

# Role of Functional Academic Literacy in ESP Teaching: ESP Teacher Training in Turkey for Sustainable Development

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## Abstract

Over the past 30 years, English for specific purposes (ESP) has established itself as a viable and vigorous movement within the field of TEFL, parallel to developments in science, technology, and business world has. Therefore, there has been a great deal of improvement in curriculum development in this field and the application of findings of ESP researchers continues to increase and expand throughout the world. However, in Turkey, this is not the case in the training of ELT teachers, who are expected to put these new methods and techniques into practice. In this study, we therefore analyzed this issue in terms of Functional Academic Literacy (FAL) ESP teachers are expected to have so as to perform well in ESP classes. The challenges ESP teachers have to overcome were displayed, comparing them with their students' needs which they have to meet and with the qualities which facilitate their burden within the framework of Cummins' Bilingual Proficiency Theory, Bruner's Constructivist Learning Theory and Anderson's Schema Theory.

**Key Words:** ESP teaching, functional academic literacy (FAL), language teacher training,

## 1. Introduction

Given the role English plays around the world, it is not surprising that a substantial and growing number of schools choose English-medium instruction at the secondary and tertiary level. Moreover, the increased number of immigrants in English-speaking countries and the demand for MBA courses in all parts of the world have increased the demand for professional and business English, vocational English, and English in the workplace programs. Similarly, following the Bologna Declaration, which provides a framework for higher education across Europe, many universities in the non-English speaking countries in Europe started offering English-medium programs to remove language obstacles and increase student and staff mobility (Radu, 2006) because now students seek a full foreign degree, among other reasons, to enhance their employability and increase their opportunities for professional mobility (Marginson & McBurnie, 2004).

In likewise manner, Gueye (1990) argues that in developing countries all over the world, ESP teaching through English for development purposes should encourage students to understand their roles in the educational and social development of their nations, so the need for a more specialized foreign language teaching has expanded. In this study, therefore, we tried to display what is made or not made to meet the needs of Turkish university students for ESP teaching. We first analyzed language teacher training programs in faculties of education in term of their role in meeting domestic and/or global needs for ESP teaching. Secondly, we evaluated their possible influence on the success rates of the post-graduate students depending on the results of national exams they sit. We concluded that present programs and ELT teachers appointed as ESP teachers do not make enough contribution to the cognitive academic language proficiency (CALP) (Cummins, 1981) development of undergraduates even if they attend preparatory school for a year before they have technical English (EAP) classes during their undergraduate study. For example, the UDS, a language test held by Institute of Higher Education bi-annually for those planning to study for an MA or PhD degree, has been posing a great challenge for the candidates, though it is much easier than even the TOEFL-PBT test. Results of the one held in March 2008 show that prospective scientists of Turkey cannot understand half of what they read in a foreign language. (see Appendix I). Similarly, the number of companies in Turkey looking for employees with a good command of English is increasing day by day as they cannot find such qualified graduates (See Appendix II).

What is hypothesized in this paper is that the amount of contribution Turkish university graduates may make to local and global educational, social and economic development through their scientific knowledge and academic development will be limited unless radical changes are made in

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foreign language teacher training programs to help prospective ESP teachers acquire FAL and ESP teaching methodology. We asked the following research questions;

- 1- Can ELT teachers teach ESP without FAL?
- 2- Can they teach ESP without getting a special training?

## **2. Review of literature**

### **2.1. A Brief History of ESP and Its Nature**

The field of English for Specific/Academic Purposes has developed rapidly over the past 40 years and become a major force in English language teaching and research. The idea of including content of a subject under study into a language classroom was first introduced in the 1970s by Hutchinson and Waters. They stated that the content of a subject, for example economics or management, should be used for teaching a foreign language. The emphasis of ELT has always been on practical outcomes on the language. It has always focused on the needs of learners and it has been preparing them to communicate effectively in the tasks required by their field of study or profession (Bojović 2006). The idea of “natural” language acquisition promoted by Krashen (1981) supported this approach as both claim that the best way to learn a language is to use it for “meaningful” purposes. These meaningful purposes change greatly so various applications of ESP have arisen in terms of the field or the approach of teaching specific English; i.e EAP (English for Academic Purposes), CLIL (Content and Language Integrated Learning), CBI (Content-based Instruction) and TBL (Task-based Learning).

