ESP Needs Analysis in Moroccan Higher Education
The Case of Computer Engineering Students

Mohsine Mahraj
Laboratory: Language and Society
Ibn Tofail University, Morocco
mohsine.mahraj@uit.ac.ma

Abstract
This paper investigated the English academic requirements of Moroccan computer engineering students at the National School of Applied Sciences in Berrechid. Questionnaires were the major data collection method used in this study. Data were collected from 32 undergraduate computer engineering students. The results of the study indicated that the perceptions of computer engineering students toward English learning are highly favorable. The findings also revealed that these students have difficulty with listening, speaking and writing skills. Based on the obtained results, a task-based approach was applied to foster students’ needs in the three skills by ways of delivering in-class presentations, writing reports, sitting for mock interviews, and taking part in a public speaking contest. More importantly, the study suggests a renewal of the current pedagogies by adopting a learner-centered approach to meet students’ target needs.

Keywords: Computer Engineering, EFL, ESP, Higher Education, Needs Analysis
1. Introduction
The rapid growth of globalization and the status of English as both an international language and the language of technology and science have generated a great demand for many countries to assign English language classes to their students. In the Moroccan university, English is taught as a foreign language (EFL) and the courses are basically for general purposes in the faculty of Arts where students opt for linguistic or literary studies. However, students in science-oriented disciplines study English as a secondary course with a very limited time and with an average of three hours per week in the first year. In some other departments, English is taught only in the first term or is not programmed at all. In the faculty of science, for example, English is not taught till the postgraduate level. In the faculty of science and techniques, English is taught in the undergraduate and postgraduate level since science students need this language to be updated regularly on the latest news in their field of research. What is more, PhD students are required to publish one article in English or at least write the abstract since French is the language of instruction. Based on my experience as a high school EFL teacher and a part-time university teacher at the National School of Applied Sciences in Berrechid (ENSA B), I can observe that learners’ attitudes toward English are highly favorable either in secondary or in tertiary education. This is probably explained by the rapid evolution of online socializing and the globalized status of English worldwide. The teaching/learning material in EFL settings is not innovative and available enough especially in the secondary level. To quote Prensky (2001), most of teachers are “digital immigrants” whereas their learners are “digital natives”. In other words, some EFL teachers are information illiterate which renders their attitudes toward ICT ambiguous and fuzzy. This situation contributes in a way or another to the impediment of the teaching/learning process. This study is an attempt to investigate computer engineering (CE) students’ needs regarding English classes. It also attempts to examine their needs in terms of English language skills and sub-skills.

2. English for Specific Purposes
The situation of English as the language of science and technology worldwide has driven many EFL and/or ESL (English as a second language) countries to assign classes of English for
Specific Purposes (ESP) to their students so as to acquire a reasonable understanding of scientific English. According to Hutchinson and Waters (1987), English for specific purposes is a learning/teaching setting which is made up of two main branches: English for Academic purposes (EAP) and English for Occupational purposes (EOP). The term EOP generally refers to job related courses, and is likely to be highly technical or specific in nature such as English for technicians or businessman. However, EAP refers to any English teaching setting that relates to a study purpose, and it is taught generally within educational institutions to students needing English for their academic courses (Dudley-Evans & St John, 1998). According to Shing and Sim (2011), the growth of EAP is derived from the awareness of ESP practitioners that at the tertiary level students possess different learning needs and this cannot be fulfilled by teaching them the same type of English language. Citing Coffey (1984), Sager (1998) describes EAP as a student’s need for “quick and economical use of the English language to pursue a course of academic study”. Whereas for Wei and Flaitz (2005), EAP is like a “key responsibility” in assisting ESL students to develop the kind of English language proficiency that will lead to success in their academic endeavors.

