depcik, C., Moldovanu, D., & Burnete, N. (2019). Second law analysis of waste cooking oil biodiesel versus ULSD during operation of a CI engine. *Fuel*, *255*, 115753.
3. Casselberry, R. Q., Corporan, E., & DeWitt, M. J. (2019). Correlation of combustor lean blowout performance to supercritical pyrolysis products. *Fuel*, *252*, 504-511.
4. Leach, F. C., Stone, R., Richardson, D., Lewis, A. G., Akehurst, S., Turner, J. W., ... & Aradi, A. (2019). The effect of fuel composition on particulate emissions from a highly boosted GDI engine–An evaluation of three particulate indices. *Fuel*, *252*, 598-611.
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541-553.

11. Webster, J., Lee, M., Gurba, L. W., Manefield, M., & Thomas, T. (2019). The effect of oxidative treatment on soluble compounds from Australian coal. *Fuel*, *257*, 116071.
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13. Ivanov, S. Y., & Ray, A. K. (2014). Multiobjective optimization of industrial petroleum processing units using Genetic algorithms. *Procedia Chemistry*, *10*(2014), 7-14.
14. Stradling, R., Williams, J., Hamje, H., & Rickeard, D. (2016). Effect of octane on performance, energy consumption and emissions of two Euro 4 passenger cars. *Transportation Research Procedia*, *14*, 3159-3168.
15. Gifford, J. D., & Brown, R. C. (2011). Four economies of sustainable automotive transportation. *Biofuels, Bioproducts and Biorefining*, *5*(3), 293-304.
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17. Berkeley, N., Jarvis, D., & Begley, J. (2012). Phoenix from the ashes: can low carbon vehicles ensure the long-term viability of the West Midlands automotive cluster?. *International journal of automotive technology and management*, *12*(2), 137-152.
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Appendix 7. Full Representation of the Results of Students' NA Questionnaire

Item #	Question	Answer	Frequency (144)	Percentage
1*	Why do you need to study English?	success for future profession	95	66.9 %
		success in job + talking to foreigners	13	9,2 %
		higher education + success in job+ talking to foreigners	11	7,7 %
		higher education	8	5,6 %
		talking to foreigners	7	4,9 %
2*	When do you use English?	in social life	53	42.1%
		when studying	32	25.4 %
		ın workplaces	15	11,9 &
3*	In the future I will be using English for _____.	job/ career	94	65.7%
		career + socializing	21	14,7 %
		higher education + socializing + career	9	6,3 %
4.	What do you think of the improvement of your English?	not improving	58	40.8%
		not sure	46	32.4%
		improving	38	26.8%
5	Do you think if a student's level of English is not good, it can have _?	bad effect	121	85.8%
		good effect	10	7,1 %
		no effect	10	7,1 %
6	Would you like English to be taken away school curriculum because you don't find the present syllabus and the way of classroom teaching helpful in fulfilling your needs of English?		64	45.1%
			32	22,5 %
			21	14,8 %
		Strongly disagree	14	9,9 %
		Disagree	11	7,7 %
		Neutral		
		Agree		
		Strongly agree		
7*	Which areas are emphasized in the class?	grammar, vocabulary, writing, speaking, listening, reading	26	20.6%
			14	10,3 %
		vocabulary	9	6,6 %
		reading + vocabulary	6	4,4 %
		grammar	5	3,7 %
		grammar + vocabulary		
8*	Which of the following areas do you wish to develop more?	speaking	26	19 %
		all the skills	23	16,8 %
		speaking + listening	16	11.7%
		speaking + vocabulary	13	9,5 %
		speaking + writing	6	4,4 %
9	What kind of English class do you like?	A class with a lot of activities, pair/group work, etc.	127	92.7%
		traditional classroom	10	7,3 %

10	How do you prefer to do learning activities in the class?	working in pairs and groups working individually	114 23	83.2 % 16,8 %
11	What kind of role do you like your teacher to have?	a teacher as a facilitator and guide traditional both	128 8 1	93.4% 5,8 % ,7 %
12	Do the students in your class face difficulty in content subjects because of their poor English?	a little yes no	77 33 26	56.6% 24,3 % 19,1 %
13*	Which key job skills do you lack?	job interviews presentations in a meeting job application and resume writing business letters	35 33 19 10	28.5% 26.8% 15.4% 8,1 %
14	Why are you taking Vocational English course?	to develop professional comm. in writing and speaking to develop skill in writing business correspondences to improve the skills in job interviews /presentations	45 34 12	33.8% 25.6% 9,0 %
15	How do you want the instructional materials to be delivered?	both face-to-face and using Internet and multimedia face-to-face no idea	76 25 21	55.5 % 18,2 % 15,3 %
16	Are the resources for the Vocational English course sufficient? (whiteboard, projector, coursebook, etc)	No Yes No idea	75 45 22	52.8% 31,7 % 15,5 %
17	What type of classroom do you want Vocational English course to be held in?	Internet and multimedia facilitated with visual info multimedia board and projector	108 11 10	76.6% 7,8 % 7,1 %
18	What types of materials do you think the course should include?	all of them coursebook , videos, etc. material downloaded fro thr Internet workplace materials	64 43 17 13	45.7% 30,7 % 12,1 % 9,3 %
19	What do you think of the nature of attendance in the course?	optional compulsory compulsory and part of evaluation no idea	98 25 17 2	69,0 % 17,6 % 12,0 % 1,4 %
20	When do you think you should enroll in this course?	from the first term on 2nd and 4th 5th and 7th Last term	88 30 12 10	62,0% 21,1 % 8,5 % 7,0 %

**Items with asterisks (*) have been subjected to multiple-response analysis in SPS*

Appendix 8. Automotive Engineering Technical Word List (AETWL)

AUTOMOTIVE ENGINEERING TECHNICAL WORD LIST (AETWL)

