Identifying the English and study skill needs of science students at the university of Petra: A case study

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Abstract

This study gives insights into undergraduate science learners’ difficulties and needs in the context of English as a foreign language (EFL). Hence, it is directly concerned with the language and study skill needs of the science students who are enrolled in university, compulsory English courses offered by the Department of English at the University of Petra (UOP) in Jordan. These undergraduates learning English as a means of access to their specific fields of study confront a number of problems. Top on the list is the fact that the specific language and study skill requirements of these students have not been identified. The teaching materials have no direct relevance to the language and study skills required in the students’ specific area of study nor to their interests. It is the writer’s contention that such grave problems need to be investigated and identified, providing some of the means by which they may be solved (Widdowson, 1971) as they negatively affect students’ performance. For this purpose, a Questionnaire for faculty in the Science Departments (supported by individual interviews and observation) was developed, piloted and distributed (N=16). Findings and implications were discussed and more solid basis to specific/ academic English courses supported. The aim is to establish a motivated background for the development of an appropriate syllabus design that incorporates the required specifications of language and academic study skills. The paper ends with some suggestions offered to meet the needs of the undergraduates in communicative teaching and learning contexts in relation to scientific discourse.

Keywords: needs analysis, study skills, learning centredness, syllabus development.

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1. Introduction

According to Munby (1978), ESP refers to English for ‘specific’ not special, purposes, since the term ‘specific’ in ESP emphasizes a focus on the learner (Hutchinson & Waters, 1987) and on the purposes required to satisfy the specific needs of the learner.

Research (e.g. Strevens, 1977) suggests that English for specific purposes (ESP) arose in 1960s as a result of an increased awareness that general English (GE) courses do not satisfy individuals’ needs (Robinson, 1980). That is to say, the emergence of ESP is directed at a new focus on the learner (Hutchinson & Waters, 1987). It is, then, a part of English as a foreign language (EFL) Teaching (Johns & Dudley-Evans, 1998). It follows that, when designing ESP courses, it is crucially important to integrate a general language content that focuses on a common core for the learners (Bloor, 1998).

ESP emphasizes English for academic purposes (EAP) and English for occupational purposes (EOP), in addition to a number of new sub-divisions (Anthony, 1977) as a result of an increasing awareness amongst business and academic community that learners’ needs, necessities, lacks, and wants should be satisfied (Flowerdew, 1990; Belcher, 2004, 2006).

In Quirk’s (1985) view, ESP is used to refer to the learning and teaching of English for a useful, or practical, purpose (Hutchinson & Waters, 1987) stated in communicative terms (Coffey, 1985) and related to specific needs (Robinson, 1980). This utilitarian purpose is generally thought of as the ability to communicate functionally (Dudley-Evans & St. John, 1998) and appropriately (Hymes, 1972) in English in areas of academic study (EAP) or occupations (EOP). ESP, therefore, fits firmly within the general movement towards communicative teaching. It is a concern with the communicative value of linguistic items (Edwards, 2000), focusing on language appropriate to the tasks of the disciplines it serves, involving syntax, lexis, language and study skills, discourse and genre (Dudley-Evans & St.John, 1998).

This implies an ESP course rejects the viewpoint that a communicative approach is learner-centered (Nunan, 1988; Brumfit, 1984; Robinson, 1991; Dudley-Evans & St.John, 1998; Strevens, 1988): rather, it is learning-centered (Hutchinson & Waters, 1987) because it takes into account the process of learning, self-directed learning; autonomy, a concern with effective use of language (Carter, 1983), and an increase in the learners’ intrinsic motivation (Edwards, 2000).

To quote Quirk (1985) again, learning English for ‘specific’ purposes, with the English language teaching (ELT), the teaching of English as a foreign language (TEFL), and the teaching of English as a second language (ESL) domains, and particularly in the scientific context, has become a vital concern since it is directly related to the utilitarian needs of individuals and their pragmatic needs in the academic and professional areas of study, particularly in the scientific context.

Ferris (1998) asserts that it is vital to focus on the role of needs analysis as a basis of any curriculum design, including course components and material selection.

Dudley-Evans & St.John (1998) emphasise the importance of analyzing the learners’ specific needs in order to specify realistic objectives. Hence, in the above researchers’ view needs analysis is the main concern in ESP.

Belcher (2006) views needs analysis as the most prominent decision on which all other considerations, such as syllabus design and implementation of the syllabus, in response to specified needs, are made.

In light of the above discussion, this paper surveys different methods of identifying the problems and investigating the needs of science students enrolled in the service English language courses offered by the Department of English at the UOP.
2. Background and Overview: An awareness of needs in the target situation of the study

The purpose of this introductory background is to provide a brief survey of the language problems of students joining the UOP faculties, describing some methods by which the nature of these problems can be identified and the subsequent needs defined.

2.1. Methods of the identification process

First, a Placement Test should be conducted on entry to the university for Jordanian and non-Jordanian school graduates. The aim of the Placement Test is to determine the state of the students’ knowledge before English courses begin: a non-credit course (099 Intensive English) and two credit courses (121 General English and 122 English for Specific/Academic ‘ESP’/‘EAP’ purposes). The test is used to help decide which course students are to go in (099 or 121). The results of the placement are usually less than satisfactory.

A second method which can be employed to identify problems is to observe students’ difficulties in English classes. Students with the most serious language problems are referred to the English Remedial Site where teaching focuses on specific areas of weaknesses.

A third method of identifying students’ language problems and needs is by means of surveys taking the form of questionnaires and interviews. The results of these surveys can help to focus attention on areas of needs.

A profile should now emerge of the type of science students who attend Intensive English (099) and University Language courses (121- General English and 122- English for Specific/Academic Purposes).

2.2. Interacting variables in the identification process: emergence of problems

Investigation of the English and study skill needs of the students in the study is a complex activity since it involves a number of interacting variables.

For example, a problem that emerged, which was also noted by Cook (1977), is the difficulty of unequal language demands. The students in the study in the different departments where science courses are offered require a broad range of language skills. That is to say, different sciences require different language skills. Moreover, the study confronts the problem of identifying precisely how the English and study skill requirements of the students change as they progress through a course. For example, in the earlier stages of the student’s study, participation in seminars and discussion groups may place heavy demand on oral-aural skills. As their work progresses, aural skills may cede place to writing skills if reports have to be submitted in the later stages of their study. On the other hand, there may be a steady demand on the reading skill throughout the period of study.