CLIL, for instance refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language in which this content is encoded (Marsh, et al 2001). It is widely seen as an excellent means of learning a language, and of introducing international aspects into the teaching of content subjects. Advocators of CLIL claim that it is a very effective way of learning a language as it provides the learners with meaningful input and authentic situations as suggested by Comprehensible Input Theory of Krashen. According to Krashen (1981), the mistake of language teaching is that we first teach the skills and only later use them, while the most effective way should be learning something and using it at the same time.

Another application of ESP is the Content-Based Instruction (CBI), which focuses on the teaching of academic English through content knowledge. Language learning and content of subject matter could be brought together because a foreign language is most successfully acquired when learners are engaged in its meaningful and purposeful use. The integration of language and content involves the incorporation of content material into language classes. Content can provide a motivational and cognitive basis for language learning since it is interesting and of some value to the learner (Brewster, 1999).

Kasper (1997) has greatly strengthened the evidence for the effectiveness of content-based courses. She has reported both improved language and content performance among students exposed to content-based English for Academic Purposes (EAP) programs and they have higher scores in reading proficiency and higher pass rates on ESL (English as a Second Language) courses. She has also supplied quantitative evidence that such students gain a performance advantage over students who are exposed to non-content based ESP training and that they maintain it in the following years.

### **2.2. Theories behind the Acquisition of FAL**

ESP programs are content-based, task-based, interactive programs which provide cooperative learning. Small groups of students work together to accomplish meaningful tasks in this approach to L2 learning so both cognitive and socio-cultural processes are at work together (Mitchell & Myles, 2004). Therefore, there are several theories of learning in general, learning L1 and L2, which all together account for the reason why prospective ESP teachers should have training different from that of general English teachers. For example, Vygotsky’s Social Development Theory, Bruner’s Constructivist Learning Theory and Anderson’s Schema Theory account for processes at work during learning in general and L1 learning while Krashen’s Comprehensible Input Hypothesis (CIH) (1981), Long’s Interaction Hypothesis (1983), and Swain’s Output Hypothesis (1985), are the most well known theories of L2 learning.

As one of the socio-cultural approaches to second language acquisition (SLA), Vygotsky’s Social Development theory says that children learn language first to meet their social needs but then they

internalize it, which leads to the development of higher-order thinking and cognitive skills. This phenomenon is called the Zone of Proximal Development. Vygotsky describes it as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978 cited in Cawford, 1996).

Constructivist Learning Theory of Bruner (1983:60) is also compatible with proximal learning. He says language and content-area learners construct their own knowledge on the basis of interaction with their environment. Effective teaching/learning enables learners to be in dialogue, to collaborate in the composition of knowledge and to share results of their inquiry. It is impossible for a human being to perceive reality in any objective manner; we rather “construct” reality while learning something new by means of using mental strategies on the basis of our previous experiences, our prior knowledge and our social interaction with the other learners and the teacher. Academic language development in a student therefore comes to the fore slowly in time.

Schema Theory of Anderson (Anderson&Pearson,1984) accounts for the mutual scaffolding process taking place during interaction. According to it, prior knowledge is essential for the comprehension of new information within a given text or context. Readers’ mental stores are divided into two main types: “content schema” (reader’s background knowledge of the world) and “formal schema” (readers’ background knowledge of textual structure). Readers develop a coherent interpretation of text joining these two types of knowledge during reading. In academic settings, with the help of ESP instructor, cooperative or collaborative ESP teaching provides the learners with formal schemas of academic language through academic content they are already familiar with through their present and previous academic studies they have made provided that the instructor has FAL.

According to Krashen’s CIH, language learning will happen automatically when input is just a little higher than the learner’s current language proficiency level and is available in a sufficient amount. Interaction Hypothesis of Long (1983) serves as yet another theory in language acquisition. It states that language learners need to be active learners and participants when receiving language input. Only listening to new language structures will not lead to successful language learning. The learner has to become an active participant in the target language by using received input in immediate interaction and communicative patterns with other learners. Swain also disagreed with Krashen putting forward his Output Hypothesis (1985). He maintains that comprehensible input is not enough; it is output that pushes learners into using language that will force them to recognize certain limitations in their language and rectify their faults while producing certain forms which, consequently, lead to their acquisition.