1	vehicle	30	gas	59	manufacture
2	system	31	loading	60	cycle
3	engine	32	driver	61	motor
4	brake	33	flow	62	circuit
5	pressure	34	indicator	63	compression
6	fuel	35	electrical	64	key
7	control	36	power	65	axle
8	speed	37	battery	66	reduction
9	tire	38	lock	67	equipment
10	temperature	39	sensor	68	safety
11	airbag	40	exhaust	69	energy
12	display	41	function	70	body
13	wheel	42	component	71	performance
14	design	43	injection	72	transmission
15	operate	44	rear	73	angle
16	seat	45	ratio	74	maximum
17	valve	46	button	75	filter
18	cylinder	47	surface	76	fluid
19	increase	48	belt	77	voltage
20	force	49	coolant	78	remove
21	model	50	mixture	79	warning
22	position	51	steer	80	chamber
23	product	52	diesel	81	gear
24	ignition	53	emission	82	torque
25	process	54	automatic	83	mass
26	condition	55	discharge	84	signal
27	combustion	56	current	85	analysis
28	switch	57	range	86	passenger
29	heat	58	piston	87	output

88	method
89	wear
90	acceleration
91	resistance
92	equation
93	volume
94	pump
95	suspension
96	failure
97	efficiency
98	friction
99	mode
100	detection
101	rotation
102	adjust
103	device
104	reaction
105	generate
106	velocity
107	flame
108	airbag
109	element
110	measured
111	electronic
112	panel
113	spark
114	damage
115	converter
116	pedal
117	stroke
118	manual
119	mechanical

120	supply
121	feature
122	automotive
123	distribution
124	diagnostic
125	assist
126	transfer
127	shaft
128	wire
129	traction
130	distance
131	input
132	assembly
133	crank
134	locate
135	intake
136	decrease
137	curve
138	slip
139	restraint
140	hydraulic
141	lever
142	cell
143	simulation
144	frequency
145	injury
146	impact
147	initial
148	plug
149	vapor
150	motion
151	variable

152	fraction
153	trailer
154	actuator
155	procedure
156	port
157	shift
158	deceleration
159	throttle
160	bolt
161	deactivate
162	inlet
163	consumption
164	lane
165	spring
166	activate
167	manifold
168	parking
169	tow
170	release
171	insert
172	tube
173	tank
174	truck
175	internal
176	maintain
177	bulb
178	disc
179	direction
180	liquid
181	integrated
182	wiper
183	handling

184	catalyst
185	parameter
186	collision
187	testing
188	lateral
189	crash
190	nozzle
191	damping
192	particle
193	beam
194	rotor
195	maintenance
196	spray
197	expansion
198	installation
199	monitoring
200	concentration
201	gauge
202	thermal
203	steel
204	track
205	radiator
206	carbon
207	seal
208	joint
209	peak
210	dynamic
211	specification
212	controller
213	capacity
214	exceed
215	mount

216	compartment
217	block
218	conventional
219	inflation
220	cruise
221	dimensions
222	connector
223	protection
224	sliding
225	lighting
226	headlights
227	stability
228	ABS
229	hydrocarbon
230	interior
231	flash
232	lubrication
233	mph
234	density
235	oxidation
236	leakage
237	calculation
238	composition
239	HC
240	diameter
241	occupant
242	turbulence
243	transport
244	estimate
245	induction
246	idle
247	fitting

248	absorption
249	dealer
250	housing
251	service
252	unburned
253	fuse
254	vibration
255	cap
256	booster
257	stiffness
258	welding
259	clutch
260	strength
261	swirl
262	modified
263	command
264	vector
265	axis
266	rod
267	coil
268	reverse
269	vertical
270	crankshaft
271	fire
272	rail
273	malfunction
274	linear
275	jack
276	lining
277	illuminates
278	interval
279	caution

280	gearbox
281	nut
282	winding
283	onboard
284	formation
285	ACC
286	key
287	terminal
288	tension
289	burned
290	displacement
291	selector
292	screen
293	extended
294	cargo
295	external
296	optimum
297	thickness
298	tighten
299	spark-ignition
300	parallel
301	flux
302	chassis
303	replacement
304	FMEA
305	stream
306	trunk
307	hybrid
308	ventilation
309	inertia
310	lean
311	turbocharger

312	reservoir
313	instrument
314	proportional
315	deployment
316	experimental
317	lid
318	interference
319	corrosion
320	pulse
321	fan
322	alternator
323	magnet
324	cable
325	accessory
326	configuration
327	computed
328	optimization
329	matrix
330	turbine
331	pad
332	construction
333	plastic
334	rapid
335	rapid
336	Kw
337	rest
338	spare
339	differential
340	automobile
341	navigation
342	yield
343	clearance

344	inspection
345	leads
346	radius
347	static
348	coat
349	ride
350	cam
351	pipe
352	warranty
353	interface
354	longitudinal
355	metering
356	front
357	fasteners
358	washer
359	conduct
360	shoe
361	windshield
362	relay
363	magnitude
364	aligning
365	lb
366	radar
367	magnetic
368	modulus
369	petrol
370	blades
371	stoichiometric
372	screw
373	camshaft
374	tread
375	distillation

376	DC
377	yaw
378	Bluetooth
379	solutions
380	hazard
381	shear
382	technician
383	flywheel
384	composite
385	calibration
386	plotted
387	solid
388	octane
389	duration
390	obstacles
391	structural
392	solenoid
393	constraints
394	width
395	feedback
396	check
397	correlation
398	loop
399	ambient
400	soot
401	residual
402	retarder
403	outline
404	outer
405	tuning
406	implementation
407	minimize

408	bump
409	viscosity
410	door
411	rubber
412	vans
413	highway
414	alloy
415	capacitor
416	cracks
417	volumetric
418	metals
419	drag
420	thread
421	psi
422	additives
423	droplets
424	link
425	touchscreen
426	machining
427	iron
428	retailer
429	pin
430	shoulder
431	hood
432	intensity
433	camber
434	radial
435	fatigue
436	clockwise
437	patch
438	socket
439	ISO

440	ramp
441	nitrogen
442	overheating
443	condenser
444	headlamp
445	Vas
446	CO2
447	advanced
448	route
449	mole
450	cluster
451	LED
452	cast
453	strap
454	station
455	coal
456	stationary
457	windscreen
458	accumulator
459	rigid
460	recirculation
461	buckle
462	roof
463	graph
464	regulator
465	defective
466	balance
467	oil
468	thermodynamic
469	hose
470	adhesion
471	bearings