In addition, the question of motivation is a further complex element in the study. For this reason, it is crucial to have some measure of the level of actual scientific motivation of the students apart from their language problems. On the one hand, if students are poorly motivated in their scientific discipline this will have an important effect on their supportive English classes. On the other hand, it is not unusual for ESP students to be well motivated yet display a learning resistance. This is so because their motivation is extrinsic rather than intrinsic. Firstly, the ESP student is a “keen type” (Cook, 1977). That is to say, because the ESP students’ interest is judged in terms of improved performance in their area of specialization, they are impatient of any element in the English language syllabus which they do not see as directly relevant to their immediate needs. Secondly, the ESP students’ attitudes are also engendered by a tension which often exists in ESP classes. ESP students suffer from the same sense in a language learning situation as does the language teacher in a technological situation. Both may be threatened by exposure which must be reduced to a minimum.
A further problem emerges is the use of English as a medium of instruction in the faculties of Arts and Sciences, Pharmacy, and Information Technology included in the study. English as a medium of instruction is used exclusively in the third and fourth years as a result of the increasing need for gaining a first-hand knowledge of science and technology available in English. However, the two languages (English and Arabic) co-exist in the context for first and second year instruction so that students may cope with learning their specific subjects through English. These difficulties, together with frequent late enrolments in the compulsory university requirements of English language and ESP courses and occasionally with uncooperative departments give rise to serious academic problems. It is not unusual that students at the UOP avoid taking these courses until the end of the third or fourth years of study; a time when the usefulness of taking these English courses is impractical. It may also be the case that the content of these courses is not specifically oriented towards the students’ needs. In fact, there has been dissatisfaction spelled out by subject teachers and administrators with the students’ inability to make use of the linguistic resources introduced in the compulsory English language requirements, especially where English is the medium of instruction in their faculties. In Swales’ (1984) view, ESP programs in the Middle East are directed by teachers who have high qualifications in areas irrelevant to teaching ESP. In the case of the UOP teachers with Master Degrees in linguistics, literature, translation, and even ESP put much effort in selecting commercials depending on their common sense in the orientation of the ESP program. However, an awareness of needs in this study, as viewed by faculty, would provide a sound base for ESP/EAP courses where language and study skills required are identified.

Account must also be taken of the way questions in the analysis are presented and defined. Presentation of questions must be comprehensible by science subject teachers who have not had any training in linguistics.

Furthermore, questions in the analysis should take into consideration what the lecturers (subject teachers) consider as important English and study skill requirements.

A further important point is that productive and receptive skills are connected. For example, reading textbooks and understanding lectures are pre-requisite to the production of any essay.

A final note refers to the type of questions involved in a test that would measure the subject teachers’ expectations. For example, one would like to know if multiple choice tests are used because students lack the ability to write sophisticated language usage or they are simply easier to mark. It is of questionable advantage in the limited time available for language courses to encourage the development of sophisticated skills that might not be utilized.

It is the writer’s contention that the above factors may give some indication of the interacting variables that must be investigated when designing a questionnaire of this type.

2.3. Approaches to Needs Analysis

This study is concerned with needs analysis for the investigation of the English and study skill requirements of undergraduate students enrolled in scientific courses at the UOP. A huge bulk of research has been published on the various analyses of English and study skill needs (e.g. Munby, 1978; Hawkey, 1980; Johns, 1981; McDonough, 1984; West, 1994; Hutchinson & Waters, 1996; Berwick, 1989; Robinson, 1991; Jordan, 1997; Dudley-Evans & St.John, 1998).

Needs analysis is the point of departure in the process of designing any course in any language (Johns, 1991) in the contexts of general English and ESP, including its two basic categories (EAP and EOP), because needs analysis provides relevance for all subsequent courses (West, 1994). According to Iwai et al. s’ (1999) definition, needs analysis is collecting information that will serve as the basis for developing a curriculum that will meet the needs of a particular group of learners.

In all needs analyses which have been carried out in universities throughout the world, whether adopting the systematic approach in the Munbian (1978) tradition or a more eclectic approach (Belcher, 2006), needs analysis can be carried out in the context of a specific situation.
as it really is at the UOP.

Approaches to needs analysis range from an emphasis on the target-situation of learners to a learning-centred approach (West, 1994).

2.3.1. Register Analysis

In the earlier stages (1960s and early 1970s), needs analysis emphasized register analysis (Robinson, 1991), taking the form of frequency counts of syntactic and lexical features, or lexicographical features (Belcher, 2006). Register analysis, hence, works only at word and sentence levels; not beyond (Swales, 1984). Ewer and Latorre’s (1969) studies, investigating the learners’ needs in the context of scientific English, emphasized the field of register analysis, highlighting the specific grammar and lexis of certain specialized genres.

Research efforts (e.g. Barber, 1962; Strevens, 1980) have contributed to the study of register analysis at the sentence level, directing their efforts to identify the syntactic and lexical items in the sentence grammar of scientific English.

2.3.2. Target-Situation Analysis: Munby’s Sociolinguistic Model

Target-Situation Analysis Model specifies what the learners’ communication needs will be like at the end of any language course (Chambers, 1980). Munby (1978) introduced the communicative syllabus design in which the learners’ purposes and target communication needs and the variables that affect communication (Robinson, 1991) are placed as central to ESP. Hence, target-situation analysis is a process that aims at the learners’ achievement of communicative competence (Hymes, 1972).

Target-Situation Analysis specifies the activities, involving the language skills and functions learners need to perform in order to achieve the communication needs that present communicative events developed into a syllabus (Jordan, 1997).

However, research (e.g. Ellis, 1997; Hutchinson & Waters, 1987) suggests that if results of needs analysis are not precisely transferred to the implementation of syllabus design, prediction of process of learning is not likely to take place. In other words, it is important to provide a description of how the linguistic and functional features of the target language will be required, by a specific group of learners, what process of learning and what strategies are likely to be adopted, and what kind of tasks are likely to motivate the target learners.

Despite West’s (1994) criticism that Munby’s (1978) model does not consider the learner’s voice in data collection, the Target-Situation Analysis Model comprises details referring to sociolinguistic variables important for effective communication.

2.3.3. Present-Situation Analysis of Learner’s Needs Model: A Learner-Centred Approach

Present-Situation Analysis Model specifies what the learners are like (what and how much they know) at the beginning of the language course (Dudley-Evans & St.John, 1998; Richterich & Chancerel, 1977).

Research (e.g. Jordan, 1997) suggests that the Present-Situation Analysis Model is viewed as a complement to the Target-Situation Analysis Model, for the former shows a distinct concern for learners which is lacking in the latter model.

However, the Present-Situation Analysis Model has been criticised (Richterich & Chancerel, 1977) for exaggerating the dependence on what the learners think they need. In Long’s (2005a) view, over-reliance on the learners’ wants is a narrow area, since many learners are unable to identify their wants clearly.
Despite criticism, research (e.g. Trim et al., 1998) suggests that the Present-Situation Analysis Model aims at training learners how to learn by providing them with the skills necessary to enable them to identify their ‘real-world’ needs (Jordan, 1997).

2.3.4. Learning-Centred Analysis Model

Beyond Target-Situation Analysis, Hutchinson & Waters (1987) concerned themselves with the learners’ learning needs, specifying what the learners need to do with language in order to learn.