These theories account for the processes through which students accumulate scientific knowledge and competence in their L1 and then in L2 and the reason why Cooperative Learning (CL) is the most widely used approach to ESP teaching is that it is potentially beneficial for second language learners in a number of ways especially when performed through content. First of all, CL can provide more opportunities for L2 interaction and improve L2 proficiency (Swain, 2001). It can also help students draw on their first language (L1) while developing L2 skills (Cohen, 1986). It can also include opportunities for the integration of language and content learning. Content-based, collaborative and interactive ESP teaching, therefore, helps both the teacher and students scaffold each other as the students have stronger content schemas about a given text depending on their previous science training in their L1 provided that he/she has got training special to ESP teaching. Otherwise, lack of such training prevents ELT teachers from functioning well when they are appointed as ESP teachers, since students have stronger content schemas about a given text based on the previous science training they had in their L1. When the ELT/ESP teacher has FAL and a fair amount of content knowledge he/she can scaffold the learners with formal schemas of the text because students can make use of knowledge of content schemas to make sense of these structures easily.

### **2.3. Expectations from ESP teachers**

Generally speaking, a thoughtful and intelligent way of looking at the world, a willingness and ability to learn, having some knowledge of the academic world, the ability to work well in a team, the ability to listen to and motivate his/her students, highly developed critical thinking and the ability to convey this to his/her students are all important characteristics of a successful ESP teacher. In addition, language teachers have such responsibility as to keep context and comprehensibility foremost in their instruction to select and adapt authentic materials for use in class, to provide scaffolding for students’ linguistic content learning, and to create learner-centred classrooms (Stryker & Leaver, 1993). For these

reasons, teaching academic English through CBI and CLIL require additional skills when compared with general English teaching.

First of all, besides having FAL, ESP teachers are supposed to be knowledgeable in content areas as well and be able to elicit knowledge from students. However, language teachers are trained to teach linguistic knowledge rather than a content subject. Hence, they may be insufficiently grounded to teach subject matters (Richards & Rodgers, 2001). Teachers of ESP are therefore the least lucky ones of this profession; they are generally much less informed about the content of what they are expected to teach than even their students, who have been studying their subjects all through their school years. It seems as if they are forced to teach what they are unfamiliar with. As they do not know the content knowledge of the field their students are studying they are not competent in the language in which this content has been encoded, either. In short, they are also novice learners of academic English.

Regardless of the approach or aim, ESP teaching presents a clear challenge to ESP instructors as they lack specific background knowledge of their learners' specialist academic disciplines. This situation stems from the traditional emphasis on the training of prospective EFL teachers which focuses on language and study skills but this cannot be regarded as adequate (Bell, 1996). It seems therefore necessary for EAP practitioners to possess a certain level of background knowledge in their students' academic subjects of ESP teaching in order to meet this challenge.

ESP practitioner should have several roles which require both content and formal schema knowledge in a particular field of science because a language teaching program, according to Bell (1981), consists of three stages; input, process and output. The first stage includes determination of student needs, material preparation and designing of syllabus. The second stage is the implementation of the program and last stage is the assessment of the students' performance and reorganizing the program for the following year. For this reason, the ESP teacher needs to be a course designer and material provider for the first stage. Due to the variation and continuous changes in scientific world it is rarely possible to use a particular textbook without the need for supplementary material and sometimes no really suitable published material exist to meet student needs. Therefore, ESP practitioners often have to provide the material for the course. Secondly, the ESP teacher should be a facilitator to function well in the process stage; in learner-centred, task-based, interactive learning contexts, language learning becomes a collaborative effort where the teacher's role is that of an advisor and facilitator of student's communicative attempts (Dudley-Evans & Jo St John, 1998). Lastly, the ESP teacher is expected to be an evaluator in the output stage of the program because the ESP practitioner is often involved in various types of evaluation, testing of students, evaluation of courses and teaching materials to assess whether the learners have been able to make use of what they learned and to find out what they need to be taught. Evaluation through discussion and on-going needs analysis can be used to adapt the syllabus. (Bojovic, 2006)

Naves (2002) summarizes successful CLIL programme teaching strategies; Teachers exhibit active teaching behaviours such as clearly giving instructions, accurately describing tasks, maintaining learners' engagement in instructional tasks by maintaining task focus, pacing instruction appropriately, and communicating their expectations for students' success. In presenting new information, they use appropriate strategies such as demonstrating, outlining, using visuals, building redundancy, rephrasing, scaffolding, linking new information to learners' previous knowledge, etc. to make input comprehensible and context-embedded. All these and above mentioned roles entail a good command of academic English and field-specific knowledge.