472	mobility
473	drain
474	clamp
475	TPMS
476	torsional
477	SAE
478	lambda
479	anchor
480	plates
481	kinetic
482	earth
483	hz
484	deflection
485	offset
486	oscilloscope
487	recession
488	severity
489	wrench
490	courtesy
491	compounds
492	band
493	compact
494	contamination
495	carburetor
496	filler
497	circle
498	heads
499	bushes
500	methane
501	algorithm
502	knob
503	blower

504	secure
505	outlet
506	pole
507	sensitivity
508	workshop
509	multibody
510	optional
511	adapter
512	exterior
513	limitation
514	dilution
515	visual
516	pedestrians
517	enthalpy
518	deposits
519	Eqs
520	backrest
521	dash
522	armature
523	SI
524	subsystems
525	transient
526	non-linear
527	compensation
528	bending
529	antifreeze
530	rocker
531	fluctuations
532	lightweight
533	misfire
534	tether
535	mesh

536	horizontal
537	lap
538	legislation
539	gradient
540	inner
541	dual
542	diffusion
543	maneuvers
544	intersection
545	latch
546	aerodynamic
547	momentum
548	waveform
549	atmospheric
550	iso-octane
551	pitch
552	anti-lock
553	laminar
554	glove
555	prechamber
556	retained
557	tandem
558	platform
559	scavenging
560	slope
561	diode
562	orifice
563	strain
564	DI
565	spin
566	polymers
567	MSC

568	sprung
569	manoeuvre
570	compliance
571	fibre
572	foot
573	tilt
574	defroster
575	boiling
576	stator
577	CR
578	adaptive
579	crevice
580	probe
581	uniform
582	sheet
583	seatback
584	prototype
585	auxiliary
586	EUI
587	Kpa
588	satellite
589	antifreeze
590	ions
591	gasket
592	stem
593	copper
594	roadside
595	upward
596	layout
597	neck
598	OBD
599	amplitude

600	convective
601	kit
602	simultaneously
603	depth
604	isolation
605	electrolyte
606	Idt
607	transducer
608	plunger
609	buildup
610	spot
611	penetration
612	AC
613	TC
614	molecular
615	urban
616	hardware
617	optical
618	tensile
619	elastic
620	agent
621	congestion
622	shut
623	monoxide
624	deformation
625	crankcase
626	aluminum
627	threshold
628	grid
629	attach
630	FCD
631	orientation

632	crown
633	DOT
634	source
635	precaution
636	spread
637	setting
638	foam
639	trace
640	blend
641	faulty
642	amplifier
643	degradation
644	tire-road
645	emergency
646	authorized
647	sampling
648	ergonomics
649	n-heptane
650	synthetic
651	tone
652	horn
653	PN
654	rack
655	flap
656	neutral
657	airflow
658	compass
659	fatal
660	biodiesel
661	icon
662	accidents
663	breakdown

664	ADAS
665	durability
666	axial
667	transistor
668	in-cylinder
669	trim
670	regime
671	electrons
672	distortion
673	bmep
674	lb
675	preset
676	agile
677	receiver
678	apparatus
679	supplemental
680	sidewall
681	lockup
682	H2
683	diaphragm
684	dioxide
685	compatible
686	downstream
687	infrastructure
688	seek
689	n-dodecane
690	silicon
691	powertrain
692	pneumatic
693	rearview
694	split
695	steam

696	remote
697	roadway
698	ethanol
699	needle
700	departure
701	thrust
702	sulphur
703	AG
704	normalized
705	electrodes
706	Nm
707	pinion
708	inverter
709	low-speed
710	peroxide
711	rollover
712	dwell
713	laboratory
714	TDC
715	excitation
716	aspirated
717	bracket
718	bonnet
719	standard
720	pivot
721	conjunction
722	hitch
723	upright
724	cushion
725	rotary
726	high-speed
727	lag

728	fade
729	thermostat
730	speakers
731	revolution
732	fuel-air
733	arc
734	spectrum
735	coupling
736	cabin
737	grease
738	sleeve
739	vane
740	thermistor
741	upstream
742	steep
743	anti-roll
744	boot
745	wavelength
746	cone
747	pillar
748	segments
749	micrometer
750	pollutant
751	nominal
752	caterpillar
753	propagation
754	fleet
755	frames
756	groove
757	counterclockwise
758	exchanger
759	dipstick

760	infrared
761	wishbone
762	bulk
763	wax
764	abrasive
765	helical
766	transition
767	layers
768	adiabatic
769	IC
770	odometer
771	end-gas
772	heat-transfer
773	DIC
774	autosteer
775	caliper
776	rearward
777	DSC
778	unity
779	disturbance
780	blind
781	GDI
782	flange
783	in-vehicle
784	motorway
785	tail
786	industrial
787	fusion
788	outward
789	shell
790	CVHS
791	imep

792	spherical
793	heat-release
794	constant-volume
795	downhill
796	nickel
797	wound
798	TCS
799	premixed
800	lens
801	plants
802	hand-held
803	trap
804	microprocessor
805	jets
806	grip
807	transverse
808	automation
809	sunroof
810	markings
811	rim
812	wing
813	strip
814	console
815	adjacent
816	pulley
817	tongue
818	homogeneous
819	trigger
820	gate
821	venturi
822	modulator
823	perpendicular

824	overhead
825	refrigerant
826	ppm
827	dashboard
828	antenna
829	strut
830	deviation
831	pores
832	translational
833	isentropic
834	car
835	customer
836	fuzzy
837	canister
838	dynamometer
839	SRS
840	vortex
841	hub
842	biomass
843	validation
844	centrifugal
845	reset
846	digital
847	ASTM
848	tailgate
849	exposure
850	multi-hole
851	bench
852	ADAMS
853	autoignition
854	slot
855	solar

856	fuel-cell
857	renew
858	intermittent
859	networks
860	collapse
861	Mpa
862	hydrodynamic
863	destination
864	terrain
865	stack
866	audio
867	fed
868	chest
869	lube
870	smog
871	off-road
872	bay
873	brightness
874	conservation
875	mileage
876	EMB
877	ITS
878	three-way
879	four-cylinder
880	anti-theft
881	resin
882	CVT

883	bsfc
884	MBT
885	blowdown
886	cetane
887	resources
888	LDWS
889	impeller
890	auto
891	right-hand
892	hatch
893	liability
894	broad
895	ID1
896	slack
897	resultant
898	BTU
899	supercharge
900	overlap
901	FCC
902	epicyclic
903	pan
904	underbody
905	EHI
906	MBS
907	char
908	ultramid
909	framework

