English for Specific Purposes: A Study of Science Major Students’ Needs at ENS-Rabat

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Abstract  
English in context is relatively new to Moroccan higher education in that a major swift from General English to English for Specific Purposes has been noticed in the last couple of years at Moroccan universities. This change of focus in English language teaching is accounted for by the fact that English is world-widely recognized as the language of academia and scientific research. The present paper seeks to identify the English language needs of science major graduates at ENS-Rabat and showcases a short-period trial in an attempt to include ESP classes together with General English in Chemistry and Physics graduate programs. The sample of 63 students who took part in the study allowed us to assess their linguistic level, determine their needs, and evaluate the syllabus designed for these experimental classes. Results showed the students’ needs do not fall within the scope of ESP but rather under that of GE. This issue portrays the actual situation of English language teaching in higher education institutions. It is frustrating for both the teachers and the students to cope with the deteriorated state of English language teaching and the lack of planning and orientation, let alone imposing ESP classes with no solid grounds.

Keywords: English for Specific Purposes, Needs Analysis, Higher Education, Science Majors
1. Background of the study

Mastering English has become an unquestionable necessity for science students as it has become the *de facto* language of science, technology and research. Hutchinson and Waters (1987) state that, with the increasing demand of English language learning, each English language learner requires knowledge in her/his field. As a response to this need-focused situation, teaching these students English has shifted from second/foreign language learning to the teaching of English for Specific Purposes (henceforth, ESP). This movement in English language teaching and learning came into being as early as the 1960s.

According to Brunton (2009), the term ESP, indeed, originated in the 1960s and became effective upon the awareness that general English was no longer meeting learners’ or employers’ needs. With the increasing demand in international trade and technical and economic activities in the post-World War II period, the development of an international language to facilitate the transfer of knowledge and international trade was eminent as it shifted the objectives of learning English from pleasure or prestige language to English for practical and professional use (Hutchinson & Waters, 1987: 6). Furthermore, they argue that the approach to the study of language has changed, which has in turn contributed to the development of ESP as linguists started reconsidering early approaches to the rules of English use and its grammar and focusing on how English is deployed in real life communication. The key aspects of this approach stress on the context in which language, be it written or spoken, varied. For example, English used in economics and medicine required a specific language terminology and content.

Initially, Carter (1983) established three branches of ESP: English as a Restricted Language (ERL)¹, English for Academic and Occupational Purposes (EAP & EOP) and English for Specific Topics (EST). To illustrate, Carter referred to ERL as the language solely used by air traffic controllers or waiters. EAP is English used for the study of a particular discipline and EOP is English used in the practice of a profession (Dudley-Evans and St John, 1998). For example, EAP is English taught to law students while EOP is English taught to law practitioners. EST, on the other hand, concerns the need for English language in postgraduate

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¹ English as Restricted Language (ERL) is attributed to Mackey and Mountford (1978).
ESP: A Study of Science Major Students’ needs at ENS-Rabat  
Biddou, Boukanouf and Al Ghadi

studies and conferences. Robinson (1980) viewed ESP as the teaching of English to learners who have specific goals and purposes that might be either professional, academic or scientific. Coffey (1985) claims that ESP is on an ongoing development as new approaches in the field and various discoveries are possible to emerge. ESP underlines that the focus is shed on the learner rather than the language per se. Respectively, determining the who has become fundamental in shaping the purpose of the learning. Since the purpose relatively means a targeted analysis of the learner needs, needs analysis is considered as a pillar of ESP (Johns, 1991). Teaching an ESP class or developing an ESP syllabus and course design requires a deep understanding of the learner’s needs and an expertise in the subject matter.

The current status of ESP in Moroccan higher education is juvenile. Few are the studies that tackled the issue of ESP in the Moroccan context though there is a huge need of these studies as the demand is in a constant development. Students and professionals seek to learn English in context alongside General English. Students, on the one hand, are required to master the language for research and academic purposes. As for professionals, such as those in science and information technology, they lack the operational language of their fields.

Unfortunately, Moroccan universities do not include ESP classes within their undergraduate and graduate programs. Additionally, few are the universities that include General English classes in their curricula. This unbalanced deployment of English language creates a serious mismatch between the actual needs of the students and academic/market demands. In contrast, in most cases, students see themselves oriented towards private language centers in which ESP classes are offered. Still, these private English language centers only offer one branch of ESP, which is English for Business Purposes.