According to Nunan (1988), needs analysis developed from an interest in the subjective needs of the learner (learner-centred) into learning-centred approach, emphasising not only what learners do with language, but how they learn by being involved in the learning process (Belcher, 2006).

It is worth noting that, while Halliday et al. (1964), Munby (1978), and Wilkins (1976) focus on target-oriented approach, Hutchinson & Waters (1987) direct specific attention to the concept of learning, highlighting the role of strategies that learners make use of while learning the target language.

Likewise, Widdowson (1981) refers to the term ‘learning’ as a process-oriented approach (i.e. the means of language acquisition, including strategies of learning; transitional competence), satisfying the cognitive demands of the learner. Hence, the component of the learners’ cognitive process in language learning is not ignored (Widdowson, 1972). This is succeeded by the learners’ need to be taught the communicative value of the grammatical items, rather than just the linguistic forms.

On the same token, Allwright & Bailey (1991), Jordan (1997), and Dudley-Evans & St. John (1998) refer to the context of learning by emphasizing the learners’ need to be taught the skills (language and study skills) necessary to reach their targets, considering the vital role motivation plays. West (1994), also, refers to the importance of term ‘learning’ needs, suggesting that the learners’ or subject teachers’ views of learning and of the learners’ needs are of relevance.

Dudley-Evans and St. John (1998); Johns (1991); Brindley (1989); Ferris (1998); Benesch (1996); Cameron (1998); Paltridge (1997) are eminent contributors to the study of the concept of ‘learning needs’. They suggest that the term comprises information about the tasks learners will require while studying English for target situation; information about the learners’ attitudes to English, their command of the foreign language, and their lacks and gaps. According to Dudley-Evans and St. John (1998), when designing EAP courses in the context of ESP, it is crucially important to focus on authentic (real-world) tasks, and select materials that encourage negotiation of meaning, autonomy, and independent learning.

In Long’s (2005a and b) view, communication needs are of utmost importance. In consequence, learners should be able to understand and produce discourse practices; an ability to communicate effectively in the context of ESP.

Quoting Hutchinson & Waters (1987) again, a learning-centred model of needs analysis teaches learners how to learn, since it includes needs that direct attention to target needs and learning needs.

Hence, the context of learning needs will demand investigation of the learners’ objective needs, their difficulties and lacks between the target competence and the learners’ present competence, and the areas of interest required in their specific field of study which may necessitate some adjustment in the target course specification, highlighting the role of learners’ motivation and attitudes in the learning-teaching process.
2.3.5. Other Important Approaches in Needs Analysis

(a) Discourse Analysis

Discourse analysis shifted attention from analysis of lexicographical features (Belcher, 2006; Swales, 1984) to the level beyond the sentence, aiming at finding out how sentences are combined into discourse (West, 1998; Hutchinson & Waters, 1987).

Discourse analysis emphasizes the communicative values of discourse rather than the lexical and grammatical properties of register. In consequence, this approach tends to focus attention on how sentences are used in the performance of acts of communication and on the functions of language (West, 1998).

(b) The Rhetorical Approach to Needs Analysis

Holliday (1994) is concerned with an approach that emphasises the need to consider the cultural context of the specialist area of study. The advocates of discourse analysis (e.g. Lackstorm et al., 1973) also encourage the rhetorical or textual analysis: the focus, then, is on the text rather than on the sentence, and on the writer’s purpose rather than on form.

(c) Genre Analysis

While discourse analysis refers to analysis of text at a level above that of a sentence, involving the study of cohesive links (between sentences, or paragraphs, or the structure of the whole text) genre analysis refers to communicative events that take place within a functional setting (Swales, 1984).

To sum up, genre theory is considered as top-down, more contextual than just textual (Bhatia, 2004), and has a sociorhetorical view of discourse (Bazerman, 1997); while lexicographical view of language is more bottom-up and relatively decontextualised (Flowerdew, 2005). Finally, it can be said that genre theory has a more macro-level perspective than micro-level analysis. However, the two approaches have much to offer each other.

3. Needs Analysis: two concluding notes

(a) Needs analysis should be treated as an ongoing activity (Nunan, 1988; Holliday, 1994). In other words, learners’ needs are expected to change over time (Hutchinson & Waters, 1987) which necessarily need a change in syllabus evaluation (Allright, 1988; Kemmis & McTaggart, 1988), and, consequently, in methodology (Brown, 1995; Jordan, 1997).

(b) Moreover, results of needs analysis are expected to be followed by implications comprising the researcher’s suggestions related to components of syllabus development, teaching methodology, materials selection, the role of the teacher, teacher’s education, and any other components of relevance for implementation in subsequent research studies.

4. Significance of the Study

What is new within the present study is that the designing of undergraduate scientific English courses, as university requirements in the UOP, and decisions on short and long-term objectives for such courses will be built upon the information to be gathered on the English language and study skill needs, as viewed by the subject teachers (faculty members). The purpose is to establish the English and, especially, the ESP/EAP courses on a more solid basis, and to extend the English language program for science students to offer support for ESP/EAP programme in the other specific areas of specialization not only in the UOP but also in tertiary education in Jordan.
5. Limitations of the Study

This study has been carried out with a view to pinpointing the problems encountered by students enrolled in scientific courses, as viewed by faculty members. The study is, then, limited to all departments that offer scientific courses, using English as a medium of instruction, but having the alternatives of teaching in both languages (Arabic and English). The study does not, however, include the devising of a syllabus or describe in detail the nature and use of materials.

6. Purpose of the study

In constructing the tool of the study (Faculty Questionnaire), the writer’s purpose is to answer the following major questions:

1. How is the concept of students’ motivation viewed by the Subject teachers?
2. What are the language and study skill abilities and needs of Science students as viewed by faculty?
3. How far have the English service courses, the teaching materials and methodology used fulfilled the ESP students’ needs as specified by faculty members in the study?
4. Are the English language service courses offered by the Department of English really English for Specific/Academic Purposes courses? What factors would help in improving the teaching situation?
5. What is the importance of English to students at tertiary level and what role does it play?
6. Methodology and Procedure

A- The Sample: Subject Faculty Members

Members of all science departments in the faculty of Arts and Sciences were included in the sample. They are Arabic-speaking faculty members who use English as a medium of instruction, but have the alternative of teaching in both languages (Arabic and English) especially introductory courses for first year students.

Prior to being interviewed, lecturers were provided with a letter, explaining the importance of the analysis and its purpose. A Faculty Questionnaire (FQ) was distributed with the cover letter to a sample of 18. Out of a total of approximately 18 faculty members, 16 were included. 36 different courses, different years and majors were included in the study.

B- The Questionnaire: The Information- Gathering Instrument

1. The Questionnaire and the Interview:

Since what is sought is a great deal of general information from the faculty member group, a questionnaire and an interview are the suitable data gathering instrument in order to establish statistically significant trends.