910	default
911	lead-acid
912	summon
913	screwdriver
914	organic
915	analogue
916	spill
917	cycle-by-cycle
918	cut-off
919	scales
920	direct-injection
921	delays
922	risks
923	roller
924	steady-state
925	particulates
926	host
927	cartridge
928	squish
929	driveline
930	reciprocating
931	baseline
932	fuel-injection
933	con
934	ceramics

Appendix 9. Automotive Engineering Technical Collocation List (AETCL)

AEE COLLOCATION LIST (AETCL) (full list)

	Item	keyness score	Freq
1	steering wheel	84.06	512
2	combustion chamber	196.54	495
3	diesel engine	194.17	489
4	seat belt	113.15	487
5	engine speed	189.43	477
6	brake system	186.66	470
7	engine oil	157.03	395
8	heat transfer	142.88	391
9	fuel consumption	113.94	388
10	exhaust gas	137.07	375
11	brake force	147.95	372
12	instrument panel	146.37	368
13	equivalence ratio	144.39	363
14	child restraint	142.81	359
15	combustion process	135.7	341
16	cylinder head	121.46	332
17	ignition switch	128.99	324
18	air bag	106.21	290
19	air flow	98.18	290
20	cylinder pressure	115.16	289
21	parking brake	114.37	287
22	rear axle	111.21	279
23	compression ratio	110.82	278
24	control system	109.63	275
25	tire pressure	108.05	271
26	front passenger	97.5	266
27	brake pedal	103.31	259
28	remote control	34.59	248
29	road surface	94.22	236

30	spark plug	92.64	232
31	fuel injection	92.25	231
32	ignition delay	90.67	227
33	vehicle speed	89.09	223
34	flow rate	88.69	222
35	slip angle	87.91	220
36	cruise control	40.48	218
37	control unit	73.68	217
38	master cylinder	85.53	214
39	brake line	84.74	212
40	seat insert	84.35	211
41	cooling system	69.99	206
42	line pressure	78.82	197
43	engine cylinder	76.84	192
44	burned gas	76.84	192
45	crank angle	75.26	188
46	spark-ignition engine	73.68	184
47	fuel tank	65.18	177
48	warning light	60.25	177
49	exhaust system	70.13	175
50	inflation pressure	69.73	174
51	exhaust valve	65.78	164
52	contact patch	65.39	163
53	indicator light	64.99	162
54	head restraint	64.99	162
55	electronic control	64.6	161
56	fault diagnosis	64.6	161
57	selector lever	64.2	160
58	air conditioning	14.09	160
59	catalytic converter	58.28	158
60	warning lamp	63.02	157
61	engine management	57.92	157

62	information system	62.62	156
63	front axle	61.83	154
64	friction coefficient	61.04	152
65	diesel fuel	61.04	152
66	safety belt	56.11	152
67	additional information	45.08	152
68	spare tire	60.65	151
69	internal combustion	47.63	150
70	wide range	39.1	149
71	tire inflation	59.46	148
72	vehicle body	58.28	145
73	heat flux	57.49	143
74	mass flow	56.7	141
75	force distribution	56.3	140
76	pedal force	56.3	140
77	brake line pressure	56.3	140
78	cylinder block	51.75	140
79	volumetric efficiency	55.91	139
80	braking system	55.91	139
81	automatic transmission	54.33	135
82	engine compartment	49.93	135
83	brake force distribution	53.93	134
84	accelerator pedal	53.93	134
85	idle speed	53.93	134
86	unburned mixture	53.54	133
87	rear seat	53.54	133
88	oil level	53.14	132
89	turn signal	53.14	132
90	instrument cluster	52.75	131
91	fuel ratio	52.75	131
92	ignition system	52.75	131
93	lateral force	51.96	129

94	braking performance	51.96	129
95	child seat	51.56	128
96	fuel economy	47.03	127
97	high speed	19.72	127
98	inlet valve	50.77	126
99	information display	50.38	125
100	ignition timing	50.38	125
101	brake torque	49.59	123
102	rear window	45.21	122
103	compression stroke	48.8	121
104	gas temperature	48.4	120
105	brake fluid	29.88	120
106	rolling resistance	48.01	119
107	fuel system	47.22	117
108	engine coolant	43.4	117
109	automotive industry	43.4	117
110	fluid level	46.82	116
111	operating temperature	46.82	116
112	passenger seat	28.09	116
113	automotive fault diagnosis	46.43	115
114	automotive fault	46.43	115
115	magnetic field	32.17	115
116	effective pressure	46.03	114
117	airbag system	46.03	114
118	coolant temperature	46.03	114
119	engine operation	45.64	113
120	intake manifold	44.85	111
121	braking force	44.45	110
122	shock tube	44.45	110
123	surface area	30.81	110
124	intake system	44.06	109
125	tire inflation pressure	43.66	108

126	braking efficiency	43.27	107
127	stopping distance	36.76	107
128	press button	42.87	106
129	brake factor	42.87	106
130	control valve	42.87	106
131	cylinder wall	42.48	105
132	air pressure	39.04	105
133	front seat	26.22	105
134	lateral acceleration	42.08	104
135	reference frame	42.08	104
136	suspension system	42.08	104
137	high pressure	16.22	104
138	fuel conversion	41.69	103
139	four-stroke cycle	41.69	103
140	failure mode	41.69	103
141	manifold pressure	41.69	103
142	wheel cylinder	41.29	102
143	conversion efficiency	41.29	102
144	electrical system	41.29	102
145	restraint system	41.29	102
146	tire-road friction	40.9	101
147	flat tire	40.9	101
148	full load	32.33	101
149	residual gas	40.5	100
150	first-stage ignition	40.5	100
151	convertible top	40.11	99
152	fuel flow	39.32	97
153	tyre model	39.32	97
154	engine performance	39.32	97
155	fuel pump	39.32	97
156	air temperature	39.32	97
157	vehicle information	38.92	96