To identify the competencies the teachers of English in Engineering Faculties need, a faculty questionnaire in Sastra University, Tamil-Nadu, India was administrated by Venkatraman. The students' responses to this tool not only revealed their English language needs but also confirmed that ESP teachers require a 'special set' of competencies. 73 competencies had been given in the Faculty Questionnaire for validation, 65 of them (89%) were identified by the respondents as 'Necessary' with a more than 80% response. The remaining 8 competencies, which received response less than 80%, were omitted. (Venkatraman & Prema, 2006) (See Appendix I for detailed table.)

**Table 1: Qualifications expected from ESP teachers.**

Competence Types		Number of competencies	Competencies related to FAL
I- General competencies		17	8
II-Subject-specific competence	a) Listening skills	8	4
	b) Speaking skills	7	5
	c) Reading skills	11	10
	d) Writing skills	5	5
	e) Professional speaking skills	5	4
	f) Professional writing skills	7	5
	g) Special grammar items used especially in scientific and technical communication	5	4
		Total 65	Total 45

As seen in Table I, most of these qualifications require FAL or field-specific language skills. However, linguistic knowledge alone is not sufficient; ESP teachers are supposed to have a thorough knowledge of the content area they are teaching. Unless they put into practice team teaching, in which two teachers, one of whom is capable of teaching language forms while the other has a detailed knowledge of the discipline, work together. Since meaning and form namely content and formal schemas, are not separable, prospective ESP teachers should have training in science as well.

### 3. The Study

#### 3.1. Participants and Scope

The research was carried out in Faculty of Education in Kocaeli University, Turkey. 60 4<sup>th</sup> grade students and 40 teachers in the Department of Foreign Languages participated in the research.

#### 3.2. Experiment (Questionnaire)

We designed a Student/Faculty Questionnaire to explore student and faculty experiences and expectations regarding ESP teaching and learning. Specifically, the questionnaire examined student and faculty familiarity with the problems of ESP teaching and their views on possible solutions and benefits (see Appendix IV for the statements of the questionnaire).

#### 3.3. Evaluation of the Results of the Questionnaire

Figures in Table II validate our hypothesis and research questions about the source of the problem because both prospective EFL/ESP teachers and faculty staff (their teachers) agree that an ESP teacher needs to have a prior content knowledge, FAL in content-specific language and knowledge of methodologies suitable to ESP teaching. (see Table 2 below)

**Table 2: Statements about the source of the problem**

Statements	Mean		Std.deviation	
	Student	Teacher	Student	Teacher
S5 ESP teacher's knowledge of content	4.48	4.47	,70	,50
S9 ESP teacher FAL	4.65	4.47	,70	,50
S2 ESP teacher training	4.60	4.60	,64	,63

Results obtained through questionnaire statements about solution of the current problem also confirm the author's ideas or suggestions (see Table 3 below). For instance, we suggest that in the short and long run, ESP teaching should be carried on by the collaboration of an EFL teacher with a content teacher. They can carry out ESP teaching scaffolding each other; the former provides the latter with methodology of language teaching while the latter makes the content meaningful, helping the EFL teacher learn content knowledge. In this matter, participants agreed with us with the answers they gave to statement 12. They also agree that language teacher training curriculum should include ESP methodology as well (statement 14). However, upon this result we analysed EFL programs in the biggest 20 universities in Turkey and we found out that only one of them (Anadolu University in Eskişehir), has aimed to teach ESP methodology.

In terms of the process of ESP teaching, participants agreed with that ESP teaching requires special materials and way of teaching (statement 3) and that four language skills of the students should be improved integrated (statement 4), and lastly that ESP classes should be interactive and task-based, and they should have collaborative teaching settings (statement 8). (see Table 3 below)

**Table 3: Statements about the solution of the problem**

Statements		Mean		Std. Deviation	
		Student	Teacher	Student	Teacher
Teacher training	S 12	4.45	4.55	,69	,55
EFL Student training	S 14	4.03	4.07	1.11	,99
ESP teaching process(S3, S4, S8)	S 3	4.66	4.60	,57	,40
	S 4	4.55	4.50	,64	,81
	S 8	4.08	3.75	1.04	,89

It is not surprising, however, that both language and content area teachers may be frightened at the prospect of integrating language and content instruction, since there is limited attention to language needs in the preparation of content teachers, and limited attention to either the specific discourse of academic disciplines or to the practical concerns of needs analysis, text adaptation, curriculum development, or collaborative teaching in most language teacher education programs (Crandall, 1998). The best example of this fact is the TOEFL exam, which has become one of the most popular high-stakes tests, affecting not only what and how English language teachers teach but also what and how students learn in recent years. In this matter Zareva (2005) said “ the latest computer-based TOEFL was introduced fairly recently worldwide but The new 2006 TOEFL–IBT exam is on its way as the previous format did not meet the needs of students and the departments they are planning to study in”. The new test may also fail unless both TOEFL courses and ESP teacher training courses pay attention to special needs of ESP students and their future teachers.