3. Needs Analysis

Needs Analysis (NA, henceforth) has continuously played a significant role in the process of assessing, designing and implementing any language course, particularly in the context of ESP (Fulcher 1999) and (McDonough 1984). In the literature, NA or what is also known as needs assessment (Schmidt 1981), is defined by Richards & Schmidt (2002) as “the process of determining the needs for which a learner or group of learners requires a language and arranging the needs according to priorities” (p. 353). They add that needs assessment makes use of both subjective and objective information (e.g. data from questionnaires, tests, interviews, observation) and seeks to obtain information on: a) the situations in which a language will be used (including who it will be used with); b) the objectives and purposes for which the language is needed; c) the types of communication that will be used d) the level of proficiency that will be required. It follows then that needs assessment is a part of curriculum development and is normally required before a syllabus can be developed for language teaching (Richards & Schmidt, 2002). In light of this definition, NA is about being aware of learners’ needs and
organizing them to suit their desired environment. Accordingly, Gupta (2011) states that NA is a process of comparing the current condition to the desired condition, defining the problem or problems, understanding the behaviors and mechanisms that contribute to the current condition, determining if and how specific behaviors and mechanisms can be changed to produce the desired condition, developing solution strategies, and building support for action.

The most known models of NA are: Target Situation Analysis (TSA) and Present Situation Analysis (PSA). The first model (TSA) was proposed by Munby (1978) and it is based on the learners’ communicative needs in the target situation. It is composed of nine components which tend to explain students’ communicative needs in real situations: participants, purpose, setting, interaction, instrumentality, dialect, target level, communicative event and communicative key. Hutchinson and Waters (1987) underscore the usefulness of looking “at the target situation in terms of necessities, lacks and wants” (p. 55).

The second model (PSA) was introduced by Richterich & Chancerel (1987). It aims to gather all the information capable of enhancing course designing, teaching materials and the adequate teaching methodology based on the actual needs of learners at the present time. According to Jordan (1997), Data collection for PSA includes the learners themselves, the institutes where they learn English and the workplace or any other context where they are often required to use language. In fact, it is noted by Robinson (1991) that PSA is a complementary source for TSA since the former seeks to investigate the strength and weaknesses of the students participating in a course and their short and medium term objectives.

There were a few studies in Morocco which investigated NA in engineering context. Midoul (2012) conducted a NA research at ENSAM Meknes. Using closed ended questionnaires, the study targeted 120 third year engineering students and its results revealed that these students’ attitudes are favorable. Furthermore, the productive skills (speaking and writing) are the most needed skills by these students. In the same vein, EL Hiani (2016) conducted a study on the impact of NA on ESP courses: the example of electrical engineering at Mohammadia School of Engineers in Rabat. The researcher used participatory needs analysis and testing to investigate the
needs of first year electrical engineering students. The results of the study showed that students need to improve their productive skills and vocabulary repertoire related to their specialty. However, the pedagogical implications of the study were not taken into consideration by the institution; this is witnessed through a shortage of the teaching learning materials, the allotted time to the English class (two hours per week), and the overloaded syllabus. All these factors did not help meet students’ needs. Other worldwide studies, just to mention a few; (Al-Tamimi and Shuib, 2008; Pritchard and Nasr, 2004; Salehi, 2011), revealed that engineering students need to develop their productive skills most.

The various research studies (Al-Tamimi and Shuib, 2008; Kittidhaworn, 2002; Pritchard and Nasr, 2004; Salehi, 2011) conducted to investigate ESP students’ needs either in ESL or EFL context emphasized the significance of identifying learners’ needs and warned against the risk of ignoring the importance of NA in designing or implementing any ESP course.

4. **Statement of the problem**

At the Moroccan ENSAB, the teaching of ESP is carried out by non specialist English teachers. Because these instructors do not fully take into account students’ needs, the students fail in their attempt to acquire the required knowledge of English language as far as their specialty is concerned.

5. **Research objectives**

The objective of this study is to investigate the English language needs of CE students at ENSAB. Thus, this study aims at probing the students’ perceptions of: a) the frequency of the English language skills used, b) the importance and difficulty of these skills, c) the areas of language use that they need more training in.

6. **Significance of the study**

This study will provide empirical data about CE students’ English language learning needs and problems. The findings of the study can be used as a basis to develop a more appropriate program that would meet students’ newly identified needs. Also, they can be of significant importance to
curriculum developers, course designers and language instructors in order to supply their students with the English courses developed based on the actual needs of the students.

7. Research questions

This study attempts to answer the following research questions:

- What are the attitudes of CE students toward English language learning?
- What English language skills do CE students have difficulty with?
- What English language skills do CE students mostly need?
- What are CE students’ target needs?