2. Testing the internal validity of the questionnaire:

The questionnaire was reviewed and evaluated by three colleagues, then modified in light of comments received.

3. Conducting the pilot study: preliminary investigation

Seven faculty members from different departments were selected at random to answer the questionnaire during an interview. Such a piloting clarified misunderstandings or ambiguities of
wording, and allowed the researcher to improve the quality of the information-gathering instrument. It was also found that lecturers required between 30 to 40 minutes to answer. Based on information gained from this preliminary investigation, the collection of data for the Needs Analysis proper was administrated to the sample.

C- The Description of the Questionnaire: the Variables Involved

In developing the questionnaire, the researcher made use of Jordan (1997), McDonough (1984), Johns (1981), and The British Council (1984).

1. The Communication Needs Profile Questionnaire

   The purpose of this section is to obtain basic information to cater for potential variables that might affect the results.

2. The Communication Needs Analysis Questionnaire

   The Communication Needs Analysis Questionnaire was accompanied by an Answer Sheet (1+2) on which the lecturers' responses were recorded.

   (i) Students’ Attitudes (questions 1-2)

   Attempts are made in this section to isolate English Language and scientific motivation as factors affecting poor students’ performance.

   (ii) Note-Taking Techniques during Lectures (questions 3-5)

   This section identifies lecture technique, which technique is required more than the other, and if they think the students’ listening abilities should be improved.

   (iii) Reading (questions 6-9)

   This section identifies the level of reading required in terms of the number of sources for any given course. It also identifies how the reading is used, i.e. to supplement lectures, clarify misunderstood points or a combination. Lecturers are asked whether they wish to upgrade reading assignments if reading standards could be improved, using question 6 as a reference for their answer. The data from questions 7 and 8, i.e. book titles, provide material to analyse the reading level that the students need to attain.

   (iv) Writing (questions 10-15)

   This section identifies the type and length of written assignments set during a semester. It also identifies what lecturers rate as important in written work as well as qualifying student weaknesses in the important aspects of writing. In question 12, lecturers are asked whether they would wish to upgrade writing assignments if writing standards could be improved.

   (v) Oral Contact

   This section identifies how well students are able to communicate orally. It also investigates the lecturers’ use of seminars, and whether they would like to expand on this teaching technique if students’ oral performance is improved.
(vi) Practical Work (questions 16-17)

This section is concerned with the amount of practical work carried out and its type. The latter considers whether practical work is course related.

The amount of practical work done is also covered by the Communication Needs Profile questionnaire. As was noted earlier, practical work will require its own particular language and study skills. Some quantification of these skills, including the level of supplementary reading needed, is made for course related experiments.

(vii) Final Course Exams (questions 18-19)

This is concerned with qualifying the structure of final exams, students’ linguistic performance in them and linguistic and non-linguistic factors affecting their performance.

(viii) General (questions 20-25)

Question 20:

This question identifies the subject teachers’ attitudes towards the teaching of ESP and General English of Tertiary level, i.e. its importance as a factor of success.

Question 21:

This question gives information on the kind of language skills to be emphasized in English service courses as seen by the subject teachers. It also indicates whether undergraduate ESP students need General English or not. This could be judged according to the preference given to item (a) in this question.

Question 22:

The purpose of this question is to specify the language skills needed in each specific area of study.

Question 23:

The purpose of this question is to give an overview of where students’ difficulties lie and these are then examined in depth in subsequent sections.

Question 24:

This question indicates how far the English service courses have fulfilled the ESP students’ needs as viewed by faculty members in the study.

Question 25:

This question determines the factors that impede the progress of English language programme, and hinder the achievement of its objectives.

E-Statistical Procedure

The data from the Faculty Questionnaire was tabulated on computer sheets, and a programme was run to calculate frequencies and means. Each item was analysed by using the SPSS.
8. Findings and Discussions of Communication Needs Analysis

The results are discussed under five major headings as they appear in the form of questions in the Communication Needs Analysis Questionnaire, in addition to conclusions and implications:

1. Perception of students’ motivation towards studying Science and through the medium of English from the faculty’s point of view at the UOP.

2. Assessment of the Science students’ English language abilities as viewed by faculty.

3. Perception of the English Language and study skill needs of Science students as viewed by faculty.

4. Evaluation of the Service English courses at the UOP from the faculty’s point of view.

5. Factors that would help in improving the English language teaching situation as seen by faculty.


8.1. Perception of students’ motivation towards studying Science and through the medium of English from the faculty’s point of view at the UOP.

FQ.1 How would you rate your students’ motivation towards studying Science? * Year Crosstabulation

<table>
<thead>
<tr>
<th>How would you rate your students’ motivation towards studying Science?</th>
<th>Very high</th>
<th>High</th>
<th>Average</th>
<th>Low</th>
<th>Total</th>
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<td>Count</td>
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<td>4</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>2nd</td>
<td>% within year</td>
<td>6.7%</td>
<td>26.7%</td>
<td>60.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>3rd</td>
<td>Count</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4th</td>
<td>% within year</td>
<td>.0%</td>
<td>66.7%</td>
<td>33.3%</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>% within year</td>
<td>6.7%</td>
<td>26.7%</td>
<td>60.0%</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

This is of considerable interest to language teachers, since if scientific motivation is poor, it is reasonable to conclude that any language supporting scientific studies will be similarly affected.

Table 1 shows that students’ general motivation towards their subjects of specialization is reasonable throughout all years of study. The table shows a progressive increase in motivation (average and above): Year 1-60%; Year 2-66.7%; Year 3-87.5%; and Year 4-100%. The difference...
in motivation might be explained by lack of interest by students in earlier years, or the subject matter language difficulty.

FQ.2. What is your students’ motivation towards studying Science though the medium of English? *Year Crosstabulation Table 2

<table>
<thead>
<tr>
<th>Year</th>
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<th>2nd</th>
<th>3rd</th>
<th>4th</th>
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<tr>
<td>% within year</td>
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<td>.0%</td>
<td>62.5%</td>
<td>100.0%</td>
<td>33.3%</td>
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<td>Average</td>
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<td>5</td>
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<tr>
<td>% within year</td>
<td>40.0%</td>
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<td>37.5%</td>
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<td>Count</td>
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<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td>% within year</td>
<td>46.7%</td>
<td>16.7%</td>
<td>.0%</td>
<td>.0%</td>
<td>22.2%</td>
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<tr>
<td>Very low</td>
<td>Count</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% within year</td>
<td>13.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>15</td>
<td>6</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>% within year</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The figures in Table 2 show that students progressively come to terms with studying through the medium of English. The figures show responses of low, average and above between Year 1-46.7 and Year 2-83.3%; and between Year 3-62.5% and Year 4-100%. The difference in motivation between years 1 and 2 might be explained by students’ low proficiency in English language in earlier years. Whereas the very marked decline in students’ motivation in Year 3 might be justified by increased difficulty due to the more specialized subjects and the more likely restrictive language code involves in scientific language, which students by their fourth year would be thoroughly familiar with.