158	low tire	38.92	96
159	shoulder belt	38.53	95
160	flame front	38.53	95
161	front wheel	20.43	95
162	high temperature	28.16	94
163	carbon monoxide	20.22	94
164	fuel cell	37.74	93
165	block diagram	37.74	93
166	engine load	37.74	93
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813	windshield washer	13.24	31
814	sitting position	11.25	31
815	convenient access	12.85	30
816	good agreement	12.85	30
817	front passenger air	12.85	30
818	steer angle	12.85	30
819	automatic climate	12.85	30
820	soft cloth	12.85	30
821	automatic climate control	12.85	30
822	applicable country	12.85	30
823	primary current	12.85	30
824	tread depth	12.85	30
825	spark discharge	12.85	30
826	gas exchange	12.85	30
827	friction force	12.85	30
828	natural frequency	12.85	30
829	air gap	12.85	30

830	turn indicator	12.85	30
831	indicator lever	12.85	30
832	status light	12.85	30
833	point p	12.85	30
834	latch plate	12.85	30
835	constant power	12.85	30
836	maximum cylinder pressure	12.85	30
837	airlfuel ratio	12.85	30
838	energy release	12.85	30
839	low resistance	12.85	30
840	friction surface	12.85	30
841	belt system	12.85	30
842	central locking system	12.85	30
843	fault diagnosis table	12.85	30
844	wall temperature	12.85	30
845	valve train	12.85	30
846	host vehicle	12.85	30
847	display screen	11.81	30
848	wheel spin	11.81	30
849	technician b	12.46	29
850	lead-acid battery	12.46	29
851	low carbon	12.46	29
852	cd changer	12.46	29
853	cylinder charge	12.46	29
854	air cleaner	12.46	29
855	easy connect	12.46	29
856	pedestrian detection	12.46	29
857	significant effect	12.46	29
858	programmed ignition	12.46	29
859	pressure indicator	12.46	29
860	turn indicator lever	12.46	29
861	tire pressure warning light	12.46	29

862	friction material	12.46	29
863	relative motion	12.46	29
864	high power	12.46	29
865	partial pressure	12.46	29
866	peak pressure	12.46	29
867	burning process	12.46	29
868	multi-hole spray	12.46	29
869	wishbone suspension	12.46	29
870	request switch	12.46	29
871	cruise control system	12.46	29
872	multibody system	12.46	29
873	surface temperature	12.46	29
874	positive terminal	12.46	29
875	maximum torque	12.46	29
876	lane departure warning	12.46	29
877	pulse width	12.46	29
878	hot wire	12.46	29
879	traffic congestion	11.45	29
880	light source	11.45	29
881	charge air	12.06	28
882	cross-sectional area	12.06	28
883	rearward axle	12.06	28
884	front passenger air bag	12.06	28
885	side air bag	12.06	28
886	vehicle behaviour	12.06	28
887	lean burn	12.06	28
888	three-way catalyst	12.06	28
889	window defroster	12.06	28
890	vehicle diagnosis	12.06	28
891	rear door	12.06	28
892	leading edge	12.06	28
893	recycled exhaust	12.06	28

894	possible fault	12.06	28
895	force feedback	12.06	28
896	cool flame	12.06	28
897	spring force	12.06	28
898	tractive force	12.06	28
899	traffic information	12.06	28
900	valve lash	12.06	28
901	coat layer	12.06	28
902	top coat layer	12.06	28
903	fog light	12.06	28
904	similar manner	12.06	28
905	burned mixture	12.06	28
906	proper operation	12.06	28
907	wrist pin	12.06	28
908	wheel plane	12.06	28
909	license plate	12.06	28
910	absolute pressure	12.06	28
911	inlet pressure	12.06	28
912	injection pulse	12.06	28
913	tractor rear	12.06	28
914	variable resistor	12.06	28
915	compression ring	12.06	28
916	dry road	12.06	28
917	reset stem	12.06	28
918	yield stress	12.06	28
919	glass sunroof	12.06	28
920	exhaust temperature	12.06	28
921	braking torque	12.06	28
922	electronic unit	12.06	28
923	vehicle use	12.06	28
924	throttle valve	12.06	28
925	quarter vehicle	12.06	28

926	flow velocity	12.06	28
927	tire pressure warning	12.06	28
928	trailer weight	12.06	28
929	section structural weld	12.06	28
930	structural weld	12.06	28
931	ambient air	11.66	27
932	front air bag	11.66	27
933	throttle body	11.66	27
934	filler cap	11.66	27
935	valve closure	11.66	27
936	internal engine compression	11.66	27
937	operating condition	11.66	27
938	energy content	11.66	27
939	combustion efficiency	11.66	27
940	indicated fuel conversion efficiency	11.66	27
941	heat energy	11.66	27
942	di engine	11.66	27
943	drag force	11.66	27
944	steering force	11.66	27
945	total brake force	11.66	27
946	air fuel	11.66	27
947	detailed information	11.66	27
948	door opener	11.66	27
949	relative position	11.66	27
950	fuel flow rate	11.66	27
951	temperature rise	11.66	27
952	increasing speed	11.66	27
953	main supply	11.66	27
954	passenger sensing system	11.66	27
955	safety system	11.66	27
956	temperature t	11.66	27

957	spring tension	11.66	27
958	full throttle	11.66	27
959	assist unit	11.66	27
960	position vector	11.66	27
961	piston assembly	11.27	26
962	low beam	11.27	26
963	cylinder bore	11.27	26
964	preset button	11.27	26
965	radio code	11.27	26
966	adhesion coefficient	11.27	26
967	oxygen concentration	11.27	26
968	coal-to-methane conversion	11.27	26
969	diesel cycle	11.27	26
970	size distribution	11.27	26
971	maximum engine	11.27	26
972	workshop equipment	11.27	26
973	thermal expansion	11.27	26
974	cooling fan	11.27	26
975	liquid film	11.27	26
976	primary filter	11.27	26
977	hydrocarbon fuel	11.27	26
978	cooling function	11.27	26
979	suspension geometry	11.27	26
980	harmful interference	11.27	26
981	water jacket	11.27	26
982	window lift	11.27	26
983	low tire pressure warning light	11.27	26
984	operating limit	11.27	26
985	flow meter	11.27	26
986	induction motor	11.27	26
987	gas oxygen	11.27	26
988	boost pressure	11.27	26