8. Methodology

This study is conducted in ESP context and targets undergraduate students at ENSAB. The sample consists of CE students who are taking English as a compulsory course during their first year (S1). They are randomly selected in order to collect data necessary to answer the research questions.

This research is quantitatively approached. The aim is to gather data necessary to answer the research questions. The major instrument used in order to assess the English language needs of ENSAB students is the questionnaire. Closed-ended questionnaires are designed and administered to 32 first year CE students as from September 29, 2016 to October 10th, 2016. The questionnaire is divided into 3 sections: The first section, addressing some demographic information, is designed to obtain a profile of the sample. The second part of the tool investigates students’ attitudes towards English language learning. The third part of the questionnaire addresses the students’ English learning needs.

9. Results

Questions 1 and 2 in the questionnaire were designed to obtain a profile of the sample regarding their gender and age.

*Question (1): what is your gender?*
Figure (1) represents the gender of the participants. The population of the study is comprised of 32 first year CE students. 17 (54.8%) of them were male junior students, while 15 (45.2%) were female students. This clearly shows that males outnumber females:

![Gender of students](image)

**Figure 1.** Gender of students

**Question (2): what is your age?**

Figure (2) shows that two halves of respondents vary in terms of their age: the age of 15 participants (48%) is between 18 and 20, while 15 participants (48%) of them aged under 18. Only 2 respondents (4%) are between 20 and 22 years old. They are then mature and aware of their needs and interests.

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Students number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>15</td>
<td>48%</td>
</tr>
<tr>
<td>18–20</td>
<td>15</td>
<td>48%</td>
</tr>
<tr>
<td>20–22</td>
<td>2</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Question (3): Do you like English classes?**

In response to this question, all students 32 (100%) stated that they like English classes. Yet, some of them miss classes. This is explained by the syllabus; English is taught within communication module and not as a required subject as other content-based subjects.

**Question (4): Why do you like English classes?**
Students’ attitudes towards English learning show that 18 out of 32 learn it because “they need it for communication”. Another important portion of them (08 out of 32) revealed that “they like the teacher”. Based on their answers, one can conclude that this language is a necessary component to cope with their studies as well as their future careers. More importantly, this indicates that CE students are highly motivated to learn English. Their motivation is intrinsic and instrumental; they like English not only because they like the teacher, but also because they need it for communication in their future job. This shows that any course design or material development should take into consideration this motivation for the betterment and success of the English course.

Table 2

*The purpose behind liking English classes*

<table>
<thead>
<tr>
<th>Why do you like English classes?</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I need it for communication</td>
<td>18</td>
<td>56.25%</td>
</tr>
<tr>
<td>I like the teacher</td>
<td>08</td>
<td>25.00%</td>
</tr>
<tr>
<td>I feel more comfortable in it</td>
<td>04</td>
<td>12.50%</td>
</tr>
<tr>
<td>I find activities stimulating &amp; engaging</td>
<td>02</td>
<td>02.40%</td>
</tr>
</tbody>
</table>

*Question (5): Please tell us about your level of English skills?*

<table>
<thead>
<tr>
<th>Skill</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Speaking</td>
<td>4</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Reading</td>
<td>3</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Listening</td>
<td>1</td>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>

*Figure 2. Level of the English four skills*

Figure (2) shows that most of students’ level of the four skills is moderate: listening and speaking (64.50%); reading (71.00%); writing (67.70%). However, some students record a low level of
productive skills: speaking (29.00%); writing (19.40%). This reveals that these students need to develop these skills because they are going to use them regularly in class or in their future career.

Question (6): what is your level of English language?

Figure (3) demonstrates again that the language level of students is moderate: vocabulary (80.60%); grammar (67.70%). This shows that the problem of students is not about their language awareness, but it is about language use.

![Figure 3](image)

**Figure 3.** Level of English language

The findings of both questions reveal that students have a moderate level of the English language skills. This is explained by the hard work and the willingness known by science students as a whole. These students were shortlisted based on their honorable average records in their third year in high school (baccalaureate exam). In this regard, it is important to note that high school students have a good command of the English language, namely, vocabulary and grammar, while they need to develop their productive skills because the focus in high school syllabus is on language as such and not on the way language should be used in specific contexts. Having said that, it is highly unlikely for students to practice speaking or act out some pedagogical scenarios to enhance their communication skills.