Conclusion

From question 1, it can be seen the following:

A. Students’ general motivation towards their subjects is reasonable throughout all years. This may be considered as a positive advantage to the supportive language programme.

B. Students’ motivation towards studying science through English is relatively low in the first and second years but shows progressive improvement in the third and fourth years. This improvement might be largely attributed to exposure and their own efforts, and partly to the possibility that by this time most of them will have completed their English language courses. It is especially in the first and second years that the language teacher can make a positive
contribution to motivation in the area of course design.

8.2. Assessment of the Science students’ English language abilities as viewed by faculty (FQ-23).

<table>
<thead>
<tr>
<th>Listening Comprehension * Year Crosstabulation Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Weak</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Average</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Good</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reading * Year Crosstabulation Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Very weak</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weak</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Average</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Good</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Writing * Year Crosstabulation Table 5

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
</tr>
<tr>
<td>Writing</td>
<td>Very weak</td>
<td>Count</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>26.7%</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>Weak</td>
<td>Count</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>46.7%</td>
<td>50.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Average</td>
<td>Count</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>20.0%</td>
<td>.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Good</td>
<td>Count</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>6.7%</td>
<td>50.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>15</td>
<td>6</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Speaking * Year Crosstabulation Table 6

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
</tr>
<tr>
<td>Speaking</td>
<td>Very weak</td>
<td>Count</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>20.0%</td>
<td>16.7%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Weak</td>
<td>Count</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>66.7%</td>
<td>83.3%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Average</td>
<td>Count</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>13.3%</td>
<td>.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Good</td>
<td>Count</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>.0%</td>
<td>.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>15</td>
<td>6</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% within year</td>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Looking at the total responses of faculty members across the four skills, the results, in tables 3-6, indicate that faculty members view students as best in listening (50% ‘average’), then in reading (47.2% ‘average’), then in writing (44.4% ‘weak’) and last in speaking (63.9% ‘weak’).

a. Listening (Table 3)

Assessment of students across the four years in this skill shows responses of ‘weak’ and ‘average’: Year 1-60% ‘weak’; Year 2-66.7% ‘average’; Year 3-50% ‘average’; and Year 4-71.4% ‘average’.

The students’ performance falls in Year 1. This might be explained by a limited exposure to
English. In addition, it is normal for students to avoid taking the Service English Courses until late in their studies. It is, further, the situation that the two languages, Arabic and English, co-exist in the context of first and second years instruction.

b. Reading (Table 4)

Table 4 indicates responses of ‘weak’ and ‘average’: Year 1-46.7% ‘weak’; Year 2-33.3% ‘weak’ and 33.35% ‘good’; Year 3-62.5% ‘average’; and Year 4-85.7% ‘average’.

Reading appears to be significantly more difficult for students than listening. There is a remarkable decline in students’ abilities in Years 1 and 2, compared to the third and fourth years. Again, this might be explained by minimal exposure to English. Interestingly, their performance falls in Year 3. This might be explained by more demanding reading, increased difficulty in specialized subjects through the medium of English, and late enrollment in Service English Courses.

c. Writing (Table 5)

‘Weak’ and ‘average’ responses are shown in Table 5: Year 1-46.7% ‘weak’; Year 2-50% ‘weak’ and 50% ‘good’; Year 3-50% ‘good’; and Year 4-57.1% ‘weak’.

Writing is significantly more difficult for students in their late years compared with reading. The students’ performance falls in year 4, perhaps due to their exposure to more sophisticated type of writing, than in earlier years, such as writing essays and reports.

d. Speaking (Oral Contact) (Table 6)

Weak responses are shown in Table 6: Year 1-66.7% ‘weak’; Year 2-83.3% ‘weak’; Year 3-50% ‘weak’; and Year 4-57.1% ‘weak’. Although in Years 3 and 4 students make a noticeable improvement; it is not so marked.

Conclusion

The results show the following:

a. Listening clearly presents the least problem to students. This would be expected since most of their exposure to English, is in their lectures listening to lecturers.

b. Students seem unable to cope with the reading demands imposed on them, especially in their earlier years.

c. Writing and oral contact generally show a minimal improvement throughout the four years although these are rather in the early years.

In these areas, the English language programme needs to attempt to make a gain in improvement earlier so that students can derive maximum benefit from it.

8.3. Perception of English Language and study skill needs of Science students as viewed by faculty (FQ-22).

Language and study skill needs were investigated as perceived by faculty.

**FQ-22.** Rank the following English language skills according to importance from 1-4; (1 being the most important for your students and 4 being the least important).

<table>
<thead>
<tr>
<th>Skill</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>36</td>
<td>2</td>
<td>4</td>
<td>3.58</td>
<td>.649</td>
</tr>
<tr>
<td>Listening comprehension</td>
<td>36</td>
<td>1</td>
<td>4</td>
<td>2.33</td>
<td>1.242</td>
</tr>
<tr>
<td>Speaking</td>
<td>36</td>
<td>1</td>
<td>4</td>
<td>2.31</td>
<td>.856</td>
</tr>
<tr>
<td>Writing</td>
<td>36</td>
<td>1</td>
<td>3</td>
<td>1.86</td>
<td>.867</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 shows that, according to faculty, the most important needed skill for success at the university level is reading (M=3.58). This can be justified because students at tertiary level generally need to improve their reading ability. The vast majority of courses at the UOP require students to use a closely related course book in addition to lecture notes (94%), response ‘b’, question 6). Interestingly, an appreciable number of lecturers (27%, response ‘c, question 9) expect students to read from more than one source by also prescribing compulsory reading of books from the library.

Taking into consideration the amount of reading to be done in English, one realizes how close to reality the faculty ranking is.

Next to reading, Table 7 shows that faculty members rate listening comprehension second (M=2.33). Classroom lecturing is, indeed, a prerequisite for passing university requirements.

One justification for rating the speaking skill third (M=2.31) by faculty can be explained by the likely greater involvement of students in the oral problems when posing questions to clarify points, and responding to questions from lecturers, particularly, in later years. Another interpretation is that students who lack the ability to express themselves in English orally, and, thus, remain silent or reluctantly use Arabic, generally feel at a disadvantage compared to some other students whose spoken English gives them the opportunity and motivation to raise questions in the classroom. A further point of relevance here is that there is a consistent and dramatic desire by lecturers in all years (100%) to improve students’ ability in this area.

Table 7 shows that writing (M=1.86) is rated last. This does not mean that writing should be ignored from the language teachers’ point of view. More importantly, when giving lectures, faculty members expect students to take notes directly from speech. This suggests that skills are not viewed in isolation: within each of the four language skills, there is the need of specific subskills. For example, the subskills for listening comprehension involve understanding the teacher’s questions, following lectures to take notes, understanding examination questions, and eventually understanding discussions in conferences, television and radio. Indeed, the ability to take notes rapidly necessarily entails the ability to write notes and test answers fast enough under pressure.