The school we present specializes in training students in various fields and majors among which are renewable energies, chemistry formulation and quality, and valorization of natural resources. Students of the aforementioned majors have never been introduced to ESP classes before, and a minority of them took General English classes in their undergraduate studies for a minimum of one semester. The ESP class proposed by the departments was not built on a needs analysis or a survey of the students’ skills and competencies. The objective of the ESP classes as set by a previous faculty member in charge of coordinating English language classes is to reinforce the linguistic competence of the students in the English language in order for them to apprehend scientific documents and be able to
communicate appropriately in both written and oral forms. Eventually, the ESP teacher must abide by a number of random course objectives, which were specifically designed for renewable energies and chemistry majors: Grammar (Frequency, comparison, linking words and cause and consequence) and ESP (measurement, hypothesizing, the glossary of renewable energy, the geopolitics of energy). The expected outcome is to have students equipped with skills that will enable them to develop oral and written communication competencies, linguistic competence, recognize the scientific discourse and be familiarized with the fundamental concepts related to science and renewable energies.

2. Statement of the problem

Since English has become the language of science and the sole asset to achieve higher academic and professional status, some graduate programs have sought to include it in their curricula in order to maximize students' chances in accessing postgraduate studies and job market opportunities. However, the planning of English language integration in their graduate programs is arbitrary and does neither reflect the actual needs of the students nor their linguistic levels.

Graduate students of science majors at ENS-Rabat come to graduate programs with a very low mastery of the basic English linguistic skills due to the fact that during their high school and undergraduate studies all science subjects were delivered in Arabic and/or French languages. Additionally, they come expecting to be taught ESP classes in English language, which creates a serious challenge for the instructor: delivering ESP to large classes of students with mixed language abilities.

2.1 Objectives

The present paper aims to evaluate ENS-Rabat students’ linguistic levels, determine their needs, and assess the syllabus designed for these science majoring graduate students.

2.2 Research questions

a) What are the different English language needs of the ENS-Rabat students?

b) Does the linguistic level of ENS-Rabat students permit developing an advanced ESP syllabus?

c) Has the designed syllabus been successful in satisfying the students’ needs?
3. Research methods and procedures

In order to answer our research questions, we have resorted to a quantitative research approach. The data was collected during the first week of classes as the students were given a questionnaire to fill in and a placement test to take to evaluate both their needs and levels in the English language. These students belonged to two fields, Chemistry and Physics, and were distributed into four groups, joint into two large groups. The English language classes took place every Wednesday for two hours during the 2016-2017 academic years. The questionnaire was adapted from a previous version which served in a study produced by Al Ghadi, Biddou and Boukanouf (2017) with a slight amendment covering their interest in taking ESP classes. As far as the placement test is concerned, it aimed to test their mastery of three basic linguistic skills: grammar, vocabulary and writing. The first two were tested in multiple-choice questions. As for writing, students were asked to write a short descriptive paragraph about themselves. At the end of the semester, students took part in two focus groups sessions. They were asked open-ended questions about their learning experience during that semester: they were called to evaluate the teacher and the content taught. Additionally, students were also urged to express their interest and needs of the language.

3.1 Population

The population of the present study consisted of 97 students at ENS-Rabat: 81 first year graduate students, 38 females and 43 males divided between physics (51) and chemistry (30) majors, and 16 second year students, 9 male and 7 female physics majors. It is worth noting that only 65 out of the 97 participants responded to the questionnaire. these participants declared having taken English classes previously for a period of one to three years. Yet, only 36% claimed they had it at university for one semester. The vast majority (98%) expressed their interest in learning English for Specific Purposes while they also recognized the importance of mastering the basics of the language (97%).
4. Data analysis and findings

Prior to a teaching experience (*during the 2015-2016 academic year*) at the same institution and to the same majors, we have been asked to teach an ESP class, but we were not provided with any ESP teaching material. Surprisingly, we found out that the students were not equipped with the basics of the language in order to take an ESP class. This experience triggered our interest and called us to investigate its implications.

Entering the new academic year (2016-2017), we opted for a new approach to tackle an ESP class whereby we first administered a questionnaire that drew upon the students’ needs and interests in learning the English language in general, and ESP in particular.

Through analyzing the questionnaire, we found that 53% of the respondents were, indeed, in need of English for Specific Purposes classes in order to enrich their vocabulary in their own fields of specialization while 47% expressed their need of the language to develop their communicative competence and become fluent in the language. Furthermore, 40% noted that they needed ESP classes in order to be able to read scientific journals, articles and references while 42% of them insisted they needed it for writing their research papers. Generally, the students came ready to study English for Specific Purposes with more focus on communication skills and vocabulary.