*Question (7): In the course of study, how often are you expected to use the following skills?*
Figure 4. Prospective use of target language skills

As shown in figure (4), the majority of students responded with “very often” with regard to listening, speaking and writing skills, and “often” for the reading skill. These data add an important finding to the literature related to language NA in engineering context; CE students need to improve their receptive skills, namely; listening.

*Question (8): How often do you have difficulty with each of these skills?*

**Table 3**

<table>
<thead>
<tr>
<th></th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening</td>
<td>1</td>
<td>1</td>
<td>16</td>
<td>10</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Reading</td>
<td>0</td>
<td>4</td>
<td>15</td>
<td>11</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>Speaking</td>
<td>1</td>
<td>9</td>
<td>15</td>
<td>5</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Writing</td>
<td>1</td>
<td>6</td>
<td>17</td>
<td>6</td>
<td>2</td>
<td>32</td>
</tr>
</tbody>
</table>

With regard to learners’ frequency of their difficulty in the four skills, table (3) shows that most of students sometimes find difficulty in the four skills; half of them find difficulty with listening; 15 out of 32 find difficulty in both reading and speaking; and 17 out of 32 think that writing is a difficult skill. However, some students do often find difficulty with the productive skills: 9 out of 32 in speaking, and 6 out of 32 in writing.
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Speaking and writing are the two productive skills that CE students find difficulty with and, hence the need to develop these skills. Activities should be developed to foster learners’ accuracy in writing, and also their fluency in speaking. This can have positive and promising pedagogical implications on their language learning.

*Question (9): How often does the following happen to you?*

![Figure 5. Language skills difficulties](image)

Figure 5 demonstrates that almost half of the respondents have listening problems. Fifteen (15) students have to “ask colleagues to repeat what was said”, and thirteen (13) students “have difficulty understanding multiple speakers at once”. This listening problem affects the other productive skills and sub-skills; twelve (12) students reported that they “have trouble understanding meetings in English”. Also, thirteen (13) respondents “have trouble taking effective notes”. The researcher concludes that there should be an integrative approach to teach the receptive skills within the productive ones to foster and improve oral and written communication in the English class.

*Question (10): Which skills would you like to improve?*
Students reported that they would like to improve the listening sub-skills besides the productive ones; twenty (20) subjects wish to listen to native speakers. (21) out of (32) wish to communicate effectively with groups. (19) out of (32) wish to deliver presentations. These findings clearly show that an integrative approach to teaching the four skills is highly recommended.

10. Conclusion and Discussion

The present study investigated the English language requirements of CE students at ENSAB. The findings obtained from the questionnaires show that CE students’ attitudes towards ELT is highly favorable. This is due to their academic and occupational needs of the English language being the language of science nowadays. More importantly, CE students find difficulty with listening, speaking and writing. These students reported that these three skills are the ones they need to improve. In this regard, as part of the pedagogical implications applied after this NA, we opted for the following tasks. First, students were asked to deliver in-class presentations related to their subject matter (e.g. software engineering, hardware engineering, big data…etc.). Simultaneously, other students (the audience) were asked to write one paragraph report of the delivered
presentations based on the report sample given. Second, as part of the final term exam, students were invited for a mock job interview whereby they were asked to bring their CVs and cover letters. The interview was a face to face communication targeting students present as well as target needs. Finally, the researcher organized a workshop on public speaking for all ENSAB students. Many of them took part in the qualifications and the first two ranks went to CE students.

To conclude, this study has some limitations that should be taken into consideration for further research. First, the findings of this study cannot be generalized on all CE students in other higher schools in Morocco as it is a small-scale research. Second, the present study is a quantitative-based research since the instrument is a close-ended questionnaire. Thus, using another qualitative instrument would come up with more reliable result.

References


Elhiani, K. (2016). The Impact of Needs Analysis on ESP Courses: The Example of Electrical Engineering at Mohammadia School of Engineers in Rabat. In M. Guamguami et al. (Eds.), *English for Specific Purposes: A Reader* (pp. 91- 111). Cairo: Dar Al Maha.