**Conclusion**

From the discussion of this section, it can be noted the following:

a. The majority of lecturers use a reading level of prescribed course text book in addition to lecture notes. The main purpose of the course book is to supplement as well as clarify lecture notes.

b. However, there is a progressive tending to aim at higher reading levels, such as using compulsory reading of books/ articles from journals available in the library.
Interestingly a small percentage of lecturers aim at reading books/journals available in the library that students find themselves.

c. Yet, from the English and study skills point of view, it is necessary to aim at levels set by the Science Departments, since even Pharmacy students are required to take courses from these disciplines.

d. An improvement in oral contact is needed; students can speak English, but they don’t use it; students’ expression is inadequate.

e. There is a need for courses in study skills before (or while) students study science.

f. More involvement of English language instructors is needed.

8.3. Evaluation of the Service English Courses at the UOP from the faculty’s point of view.

FQ-24 Does your students’ proficiency in English show that the training they have received in the University English courses (099, 121,122) was: * Year Crosstabulation Table 9

<table>
<thead>
<tr>
<th>Does your students’ proficiency in English show that the training they have received in the University English courses (099, 121,122) was</th>
<th>Year</th>
<th>Count</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Satisfactory</td>
<td></td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Weak</td>
<td></td>
<td>11</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

The findings in Table 8 of this general survey suggest the English language program at the UOP is not satisfying the needs of the science students sufficiently to cope with the demands made on them. 83.3% of faculty members suggest that the English language programme is ‘weak’. 13.8% judge it to be ‘satisfactory’, and 2.8% of the faculty members view the quality of that training to be ‘good’. The percentage of the faculty’s dissatisfaction starts with Year 1-73.3%; Year 2- 83.3%; Year 3-87.3%; Year 4-100% (Table 9).
8.4. Factors that would help in improving the English language teaching situation as seen by the faculty (FQ-25)

FQ-25. Which of these would help in improving the English Language teaching situation in the content of General English (GE) and English for Specific Purposes (ESP)? Arrange according to importance.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasizing collaboration between language teachers and subject teachers</td>
<td>24</td>
<td>1</td>
<td>6</td>
<td>4.75</td>
<td>1.984</td>
</tr>
<tr>
<td>Replacing the existing English language textbook with other teaching materials that take into consideration students’ needs</td>
<td>24</td>
<td>2</td>
<td>6</td>
<td>2.29</td>
<td>1.367</td>
</tr>
<tr>
<td>Providing language teachers with special training</td>
<td>24</td>
<td>2</td>
<td>5</td>
<td>3.42</td>
<td>1.283</td>
</tr>
<tr>
<td>Creating learning conditions to motivate students</td>
<td>24</td>
<td>1</td>
<td>6</td>
<td>2.75</td>
<td>1.359</td>
</tr>
<tr>
<td>Studying English throughout all the years of students’ education at the UOP</td>
<td>24</td>
<td>1</td>
<td>6</td>
<td>2.58</td>
<td>1.816</td>
</tr>
<tr>
<td>Decreasing the number of students in language classes</td>
<td>24</td>
<td>1</td>
<td>6</td>
<td>2.33</td>
<td>1.523</td>
</tr>
</tbody>
</table>

The final question (question 25) of the FQ asks the faculty members to rank, according to importance from 1-6, factors that would help improving the English language situation within the General English (GE) and English for Specific Purposes (ESP).

Table 10 shows the Mean Score for each of the six variables involved in the improvement of the teaching situation. The majority of faculty members (M=4.75) ranked collaboration between subject teachers and language teachers first, followed by changes in the existing textbooks and materials of English language programme (M=2.29 Rank 2), then providing language teachers with special training (M=3.42 Rank 3), followed by the creation of learning conditions for the purpose of motivation (M=2.75 Rank 4), followed by studying English language throughout the
four years (M=2.58), and finally decreasing the number of students in language classes (M=2.33 Rank 6).

9. Conclusion and Implications of Communicative Needs Assessment

The needs analysis phase in this study finds its purpose in achieving the aims posed in the introductory part of evaluating and weighing the interactive variables that are involved in the English language program provided for tertiary level science students. In line with these purposes, this part centers attention on the following fundamental issues:

9.1. Motivation (Questions 1 & 2)

Returning to the analysis, Question 1 shows a positive response by all lecturers in relation to students’ scientific motivation. Thus, this is not a limiting factor in students’ attitudes towards learning English. Question 2 also shows a positive attitude towards studying science through the medium of English throughout the 3rd and 4th years of their courses. A further point that should be made is that, the interviews with faculty members reveal that all the course group lecturers are in favour of English as the medium of instruction especially to students in their 3rd and 4th years of study. Given this stance of how the concept of motivation is viewed, it would seem that the English language program could play an important role in helping to improve motivation, especially, in the lower years. It should also be assumed that students’ motivation can be highly aroused and retained if the language taught in Service English Courses is made closely relevant to their language and study need requirements in their areas of specialization. On the other hand, if they fail to follow instruction in their specialism delivered in English or are unable to read a textbook written in this language, the motivation for learning will soon weaken.

Seeking to establish ties between needs and motivation, Richterich (1974) suggests that the ‘lacks’ in needs analysis can be satisfied if prompted by some motivation.

9.2. Language Needs; The Four Skills

As stated in the introductory part of this study, it is only for research purposes that the four skills are separated. Indeed, all language skills are interrelated. For example, it is not possible for students to produce good written discourse, whether in examinations or in homework assignments, without the receptive skills needed to listen to lectures and read the appropriate book, as well as such productive skills as note-taking and asking for assistance when they meet difficulty.

Therefore, the conclusions drawn from the different sections of this analysis should not be considered in isolation when re-designing Service English Courses at the UOP. On the other hand, results of needs analysis will help in drawing up the relative importance of skills, i.e. a list of language and study skills for the science-based courses. Frydenberg (1982) suggests that the importance of the list of skills is that it will be developed into a course and specific objectives: what the students will be expected to do upon completion of the intended course.

The analysis and interviews revealed that students in Science Courses in general and those enrolled in 1st and 2nd years of study, in particular, find it difficult to follow continuous spoken discourse. Most have at best had very limited experience of listening to lectures in the medium of English. The feedback obtained from the faculty members during the interviews suggests that despite the fact that the ESP students have some background knowledge of the subject and may be able to predict a little of the content of the lecture, they have difficulties within the following areas: recognizing what have been said (decoding); understanding the main and subsidiary points (comprehending); writing down quickly the important points (taking notes).

Thus, there is a need to give students practice in note-taking techniques in Service English Courses by engaging them in lecture-type settings. Lynch (1994) and Rost (1990) support this
approach, suggesting that it is important to create opportunities for questioning and clarification in order to assure the learners are actively engaged in listening.