#### **4. Discussion**

##### **4.1. Deficiencies of ESP Teachers**

##### **4.1.1. Lack of FAL and Field Knowledge**

Fluency in academic English is an inevitable skill for an ESP teacher to be successful, because ESP teaching requires particular and sometimes special skills, such as dealing with language input, handling skills work, answering questions on terminology, and listening to lectures and research presentations and seminar skills training. Therefore, the main barrier to student and teacher in comprehension of texts or in a collaborative teaching in ESP settings in general is the lack of FAL. Language content and subject content of a given text, namely its surface structure and deep structure of it in Chomsky’s (1965) terms, and content and formal schemas in terms of Anderson’s Schema Theory are inseparable. For this reason the ESP teacher is supposed to have not only FAL but also content knowledge of the field.

FAL entails mastering the cognitively complex, relatively unimpeded or context-reduced language of the academic classroom (Collier, 1992). This is especially difficult to do in a foreign language. For instance Spanish-speaking immigrant children in the USA acquire academic English in school settings in 5-7 years (Cummins, 1980) because the language of lectures and textbooks is radically different from the one spoken during daily conversations by most of the students and their families. Acquisition of academic English takes a long time because it involves acquiring the discourse of science: thinking, talking, reading, writing and behaving like a scientist (Gee, 1996). Academic literacy is thus ideological and includes issues of identity, not merely writing techniques and grammar skills (Street 1996, cited in Parkinson, et al, 2007) as in general English courses.

What is meant by “issues of identity” is the particular field chosen for a future study. In Turkey, for example, students choose their future fields of study of profession during their secondary education. This can be either a physical, social or foreign language study. They then have to make choices in accordance with this when they apply for the university entrance examination. As every field of science has its own terminology and requires cognitive skills peculiar to it, every group of students develop

different CALP in their L1. And this proficiency helps them acquire CALP in a foreign language as well during tertiary education as it is also based on the same cognitive skills.

In physical sciences, Turkish students have another advantage because their academic L1 includes a great deal of loan vocabulary, which facilitates mastering academic terminology in English during ESP classes (see Appendix III). However, those who choose ELT as a field of study are deprived of such vocabulary and previous knowledge of physical and social sciences. Their only advantage is the communicative skills in general English. This advantage is maintained when they become ELT professionals as well provided that they are not obliged to teach ESP. In short, prospective ELT teachers lack academic literacy and content knowledge in both social and physical sciences both in their L1 and L2. Therefore, general English teachers who are obliged to teach ESP due to lack of qualified ESP teachers, get into trouble. In this case, they either try to teach academic English through direct translation activities in the classroom or choose academic texts which are very simple both in language and content.

#### **4.1.2. Lack of a Suitable Training**

ESP and EFL differ from each other in terms of purpose of learning a foreign language. ESP concentrates more on language in context, than on teaching the grammar and language structures required for fluency in daily conversations in informal settings as EFL does. Therefore, this determines the way language is practiced in the classroom and the way their teachers are trained. They require similar pedagogic skills but different linguistic competencies and content knowledge. While the former entails FAL and field-specific content knowledge to be able to make special material preparation and design a field-specific syllabus, the latter needs only functional literacy/communicative competence in social settings and putting into use ready-made syllabus or text books. This difference should be reflected to teacher training. However, as in many other non-English speaking developing countries, in Turkey prospective language teachers are not taught how to teach academic English or helped to acquire FAL. Their training is determined according to social language needs of students though the most important difference between ESP and EFL teaching lies in the learners and their purposes for learning English. For instance, ESP students are usually adults who already have some acquaintance with English and content knowledge in L1, and learn the foreign language in order to perform their professional skills and a set of particular job-related functions (Far, 2008), while learners of general English are much younger ones and may still be within "critical age" to learn a foreign language for everyday use.