Together with the questionnaire, we gave the students a placement test to evaluate their levels before proceeding with any ESP courses. The results of the placement test revealed that the four groups were composed of large portions of beginners, pre-intermediate and a minority of advanced students. Since the majority were pre-intermediate level students, we sought to
design a syllabus that could cater for the needs of the majority rather than an English for Specific Purposes class which most of the students could not have comprehended. The syllabus was being designed on a day-to-day basis based on how the students interacted with the content. In every two-hour session, the students were introduced to target elements of language through reading and/or listening. As we progressed, they could identify these elements and their usage. This was also followed and supported by exercises and activities to foster their learning.

Grammar was given priority as students had serious issues with some basic language uses. As far as the second part of the class was concerned, the students were given speaking activities in which they were required to implement the learnt vocabulary and grammar. Still, the teacher included, indirectly during the semester, a few classes in which ESP elements were targeted. We did not focus on ESP as of the beginning of the semester not because of the unavailability of the teaching materials but rather due to the very low level of the students who by no means could grasp nor interact within an ESP class.

There is no possible way to introduce students whose level was below the intermediate level to an ESP class, which by nature is advanced. An attempt to fully include ESP in the syllabus was made in the second semester for only students of physics, who by default had two semesters of English language classes, unlike chemistry students who only had one semester. They were asked to choose a topic of research in their field of study and present on it. Students were also introduced to how to read a scientific article and how to make a presentation. While presenting, students discussed the articles’ content and explained the key vocabulary. This has created an effective interaction between the students and provided them with a vast array of vocabulary in their major (renewable energies). They also developed their self-confidence and now have become able to present and discuss issues related to their field of study at conferences and study days.²

During focus groups conducted at the end of the first semester, students explained their insistence on having an ESP class for career purposes. The majority declared they were intending to join multinational companies where English is not only the official language of the organism but also the language of their day-to-day tasks. Thus, mastering the language is

² This is supported by testimonies from students who are currently involved in internships and conferences abroad.
no longer a choice but a requirement to land a job in their domain. Most of them view English as an asset that should be developed and sustained at the beginning of their higher education studies.

The linguistic level of ENS-Rabat students does not permit developing an advanced ESP syllabus because of, first of all, their unbalanced linguistic level and, second, the advanced nature of the ESP course. Based on the reactions of the students, the designed syllabus was to some extent successful in that it has satisfied some of the students’ needs and has attempted to remediate a few linguistic gaps. In another study tackling the same population, further information is discussed about the challenges the teacher faced and the reservations the students expressed, which has limited their taking advantage of the whole experience.

During the teacher and content evaluation session, students acknowledged the efforts of the teacher in attempting to answer both their GE and ESP needs. Those who had issues in communicating basic ideas in the language have seen themselves able to construct clear and appropriate ideas in English. As for those who already were equipped with basic language skills, they now can swiftly interact using English for both GE and ESP. Some of the students still struggle with the mastery of GE and find it frustrating that some of their peers are far advanced in ESP. This highlights the obstacles the teacher faced when designing the lessons as they encountered students with significantly distant linguistic levels.

5. Implications

The departments concerned did not provide the teacher with any ESP materials or resources, so we had to develop a convenient syllabus that would meet the students’ needs. We had to compile all the language elements from different sources to meet the students’ needs and account for some ESP elements as well. The idea of including an English language class or an ESP one to these specialized major students was not studied or planned before. The teacher had to deal with the course requirements on a weekly basis in order to satisfy all levels and insure good delivery of the syllabus.

3 This has been measured throughout the semesters as students’ performance progressed (i.e. grades, presentations).

4 For further details, please refer to Biddou, N., Boukanouf, A., & Al Ghadi, A. (Forthcoming)
The time allocated to these classes was not enough as the teacher was required to cover a lot of content in a short time and the students had to assimilate and learn in different ways to foster elements taught in class. Other more important subjects in their fields besides their lack of mastery of the language also pressured students, which has made some of them skip a great number of sessions and barely keep up with the course.

Devoting 30 hours each academic year for an impulsive English language class is not enough to teach students General English and move to ESP. Generally, any type of language class must be planned in advance and well resourced in order to efficiently implement the goals of the department. The latter must study the needs of its students first, consult language specialists to develop an ESP program to acquaint the students with the language and its basics then evaluate their performance for a period of time, say one semester, before accessing intensive advanced ESP classes in the future.