It is also very relevant to consider the content of a typical final exam, and the students' abilities in coping with particular linguistic skills. This has implications for writing skills that are important in assessment.

It is, therefore, important that English language Programme should provide students with the necessary language skills to perform to the best of their intellectual ability under examination conditions. This situation suggests an ongoing and close liaison between the Department of English and members of the Science Faculty. The latter will in turn have their own opinions about their own linguistic needs, as well as how much these should relate to the likely future needs of their graduates.

9.3. General Variables

9.3.1. The Importance of English

There seems to be unanimous agreement among subject teachers that the teaching of English is essential at the tertiary level; hence, a decisive factor of academic and occupational success. In the faculty members' view, the English programmes at the tertiary level must recognize the twofold nature of the need: General English (GE) to give a sound understanding of the language plus special English to enable students to plunge immediately into their special studies. It is also the case employed in terms of textbooks and references, examinations and students' written responses, and lecture note-taking. However, discussions, class interaction, and oral contact are carried out in English and Arabic. More importantly, Arabic is used in 1st and often in second year courses because, in the subject teachers' view, students cannot comprehend lectures delivered in English due to their low proficiency in this language.

In sharp opposition to the above situation, ESP students are in general less motivated, and more uncertain of their needs at the UOP. They, for example, avoid enrollment in Service English Courses during their 1st and 2nd years of study.

According to Allen and Widdowson (1974), in most cases, secondary schools provide insufficient instruction as a preparation for higher education, where students are required to make use of the language. Furthermore, at the university, the new comers who cannot pass the English Placement test, and are placed in intensive English Courses (Remedial Courses) are unmotivated by the feel that they start learning the same English at school all over again. For this reason, most students think of English in terms of deferred needs (Frydenberg, 1982). In Allen and Widdowson's (1974) view, such remedial courses seldom recognise that a different approach may be needed to match the essentially different role which English assumes at tertiary level. They assert that the main aim of advanced language teaching should be to activate the existing competence, and to extend it by relating their previously acquired linguistic knowledge to meaningful contexts of the language system in passages of immediate relevance to their specialized field of study, i.e. to their needs. In this case, the students acquire a practical mastery of a language (Pedagogic Grammar), and not knowledge of a specialization of the formal properties of language (Linguistic Grammar). The students' minds, then, are directed towards rational thought and problem-solving, and the grammar exercises are designed to focus on points which are particularly important in scientific texts.

In order to increase the students' awareness of the importance of English and the role it plays in their future professional life, it is suggested (The British Council, 1984) that specialist teachers, ESP students and language teachers must collaborate to remedy the situation.
9.4. The English Language Programme

The author will consider the specialist teachers’ dissatisfaction with the English language program. They have doubted whether or not English courses can adequately prepare students to handle specialized needs. Criticism has been raised concerning the students’ training and preparation.

The responses of faculty members, backed up by the researcher’s view, indicate that there is an urgent demand for redesigning the current English language programme for Science students at the UOP so that students can meet their study skill requirements.

The implications of the above conceptions immediately call for a concern with the following issues:

(a) Selection of Books and Content Materials

Before embarking on the task of redesigning programmes, objectives of the projected courses should be clarified in order to be able to select materials that fit a particular situation, and a particular group of students.

The adoption of a particular text, or section of texts should be complemented by modules including more specific materials, both with reference to topic and functional content. We need to select materials which will facilitate the transfer from a knowledge of sentences, grammatical competence, to communicative competence (Hymes, 1972). We need to teach how sentences are used while performing communicative acts (Campbell & Wales, 1970).

It should also be noted that the Department of English at the UOP can benefit from the experience of some Arab universities in developing teaching materials directed to the specific needs of foreign students in the Middle East (e.g. Bates, 1979; Swales, 1971; Robinson, 1985; Andrews, 1984; Tawfiq, 1984; Adams Smith, 1984; Hemissi, 1985; in Zughoul and Hussein, 1985). Benefit can also be obtained from similar experiences in English-speaking countries (e.g. Candlin et al., 1979; Jordan, 1997; Johns, 1981).

9.5. A Radical Change in Methodology: The Need for a New Orientation to Language Teaching

The decisions to be made in designing courses for Science students at the UOP may be determined by short-term and long-term objectives in order to fill the gap between the real situations (specific) and the far-reaching situations (general). Language teachers, then, must be aware that the behavioural objectives, or intended learning outcomes, stated are expected to change the behavior of students resulting from teaching techniques and methodology, followed by evaluation (Frydenberg, 1982).

This can be realized by the development of learning strategies for coping with general and specific situations. That is to say, specific content, designed to satisfy the needs of students, can be utilized for the development of generalized learning strategies to solve problems in particular tasks related to real-life situations. The purpose is to turn students into independent individuals by changing old habits of memorization and repetition of teacher-transmitted knowledge (Brumfit, 1979). Therefore, whatever techniques are used, attention should be directed at knowledge and the application of that knowledge, bearing in mind that application is the culmination of learning and teaching, since according to Bloom’s Taxonomy (1956), knowledge is recalling memorized information, while application means learning to master skills and strategies in order to handle new material and situations (Frydenberg, 1982).

The above discussion immediately calls for a radical change in methodology which will entail a change in the role of teacher and student. The teacher’s role is to create learning conditions (classroom management) to motivate students and support them, encouraging them to be independent and responsible for their learning. Language learning is a great risk-taking endeavor for students in which they must make many errors in order to succeed. ESP/EAP calls
for a teacher who is flexible and adaptable to meet the specifiable need of his particular group of learners. This freedom of choice, according to Strevens (1980), has to benefit from the flexible approach ‘eclecticism’ (borrowing freely a variety of sources). To Widdowson (1983), any methodology is acceptable “as long as it gets the information across.” In Sinclair’s (1985) sense, “this is the heart, and certainly art of teaching.” It is not surprising that much of the success or failure of methods hinges on the proficiency of the teacher. The implication is that, process of selecting teachers should be carefully done. More importantly, teachers who have previously attended ESP training programs should be selected.

In order to satisfy the need for a new orientation to language teaching, the following issues in methodology should be considered when redesigning an ESP/EAP course for science students at the UOP.

(a) There is a need for a shift of emphasis from the structural to the communicative features and the rhetorical functions of language. The purpose is to show students how to use language as a tool in the study of scientific and technical subjects, and the language system is used to express scientific acts and concepts (Allen and Widdowson, 1977). What Allan and Widdowson mean is that the teaching of any ESP/EAP course should involve training students in developing two kinds of basic abilities in language:

(i) The ability to recognise how sentences are used in the performance of acts of communication. It is the ability to understand the rhetorical functioning of language in use, i.e. the rhetorical coherence of discourse to express a certain reasoning process: how to classify, describe, generalize, make hypothesis, drawing conclusions, and so on.