Language teachers lacking FAL and content knowledge to teach academic English feel unprepared to integrate authentic texts, tasks, or tests from content areas in their English classes. In this case, the task of teaching ESP is shouldered by content teachers who have got a degree in a university with English-medium instruction. However, these content teachers without training, skills and strategies for language teaching perceive themselves as unable to help ESP learners to understand academic concepts, facts and knowledge encoded in academic texts through the language that they are still learning. Consequently, not only EFL teachers who have to teach ESP but content teachers who have to teach academic English due to the same reason should get special training to perform well to meet the needs of tertiary level students.

#### **4.1.3. What Happens as a Result of These Deficiencies?**

As for the case in Turkey, both general English and content teachers teaching ESP try to join language and content doing their teaching through direct translation activities and intensive reading. The former does so as he/she does not have prior content knowledge or proficiency in academic language while the latter prefers focusing on content while teaching translation from English into mother tongue as he/she can do it easily but cannot make clarifications about particular formal points in academic texts when necessary. This type of ESP teaching provides the learners only with a tool to comprehend what they read in their content books. This may improve their passive knowledge of the form of academic foreign language and content knowledge they have in their field (Savaş, 2009). Undergraduates need to have productive linguistic skills as well so as to make more use of ESP training.

Both ELT and content teachers trying to teach field-specific English by means of direct translation cannot make reverse translations (from mother tongue into English), which learners, in fact need to learn to acquire the desired language skills. In an attempt to make a reverse translation, ELT teacher cannot make sense of the content encoded in the text even if it is in his/her L1 and the content teacher cannot write in English correctly and appropriately even if he/she understands the content of the text due to lack of a suitable training. According to Swain's Output Theory, teaching ESP requires

productive activities because learning a language requires interaction so that learners can notice whether the sentences they make up are correct or not. Both teachers' approach to ESP teaching in Turkey provides students with neither enough content knowledge, nor enough exposure to academic L2, nor enough opportunity to practice it so that they can improve their academic proficiency and FAL.

## **4.2. Suggestions for ESP Teacher Training**

### **4.2.1. Ways of Training EFL Teachers for ESP Teaching**

As mentioned before, ESP teaching requires a special approach to the training of the teachers who are supposed to teach English through content. First of all, EFL teachers should be provided with the necessary knowledge and tools to deal with students' special field of study, because they are not specialists in the field, but in teaching English, their subject is English for the profession but not the profession in English. They are expected to help students, who know their subject better than them, develop the essential skills in understanding, using, and/or presenting authentic information in their profession (Bojojic, 2006). This is a quite challenging task to perform with any knowledge of content through which they will teach English as it facilitates learners' acquisition of formal schema of academic texts. Both prospective ESP teachers and those who are already in profession can be equipped with necessary tools in a couple of ways;

*1-Pre-service/In-service training;* Current language teaching programs may not consist of ESP methodology teaching or curriculum may not allow establishing separate departments for ESP teacher training as in Turkey. In this case, pre-service training after undergraduate study can be a solution. Similarly, for currently working EFL teachers, in-service training programs can be helpful. Language teachers and prospective language teachers can attend professional development workshops to let themselves acquire a second field of expertise, such as medicine, engineering or law. In these settings entailing continuous participation in situational decision making and professional involvement in the disciplinary culture in which the learners in question communicate, a prospective ESP practitioner can conceptualize appropriate notions for teaching approaches (Chen 2000).

*2- Collaborative work (Team teaching);* Chen (2000) holds that the language teacher should not be expected to possess sophisticated content knowledge, but basic concepts are needed to design an ESP syllabus that backs up the content course. Indeed, language teachers have not been trained to teach content subjects but they could definitely be a competent ESP teacher if they participate in content teaching classes and thus develop the flexibility to undergo disciplinary acculturation. In this regard, the content teacher shares the responsibility not only of providing opportunities for the language teacher to overcome the fear of a lack of content knowledge but also of introducing him/her to the modes of disciplinary thought and values. Therefore, language teachers can ask for assistance from content teachers. When this is the case, it is possible, through collaboration and cooperation, for both language and content teachers to develop the confidence and the competence to effectively integrate language and content instruction in ESP teaching, which entails 1) analysis of texts, materials, and curriculum; 2) classroom observation, reflection, and feedback; 3) collaborative action research and reflection; 4) development of integrated or complementary lessons, materials, or curricula; 5) collaborative or team teaching (Crandall, 1998).