989	flame propagation	11.27	26
990	heat-release rate	11.27	26
991	expansion ratio	11.27	26
992	road salt	11.27	26
993	adjusting screw	11.27	26
994	field strength	11.27	26
995	mixture temperature	11.27	26
996	mbt timing	11.27	26
997	cold tire	11.27	26
998	adhesion utilization	11.27	26
999	empty vehicle	11.27	26
1000	system voltage	11.27	26

Appendix 10. AEE Acronyms

AEE ACRONYMS & ABBREVIATION LIST

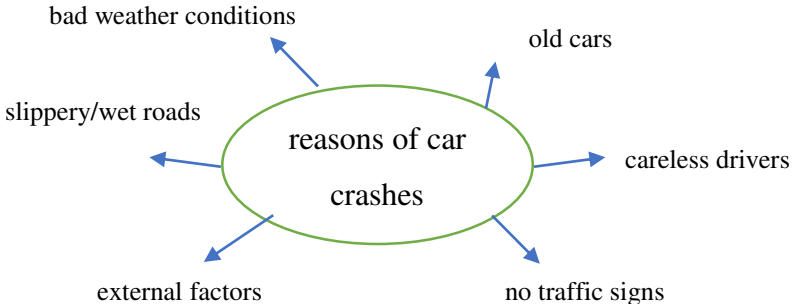
	Abb.	**Stands for:**
1	ECU	Engine Control Unit
2	mph	miles per hour
3	HC	hydrocarbon
4	OEM	Original Equipment Manufacturer/ing
5	ABS	Anti-lock Braking System
6	ACC	Acceleration
7	Kw	Kilowatt
8	EGR	Exhaust Gas Recirculation
9	lb	pound
10	rpm	Revolution per minute
11	NOx	Nitrogen oxides
12	atm	Asynchronous Transfer Mode
13	ECM	Electronic Counter Measures
14	Vas	Vehicle Alarm System
16	TPMS	Tire Pressure Monitoring System
17	CO2	Carbon Dioxide
18	SAE	Society of Automotive Engineers
19	hz	Hertz
21	Eqs	Equalizer System
22	ISO	International Organization for Standardization
23	SI	Sport Injected
25	DI	Direct Injection
26	Kpa	Kilopascal
27	EUI	Engineering User Interface
28	OBD	On Board Diagnostics
29	Idt	Integrated Device Technology
30	CR	Cruise Control
31	TC	Transfer Case
33	FCD	Flow Control Device

34	DOT	Department of Transportation
35	H2	Hydrogen
36	DC	Display Control
37	Nm	nanometer
38	TDC	Top Dead Center
39	PN	Part Number Pressure Normalized
40	AG	Automotive Group
41	IC	Internal Combustion
43	DIC	Driver Information center
44	GDI	Gasoline Direct Injection
45	FM	Frequency Modulation
46	LED	Light Emitting Diode
47	imep	Indicated mean effective pressure
48	CVHS	Cooperative Vehicle Highway System
49	NM	Nanometer Network Module
50	TCS	Traction Control System
51	min	Minute Minimum
52	DSC	Dynamic Stability Control
53	ASTM	American Society of Testing and Materials
54	ADAMS	Automatic Dynamic Analysis of Mechanical Systems
55	SRS	Supplemental Restraint System
56	ITS	Information Technology Services
57	EMB	Electronic Mechanical Brake
59	Rev.	Revolution
60	BSFC	Brake Specific Fuel Consumption
61	MBT	Minimum (Spark Advance for) Best Torque
62	CVT	Continuously Variable Transmission
63	R2	Rapid Response
64	LDWS	Lane Departure Warning System
65	SRS	Supplemental Restraint System

66	BTU	Basic Transmission Unit
67	FCC	Fluid Catalytic Cracking
68	AC	Alternating Current
69	MBS	MultiBody Simulation
70	EHI	Electro-Hydraulic Interface
71	FMEA	Fonds de Modernisation des Équipementiers Automobiles *(French: Automobile Equipment Manufacturers Modernization Fund)*
72	bmep	Brake Mean Effective Pressure

Appendix 11. Micro Teaching Sample Lesson Plan

Micro Teaching Sample Lesson Plan

Course name	OTO 209 English for Automotive Engineering
Level	B1
Duration	120 minutes (40 mins x3)
Topic	Vehicle Safety
Objectives of the lesson	1. Students comprehend the working principle of ABS. 2. Students make comparisons with two types of vehicles. 3. Students use functional language at workplace situations.
Learning Outcomes	By the end of the lesson, students will be able to: 1. name the components of ABS. 2. define the working principles of ABS. 3. compare two different concepts. 4. simulate a real-life conversation at work with pairs. 5. build a formal e-mail to a customer's problem.
Target Lexical Items	accelerate, decelerate, collision, fluid reservoir, brake booster, skidding, valve, brake disc, modular unit, ABS, ECU, wheel sensors, master cylinder
Classroom materials	Board, projector, handouts, role cards
Learning resources	• A genuine article on crash reports / www.iseeCars.com • A crash test video clip on YouTube • A video clip of "ABS Operation" • Customer reviews on www.carcomplaints.com
TEACHING LEARNING PROCEDURE	
10:00-10:05 Warm-up **Estimated time: 5'**	• After greeting, the teacher draws a circle on the board and writes "reasons of car crashes" in the middle of it. She asks students brainstorm on it and writes the ideas she elicits from the students. 

PRESENTATION
10:05-10:15

Lead-in

Task: skimming and scanning to find the information needed

Estimated time: 10'

- The teacher gives students a handout of a report titled *"The Most Dangerous Cars in the US"*.

The Most Dangerous Cars in the U.S.

By Julie Blackley

Small Cars and Sports Cars are the Most Deadly

iSeeCars.com analyzed fatality data of model year 2013-2017 cars from the U.S. Fatality Analysis Reporting System (FARS) and more than 25 million used cars from the same model years to determine the vehicles that are most often involved in fatal accidents.