Yet, the first step that should be considered is to design and develop a standardized language test with components of general language alone. This will not only facilitate streaming the students into the appropriate levels but will also enable the teachers to deliver adequate classroom content and eliminate redundancy in terms of students’ prior knowledge. By means of this test, the teachers will be able to target specific language skills at a time, and students will be assessed on the basis of their course content.

Unlike General English, ESP classes require the involvement of special resources to develop and design a test. The teaching staff should be qualified and should master the jargon of the targeted field. Teaching materials, whether personally designed by the teacher or previously developed by the department, should imperatively encompass all aspects of the majors being taught and cover at least two language skills: speaking and writing. Referring back to the results of our study, we noticed that some participants at ENS-Rabat had orientations for career while others opted for research. Those interested in the latter need to have specialized classes where they will learn mechanics and genres of academic writing and most importantly master the research jargon. A highly qualified teaching staff is required in this case as well. Thus, we propose the inclusion and development of English in Academic Research (EAR) as a module in these specialized fields at the common core level along with General English and ESP.
As demonstrated in the graph below, students at Semester 1 will benefit from an ESP class which will cover the jargon of their specialization. Yet, those who need to reinforce their General English and fill in the gaps they have in the language will have to take mandatory GE1 classes alongside ESP1 classes. Those who scored higher in the placement test are exempted from taking GE1 classes, unless they decide they need it. The assessment will be slightly different for the students who will be taking both GE1 and ESP1 since they will have to pass exams in both subjects, contrarily to the advanced students who, on the other hand, will have to provide a mini research project as a second grade for the ESP1 class that will count towards the missing grade of the GE1. For Semester 2, students will explore a different branch of ESP which is EAR. In this particular subject, students will be exposed to English for Academia, mainly mechanics of writing, genres of academic writing (articles, proposals, reports, theses etc.), and research methods. GE2 will still be optional for advanced students but fundamental for students with a low English level. The assessment will be similar to that of the first semester. The same applies to the remaining semesters. Heads of the departments should not overlook the important aspect of the subjects of GE, ESP, or EAR, to be each respectively taught by a devoted expert in the subject. In other words, one General English language teacher cannot teach all the three subjects including the field-specific ones.

Graph 3: Module designed for the two-year Master level

Opting for this strategy will ensure that the departments at ENS-Rabat fulfill their teaching objectives as well as their master students’ needs. A good planning and a thorough investigation alongside the support of English language teachers and experts in the field will eventually result in an exceptionally distinguished education program that encompasses the knowledge and the know-how.
Implementing both GE and ESP at ENS-Rabat requires careful planning and preparation. All depends on the institution’s objectives behind integrating GE and ESP in its school program. If their implementation is a short-term mission, we believe that the outcomes would result in a barren experience mainly at the learning level. Students will only benefit from the classes without seizing the opportunity to broadly exploit and apply the skills and the language learnt in their targeted domain. Therefore, classes will only be offered in fall semesters. Implementing GE and ESP permanently and fully integrating them in the curriculum will imply a mastery of both the adequate language and jargon related to their field as well as preparing them for future aspirations, be they career or academic-oriented, through pre-exposing them to field skills.

Devoting lots of efforts to this project could target different important aspects related both to education and employment. First, integrating new approaches to the teaching of English in field-oriented majors by moving from a traditional language class to an interactive objective one can ultimately make a difference in the Moroccan higher education system. Some might see the introduction of this reform as a contribution to the improvement of the Moroccan researcher profile along with professional and/or personal development. Basically, this reform is envisaged to promote the Moroccan university’s image and upgrade the teaching standards to meet international education caliber.

6. Conclusion

English for Specific Purposes is a field that is developed to meet specific needs of specific fields. The planning of these ESP classes is very tricky and requires a lot of research and preparation. Thus, we cannot expect a General English language teacher to deliver ESP classes with no previous training in the targeted fields. This implies that ENS-Rabat heads of departments must carefully think about implementing ESP classes in their programs and provide their students and teachers with adequate and appropriate resources to have an efficient teaching and learning experience.

The approach of foreign language teaching in Morocco in general and English language teaching in particular should be revisited. The ENS-Rabat experience is a good example of how we could support students of different majors and education programs at the three different cycles in achieving the needed English language level. Though the teacher at ENS-Rabat had no exhaustive background in physics and chemistry, and with very little means
available to her, she has managed to combine ESP and GE classes to fill in the linguistic gaps and to keep a balance between the different levels she had in each group. The key to have a successful implementation of English for Specific Purposes classes is effective planning, evaluation and monitoring. These are the elements that constitute the building blocks of any successful educational program.

References