A survey for the purpose of identifying English Language Needs for Technical Education was conducted in 1990 by the Language Studies Unit of the Curriculum Development Cell, IIT, in Tamil-Kanpur, India. The third research question of this survey was "*Whose job is it to teach you the language of Science and Technology? English teachers / Subject teachers (Teachers of Civil, Mechanical, and Electrical Engineering etc)/ Both English teachers and subject teachers.*" 15.6% of the students said that it is the duty of their English teachers, 10.2% are of the view that it is the duty of Subject teachers and 74.2% of the respondents said that it is the duty of both English teachers and subject teachers (Venkatraman & Prema, 2006). The students who did the questionnaire are of the opinion that teaching academic English cannot be left simply either to the language teacher or the content teacher alone because both have particular deficiencies in this matter.

#### **4.2.2. A New Model Suggestion Especially for the case in Turkey; Acculturation during Undergraduate Study.**

There are two basic results of failure of ESP teaching in Turkey due to lack of qualified ESP teacher training. First of all, the results the post-graduate students get from the UDS prove that they need a qualified ESP teaching during their undergraduate study. Results of the UDS held in March 2008 show that prospective scientists of Turkey cannot understand half of what they read in a foreign language (See, Appendix I). Secondly, in [www.kariyer.net](http://www.kariyer.net), a web site for job advertisements, the number of vacancies which requires the command of field-specific English is continuously getting bigger and bigger while unemployment rates are the highest for the university graduates (See Appendix II). This dilemma may also have originated partly from lack of ESP teacher training programs in Turkish universities.

There are both short and long term solutions of the problem brought about by lack of qualified ESP teachers. To decrease the severity of the problem currently, ELT teachers could get professional help from prospective content teachers. In Turkey, post-graduate students can teach in content classes of their departments without any obligation of having a course in teacher training. Those who are making an MA or PhD study could acquire these teaching qualifications if they worked with EFL teachers together in ESP classes. These students could therefore learn academic language in L2, which would, in turn, facilitate their academic studies and teaching skills that they need while teaching department classes on one hand while on the other hand, they could scaffold ELT teachers trying to teach ESP with content knowledge. This could be a kind of in-service-training for prospective content teacher and for ELT teacher together.

In the long term, an acculturation or specialization can be a permanent solution of the problem. Both results of the faculty survey and theories of language learning in general and of foreign language learning in particular confirm that the best way of teaching ESP and training the future ESP teachers is to perform classroom activities collaboratively. Those who are eager to be ESP teacher after graduating from ELT teacher training programs can be given opportunity to choose the field in which they would like to teach ESP. They can have particular introductory classes in engineering, medicine, biology, physics, or whatever field they like during their undergraduate study. These classes may even be in their L1 too, which will provide them at least with content knowledge of that field. Students from physical sciences can also attend ELT teacher training programs, both to learn English and teaching methodology if they are planning to study for an MA or PhD degree in their field during which they are expected to teach content classes. In order to ensure that the two curricula are interlocking, modifications to both courses may be required. The rationale behind this model is that the linked courses will assist students in developing academic coping strategies and cognitive skills that will transfer from one discipline to another. This model integrates the language curriculum with the academic language demands placed on students in their other university courses and future professional life, which is something ELT teacher training program cannot realize on its own due to vast range of scientific fields.

## **5. Conclusion**

Industrialization and technological innovation are major aspects of national prosperity in many developing countries all over the world so educators are expected to cope with the changing needs of industry and society. Therefore, according to Crandall (1998), in many countries students are increasingly expected to participate in English-medium classrooms for at least some of their academic or professional careers. At a minimum, students may need to read some academic texts in English, though they may discuss or write about them in their primary language. This situation entails both the planning of new courses and the preparation of materials. And most importantly, as our research findings have shown, this situation requires language teacher training specifically designed to meet the new language requirements of those who will be engaged in science, technology and industry.

Our research findings have shown that this is not the case in Turkey because there is almost no special training for ELT teachers so that they can teach ESP in Turkish universities. Therefore, authorities try to overcome this issue through employing either ELT teachers or content teachers who have had an MA or PhD study in an English-medium program. However, both groups of teachers are incapable of teaching ESP owing to the differences in terms of the knowledge studied and the language variety used in their undergraduate studies. It is obvious that different disciplines have different ways of viewing the world. Therefore, ELT teachers and content-area teachers teaching academic English have their own way

of teaching but unfortunately neither can be helpful. Hyland holds that there is a distance between their targets; the former naturally and compulsorily focuses on language teaching, while the latter dwells on the content. In fact these two targets should be joined through collaborative teaching (Hyland, 2002). They are like two sides of a coin in ESP teaching, and one cannot be favoured over the other. Teaching language structures is possible only when it is meaningful for the learners, and teaching content through L2 is useful only when learners can give feedback in L2, too.