Most Dangerous Cars By Fatal Accident Rate

iSeeCars found that there are 14 models that are at least two times as likely as the average vehicle to be involved in a fatal accident. The car most often involved in fatal accidents is the Mitsubishi Mirage.

iSeeCars Study - Cars with the Most Frequent Occupant Fatalities

Rank	Vehicle	Fatal Accident Rate (Cars per Billion Vehicle Miles)
1	Mitsubishi Mirage	10.2
2	Chevrolet Corvette	9.8
3	Honda Fit	7.7
4	Kia Forte	7.4
5	Chevrolet Spark	7.2
6	Subaru BRZ	6.9
7	Nissan 370Z	6.2
8	Nissan Versa	6.1
9	Kia Rio	5.9
10	Dodge Challenger	5.8
11	Chevrolet Camaro	5.5
12	Kia Soul	5.3
13	Hyundai Veloster Turbo	5.2
14	Nissan Versa Note	5.2
Average for All Vehicles		*2.6*

iSeeCars

- After giving the report to the students, the teacher directs students to read True/False questions below as well as the report.

__1. Sports cars are not as deadly as small cars.
__2. According to the report, Mitsubishi Mirage has the highest fatal accident rates.
__3. Nissan Versa Note has higher fatal rates than Hyundai Veloster Turbo.
__4. The report covers the statistics of the last three years.
__5. This report shows that Kia Rio is has two times higher fatal accident rates than average cars.

<table>
<tr>
<td>Introducing the content
10:15-10:40

Task 1: Pair work activity

Estimated time: 25’</td>
<td>

The teacher writes the topic on the board “Anti-lock Braking System” and wants students to watch a crash test video.

After watching the video for the first time, the teacher divides the students into pairs.
Then, she draws the chart below onto the board.

<table>
<tr><td></td><td>ABS</td><td>NO-ABS</td></tr>
<tr><td>stopping capability</td><td></td><td></td></tr>
<tr><td>on wet surfaces</td><td>more stable</td><td></td></tr>
<tr><td>cornering performance</td><td></td><td></td></tr>
<tr><td>risk of fall</td><td></td><td>higher</td></tr>
<tr><td>maneuverability</td><td></td><td></td></tr>
</table>

The students watch the video again to fill in the comparison table above.
By leading students with sample answers, the teacher gives students enough time to work in pairs and produce as many sentences as they can.
After they finish the task, they read them aloud and the teacher writes them on the board.

</td>
</tr>
<tr>
<td>PRACTICE
10:40- 11:25

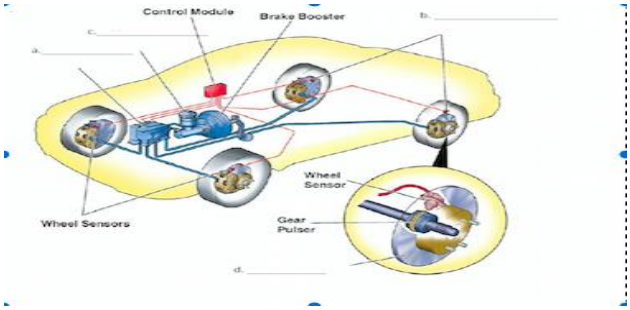
Task 2:

Estimated time: 45’</td>
<td>

The teacher presents the content through a video of “Anti-lock Braking System Operation” on https://www.youtube.com/watch?v=ZA7IJRJbOEg

After watching the video, the teacher gives them the handout below.

</td>
</tr>
</table>



A. Listen to the recording of ABS once again. Look at the diagram above and complete the missing components of ABS with the ones in the box.

wheel sensors	brake disc	master cylinder	ECU	modular unit

B. Read the following steps of Anti-lock Braking System (ABS) and put these steps into the correct order.

*__1__*__The controller (ECU-Electronic Control Unit) reads the signal from each of the speed sensors of the wheel.

_____ As the ECU reads the signal which indicates the rapid decrease in the speed of the wheel, it sends signal to the valve which makes the valve close and the pressure to the brake pad reduces and prevents the wheel from locking.

_____ During braking with ABS system, the driver can steer the vehicle and reduces the risk of vehicle collision.

_____ This process of applying brakes and releasing it happens 15 times in a second when a driver suddenly applies the brake harder. Due to this, the locking of the wheel is prevented and the skidding of the vehicle eliminated.

_____ The wheel again starts to accelerate, again the signal sends to the controller, this time it opens the valve, increasing the pressure to the brake pad and brakes are applied, this again reduces the speed of the wheel and tries to make it stop.

_____ As the brakes are suddenly applied by the driver, this makes the wheel to decelerate at faster rate and may cause the wheel to lock.

C. Find the words in B that have the same meaning with the ones below.

1. to increase the speed of a vehicle : _____
2. an accident that happens when two vehicles hit each other : _____
3. sliding along a surface : _____
4. a controlling device for the flow of liquids or gases : _____

D. Match the two halves of the expressions to make them collocations.

1.	brake	a.	sensors
2.	modular	b.	booster
3.	master	c.	unit
4.	wheel	d.	cylinder

PRODUCTION
11:30-12:00

OUTPUT

Task: Role-Play

Estimated time: 30'

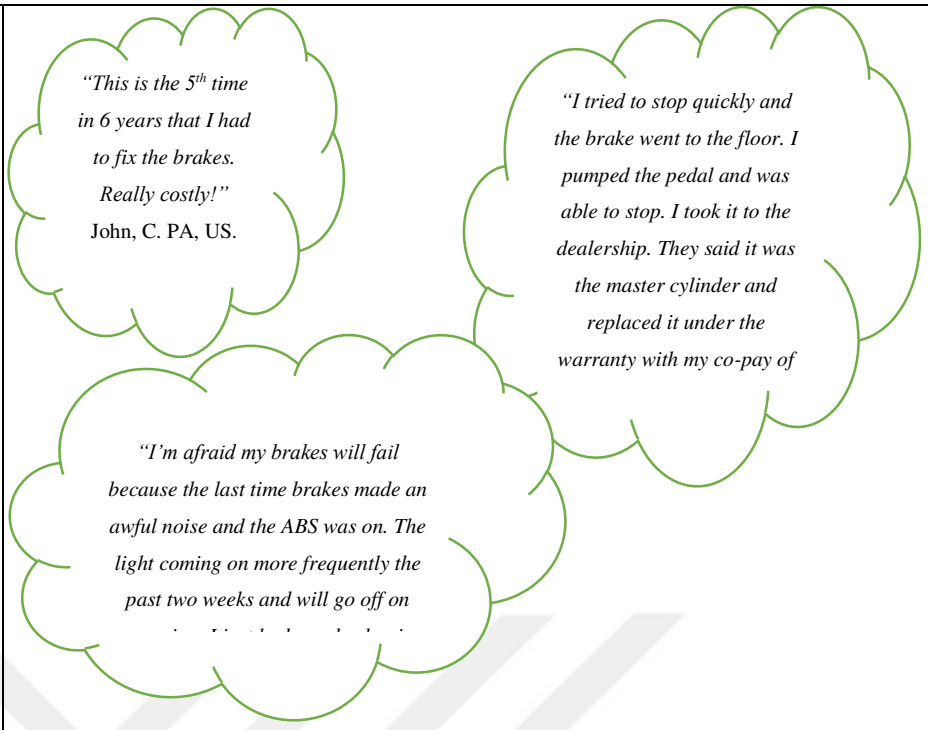
- The teacher divides the students into pairs and assigns the role of a *Visitor* to one member of each pair and of a *Sales Representative* to the other at a trade fair.