(ii) The ability to recognise and manipulate the formal devices which are used to combine sentences in creating continuous passages. In other words, it is concerned with the grammatical cohesion of text.

(b) In this paper, “The Teaching of Rhetoric to students of Science and Technology”, Widdowson (1971) refers to the importance of making students aware of the need to pay as much attention to rules of use, i.e. the speaker’s communicative competence, as to rules of grammar, their grammatical competence. In consequence, Widdowson (1972) suggests that teaching English as a medium for science and technology must necessarily involve ESP/EAP teachers in the teaching of how scientists and technologists use the code, or the system of language to communicate. In other words, communicative competence, or rules of use, especially to EFL students, have to be taught. According to Widdowson (1971), communicative competence is the language which characterizes the learners’ knowledge of rhetoric. Consequently, rhetoric is the description of communicative competence in the same way as grammar is the description of grammatical competence.

9.6. The Collaboration between the Language Teacher and Subject Teacher

Though the central task of language teachers is to teach language not content, it is still difficult to divorce the one from the other if they are to teach the language effectively. In this context, Widdowson (1979) firmly held the view that the ESP teacher would be best advised to seek methodological guidance from the science teacher.

In the case of the UOP, collaboration between the two groups of faculty is lacking. More importantly, subject teachers complain that their students achieve minimal value from the Service English Courses.

In light of the forgoing discussion, it should be assumed that joint meetings of language teachers and subject teachers should be emphasized.

For example, content-area specialists may be asked for samples of English Language materials used in subject-matter teaching: textbooks, research articles, references, and, if possible, class handouts and sample exercises. It may be useful to look at copies of old exams and materials
which students used. These can be adapted and used in the ESP class to reinforce what is taught in the content-area classes.

The subject matter faculty member can be asked to show the ESP teacher any equipment and laboratory facilities used by the students. The ESP teacher may spend some time in the laboratory to determine first-hand the kinds of interactions that are important to the students in their acquisition of English.

9.7. Teacher Training

Fortunately, in general, the English language teachers in the Department of English at the UOP have an excellent command of English and high standard of language use which would be necessary for people working in GE or ESP areas, especially those involving oral production. This is not an unimportant matter, since using authentic models of language in the classroom involves a native-like capacity for language use.

However, the English language teachers who teach ESP courses may face specific difficulties they have not been trained to cope with. Most importantly, teachers, in general, should be sensitized to the importance of teaching students the use of the English language for communication, i.e. language use (Widdowson, 1978).

10. Summary and Recommendations

This study has been carried out with a view to identifying the English language problems and study skill needs of the EFL science students, enrolled in the Service English Programme offered by the Department of English at the UOP. The study describes the various methods by which the nature of these problems can be identified and the subsequent needs defined.

The paper conducts the research necessary, bringing to attention a variety of difficulties in the teaching of English to EFL science students. These difficulties are drawn together with the aim of creating a motivating background for the development of a model of the Service English Programme. A model that can help foreign science undergraduates to take a more active part in the various communicative situations they find themselves in while studying their specific subject courses. It is the researcher’s contention that the provision of this background will show how an appropriately-designed syllabus might remedy the problems encountered.

The research design of the field study comprises three important stages:

(a) The general and specific aims of the study for the development of a model of the Service English Programme. The purpose is to find answers to an interacting set of variables included that deal with students’ motivation, students’ present abilities; the language of study skills needed, evaluation of the existing Service English Programme offered to students and remedies suggested.

(b) The construction of the research instruments and selection of the sample. The surveys consist of one Questionnaire addressed to subject teachers in all science departments and individual interviews, producing a great deal of useful information on students’ English proficiency and other important details. The testing instruments also include testing the internal validity of the questionnaire and conducting the pilot study.

(c) The administration of the research instruments includes data collection and analysis. The statistical technique used for the purpose of this study is SPSS, and tables are used to give the results, followed by a conclusion for each table. 25 questions are devised to identify the problems encountered by the students in using English.

In this study, needs analysis has achieved the aims stated in the introduction. These aims are related to an interacting set of variables included. Going through the findings of these complex variables, answers are found to the following issues:
It is obviously shown by subject teachers that the undergraduate scientific motivation is not a limiting factor in students’ attitudes towards learning English. The analysis also shows a positive attitude towards studying science through the medium of English throughout the four years of their studies. It seems that the language programme could play an important part in helping to improve motivation in the lower years.

As to the issue of students’ current abilities in the language and study skills needs, the subject teachers view students as best in listening comprehension, presenting the least problems to them, except for the first year students. Reading seems more difficult to students than listening; students seem unable to cope with the reading demands imposed on them, especially in first and second years. Writing is significantly more difficult for students in their late years compared with reading. Students’ performance in speaking is weak in all years, although in the third and fourth years students make a noticeable improvement but not so marked. Speaking of language skills, it is worth noting that, and as was noted earlier, the language skills have been, artificially, separated for research purposes only. Language skills should not be considered in isolation when designing courses, but as a whole.

Considering the science students’ study skill needs, results of needs analysis show that these students need to be able to follow lectures and take notes, to be able to read the prescribed sections of their set books, to be able to write reports of the laboratory work they have done, and to understand examination questions and write appropriate answers. The greatest initial need of these students is to grasp the ways in which the basic notions of science are expressed in English. Many students who pass the Placement test are unable to handle the science-oriented material taught in the credit courses. They have difficulty in following the various forms used to express the different language functions and the rhetorical functions considered relevant to the science students. Finally, one cannot ignore the social English needed by science students for communication.

Considering the evaluation of the Service English Programme, and the subject teachers’ dissatisfaction, there is an urgent need for redesigning current English language courses, based on the solid results of the needs analysis in this study in order to meet the urgent demands of the science students at the UOP. In consequence, the paper investigates some key issues related to materials selection, methodology, motivation, and the role of the ESP/EAP teacher, including a teacher-training programme.

Finally, remedies have been suggested to raise the standard of the science students. The following related suggestions are selected as they rank high in the results of analysis. The majority of faculty members (M=4.75) rank collaboration between subject teachers and language teachers, first, followed by changes in the existing teaching materials of the English language courses (M=4.29), then providing teachers with special training (M=3.42).

Concluding notes on recommendations mainly involve the usefulness of repeating the analysis at regular intervals, involving not only the identification of needs of science students, but also all students drawn from all faculties at the UOP, in order to keep informed on the language needs of all students. The paper, mainly, concentrates on calling for an improvement of communicative skills and the rhetorical functions in performing communicative acts as described previously in detail. Providing practice in the production of communicatively acceptable utterances, and developing in the students an awareness of language functions and the factors involved in communication are of crucial importance. An integrated course framework is the target in which the general strategy is to base each teaching unit on a rhetorical function relevant to the science students in particular, and all ESP/EAP programmes, in general, rather than a selection of linguistic categories found to characterize registers of English.
References