## 6. Limitations of the research and recommendations for further studies

A model class in which collaborative or team teaching was applied could have been organized for a term, and the results could have been compared with those of the control group. Due to the strict rule, we were not allowed to do this but some other researchers can make it. As another further study, the new model we suggested can be put into practice and the results can be evaluated after a long term research.

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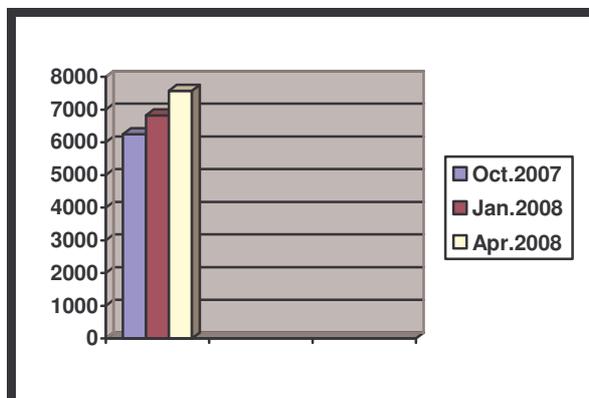
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**Appendix I: Success rates of UDS held in March, 2008 ([www.osym.gov.tr](http://www.osym.gov.tr))**

Academic fields in German, French and English	Mean	Participant number
Medicine	62.63	8051
Science	53.63	2449
Social science	49.68	20629

(Social sciences are so many in numbers, so participants from these fields cannot make use of loan words in their own field during the exam so much as the others. Especially participants in medicine have much more advantage than the other two groups due to abundance of Greco-Roman loan words in Turkish medical language)

**Appendix II: Number of Vacancies requiring command of professional English**



**Appendix III: The frequency of loan words in a given electrical engineering class**

(A definition of the content of ELK332 class in Engineering Faculty. 30 of 64 words are loan words)

<b>ELK332</b>	<b>Elektrik Makinaları II</b>	<i>Senkron makinaların</i> yapıları, uyarma alanları ve bunların <i>Fourier analizi</i> , çıkık kutuplu <i>makinalarda</i> iki eksen <i>teorisi</i> , <i>reaktanları</i> , <i>senkron generatör</i> ve <i>motorlarda endüvi reaksiyonu</i> , eşdeğer devreleri <i>fazör diyagramları</i> , boşa ve yükteki <i>karakteristikleri</i> , kısa devre oranı, kısa devre akımı, <i>senkronizasyon</i> , <i>senkron motorlara</i> yol verme, <i>aktif, reaktif</i> güç ayarı, döndürme <i>momenti</i> , <i>DC makinalarının</i> yapıları, eşdeğer devre, temel denklemler, uyarma şekilleri, moment ifadeleri, <i>endüvi reaksiyonu</i> , <i>komütasyon</i> , <i>generatör</i> , <i>motor karakteristikleri</i> , hız ayarı, yol verme.
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**Appendix IV: Statements of faculty/student survey**

(Opinions were asked with a five-point Likert scale)

- 1- A good command of Professional English has good impact on future Professional lives of graduates who have majored engineering, medicine, etc.
- 2- ESP teacher should have a special training in this field.
- 3- IN ESP classes materials and books prepared specially for that fields should be used
- 4- ESP classes should be held in order to improve students' four skills.
- 5- ESP teacher should also have field knowledge of the students he/she teaches.
- 6- In preparatory schools, there should be preparation for ESP classes in freshman, too.
- 7- During ESP classes, teacher-student interaction should be intensive.
- 8- ESP classes should include task-based collaborative teaching.
- 9- ESP teacher should have functional academic literacy.
- 10- Issue of ESP teacher training can be solved through in-service-training courses.
- 11- Issue of ESP teacher training can be solved through self-training of volunteer ELT teachers.
- 12- Issue of ESP teacher training can be solved in the short term through team teaching.
- 13- I am majoring ELT but this is not enough for me to teach ESP in the future.
- 14- There should be ESP teaching methodology classes in our department.