Student A	Student B
You are at a trade fair in the US. You're interested in a major car company's new 8o8 model but you have some doubts about the safety features. Ask questions about:	You work in the sales department of a major car company. You are now responsible for answering visitors' questions at a trade fair Stand. Here is the information about the new 8o8 model.
airbags	- no of airbags: 6
ABS	- ABS √
Seat belts	- front & rear seatbelts √
Xenon headlights	- alert systems √
Anti-theft alarm	- anti-theft alarm X
Automatic emergency braking	- Xenon headlights √

- The teacher says:
  "Now, by using the prompts in the box, please organize a dialogue with your friend."

Useful Language

Visitor	Sales Rep.
I'd like more info. about ….	How can I help you?
I'm interested in …..	Would you like me to ..?
How many …… does this car….?	Here is the list/brochure ..
Could you tell me how…….?	Let me give you my card.
What about….?	Let me explain …..

WRITING ASSIGNMENT **Task: Writing a reply to customers' complaint e-mails.**	 • The teacher assigns students a homework. • She asks them to look at the customer complaints in the bubbles and write an e-mail to handle with the problem. "OK, think that you are the chief technical officer at a car company. Recently, you've been receiving a lot of complaints about the braking systems. Choose one of the complaints in the bubbles and write an e-mail by using the template below to solve the problem on behalf of your company." Dear Mr./Ms……, Thank you for letting us know your problem with _____. We understand that your car _____ _____In order to assist you better, could you please specify _____? Could you please give the details of _____ We would like to say sorry for the inconvenience. We will get back to you soon. Best Regards.
CLOSURE **Estimated time: 2'**	• The teacher sums up the subject and stresses the important points they have learnt today. • She reminds the students to upload their assignments on *Edmodo* in three days. • She ends the lesson with good wishes for the rest of the week.

CURRICULUM VITAE

A. PERSONAL INFORMATION

Seda BANLI

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B. EDUCATIONAL BACKGROUND

Date	Degree	Institution
2014-2020	Doctor of Philosophy	Çukurova University Institute of Social Sciences
2012-2014	Master of Arts	Çağ University Institute of Social Sciences
2000-2005	Bachelors of Arts	Mersin University English Language Teaching

C. PROFESSIONAL BACKGROUND

Date	Title	Institution
2018-	EFL Instructor	Tarsus University Tarsus Technology Faculty
2009-2018	EFL Instructor	Mersin University Tarsus Technology Faculty
2006-2009	EFL Instructor	Gaziantep University School of Foreign Languages
2005-2006	English Language Teacher	Ministry of National Education Mardin, Turkey

D. ACADEMIC BACKGROUND

PAPERS PRESENTED

1. Banlı, S. (2017). Overextension of Early Words in Comprehension and Production. LIF2017-Language in Focus, 2017-03-02, 2017-03-04, Magosa, KKTC.
2. Rathert, S.; Altınsoy, E.; Banlı, S.; Kırkgöz, Y. (2015). Çukurova Uluslararası İngiliz Dili Eğitimi Öğretmenleri Konferansı. Üç Liderin Liderlik Algıları- İngiliz Dili

Eğiminde Liderlik ve Yönetim açısından Çıkarımlar, 2015-05-21, 2015-05-22, Adana, Türkiye.

ARTICLES IN JOURNALS

1. Banlı, S. (2016). Öğrencilerin Etkili bir İngilizce Öğretmeni Algılarının Yapılandırmacı Yaklaşım Yoluyla İncelenmesi. *International Journal of Language Academy*, *4/1 Spring*, 45-58.
2. Banlı, S.; Kaya, F.; Güleryüz Adamhasan, B. (2015). Yapmak ya da yapmamak? Öğretim elemanlarının ahlaki ikilemlerinin Yaşadıkları Kritik Olayların Üzerinden Araştırılması. *Uluslararası Sosyal Araştırmalar Dergisi*, *8*, 583-594.

WORKSHOP ATTENDED

1. EALTA Summer School 2014, Language Testing and Assessment, Università per Stranieri di Siena, Workshop, Siena, Italy. 28.07.2014 -01.08.2014 (International).

CONFERENCES & SEMINARS ATTENDED

1. EALTA Assessment for Academic Purposes SIG Conference Çağ University, Mersin, Turkey, March 1, 2014.
2. 4 th International ELT Student Conference Çukurova University, Adana, Turkey, May 9, 2013.
3. 6 th International ELT Conference on "The Use of Technology in Student Centered Learning". Beykent University, İstanbul, Turkey, March 31, 2012
4. NLP, Groupwork, Body-language and Motivation Seminar by Rheiland Privatschule M.V.L.V. Coaching Academy, Tarsus Technical Education Faculty, Mersin, Turkey, April 27, 2011.
5. 2 nd International ELT Conference entitled "Golden Implementations to Enable Students' Productive Skills to Flourish". Atılım University, Ankara, Turkey. April 19, 2008.
6. 2 nd GKV ELT Conference "Adding Variety to ELT" Gaziantep College Foundation Private Schools, Gaziantep, Turkey, April 7, 2007.

PROJECTS

1. Erasmus+ KA2 Strategic Partnership Project for school education "Together; stronger, happier". Kavala, Greece. November 11-15, 2019.