

Teaching English for specific purposes to computer science students with reading difficulties

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Abstract

This is a case study conducted to investigate difficulties that may hinder third-year computer science students in their development of English for specific purposes' reading skills and to grasp the different factors that may influence students negatively. Data were obtained from a questionnaire which enabled the researcher to obtain valid information about the learning situation of the target population. Through the use of this tool, students' preferences and difficulties in the area of reading were analysed. The results revealed the need to increase students' exposure to reading and provide support with vocabulary. Hence, some recommendations and strategies are provided to remedy the situation and boost the students' learning process

Keywords: Computer science students, ESP vocabulary, reading difficulties, reading strategies.

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1. Introduction

Good teaching requires competent teachers who can make use of a range of approaches to language teaching and learning to improve their students' level and competences. Although there are many approaches, methods and techniques in language teaching, we know that none of these theories can be applied in totality to get the desired results. Hence, it has always been the case that the language pedagogy professionals have to alter their own methods to teach the foreign language by combining the most relevant aspects of different approaches (Kunene & Mthethwa, 2020). A successful teacher constantly seeks ways to help learners to take risks in order to push their learning further. Teachers should make the classroom an enjoyable place to learn, focusing on learner centredness and allowing learners to share in the choice of material, topics and activities.

One of the most challenging experiences in teaching English for specific purposes (ESP) is finding useful instruments for helping students develop relevant language skills, particularly in the case of ESP learners who face particular obstacles in dealing with the language. Teachers engaged in ESP fields need to be aware of students' special needs and find solutions that will work in the ESP classroom.

Reading, like the other language skills, is vital for most learners of English. In the case of computer science master's students, good English reading abilities can make an enormous difference to their academic achievements and career prospects. It is important for teachers to provide support for students in order to help them to become more skilled in reading English, and also to discover the main difficulties they encounter when they are asked to read. Third-year computer science students often seem to struggle with this aspect, as they lack reading skills in general, and find the task of reading in a foreign language very daunting. Therefore, the present study attempts to find answers to the following research questions:

√ What hampers third-year computer science students' development in reading in English?

√ What are the strategies that ought to be used to help students overcome their difficulties in reading and better their situation?

This paper analyses student difficulties with ESP reading skills in computer science and other technology degrees and proposes adequate solutions and remedies.

2. Reading as a language skill

Reading is one of the four main language skills that is defined as the cognitive ability to read and understand written text (Montaner, 2020). Reading also provides a means for learning a language, as it allows readers to process language input in their own time, but to become an effective reader for professional purposes the student also needs to learn various component skills in order to handle the text efficiently and benefit from it. In this sense, Nuttall (1996, p. 4) states that 'reading is the process of getting out of the text as nearly as possible with the message the writer puts into it.' Reading requires the ability to recognise the relationship between different elements in the sentence. But readers also need to learn about textual organisation and genre, including the relationship between information in different modes. Effective reading implies a visual recognition of words, patterns, sentences and discourses; thus 'reading can refer to the ability to recognise sentences and their meaning as linguistic elements or it can refer to the ability to recognise how they function as parts of a discourse' (Widdowson 1978, p. 63). Moreover, experienced readers also learn prediction skills, so that in addition to grasping what is written, they can also predict what will come later in the text. This type of meta cognitive skill facilitates the reading process and makes for greater speed of processing.

2.1. Types of reading

It is important to mention that most experts in English teaching distinguish two basic types of reading: extensive reading and intensive reading. These two approaches to teaching reading have a

complementary purpose; however, they are distinct in terms of some characteristics. The former depends on every learner's interest and tendency. It is reading for the pleasure of reading, not focusing on every single detail in the writing. In this vein, Bamford and Richard (2004, p. 4) claims that 'extensive reading is a language teaching procedures where learners are supposed to read large quantities of materials or long texts for global understanding, the principal goal being obtaining pleasure from the text.' Intensive reading, however, means reading in detail for a complete understanding of every part of the text. It centres on getting the text's main idea. According to Brown (1988, p. 400) intensive reading 'calls attention to grammatical forms, discourse markers, and the surface structure details for the purpose of understanding literal meaning, implications, rhetorical relationships, and the like.'

2.2. The importance of reading

Although it is clear that reading covers the ability to comprehend and interpret the information contained in the written passage, and much has been written about reading in a first and second language, surprisingly little attention is paid in the literature to the actual process involved in reading, or to what can be done in EFL or ESP contexts to facilitate the acquisition of sound reading skills. This is all the more surprising since reading is a vital stepping stone to improving other language skills. Reiss (1983) underpins that 'the more our students read, the more they become familiar with the vocabulary, idioms, sentence patterns, organisation flow, and cultural assumptions of native speakers of the language' (Yavas Celik & Yavuz, 2020).

In particular, no one can deny the role of reading in order to improve one's writing. The relationship between the two skills is apparent in many teaching–learning contexts. Since, as Randa (1990, p. 174) says, writing is 'reader-based', and 'the writer is seen to be engaged in procedural activities for making information accessible and fulfilling the reader's expectations', it is likely that a student who is a good reader will have an advantage when it comes to writing. After mastering the reading skill, students should be able to write the language better. But in order to write better, students must learn to read better.

3. Methodology

3.1. Research design

This study aims at exploring, describing and explaining third-year computer science students' English needs, taking into consideration their language skills in general and their reading skills in particular. It thus uses a case study from the ESP course taught in the Department of Computer Science at Maseara University, in order to depict and conceptualise students' linguistic needs. As Yin explains (1984 cited in Nunan 1993, p. 76), the case study is 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident.' The choice of the case study method was also motivated by the fact that the researcher intended to go deeper and have a specific vision about a real-life phenomenon facing teachers in her context, i.e., the reasons why ESP students experienced difficulties when asked to read for comprehension. The fact that the teacher/researcher had close contact with students made it possible for her to elicit information about the situation and problems the students faced, and to use her experience of the course, the students and the context to interpret the phenomena under investigation.

3.2. Participants

The research informants were 15 third-year computer science students. It is worth mentioning that, in this study, the sample was randomly selected to define the whole population. There is always an important element of variation when dealing with educational phenomena, and it is usually difficult to

obtain a completely representative sample. Although this is a small sample, Holloway and Wheeler (2002, p. 128) assert that ‘sample size does not influence the importance or quality of the study and note that there are no guidelines in determining sample size in qualitative research’. As a result, the researcher believes that the number of participants was sufficient, and helped her gain valuable data that would provide insights into the students’ difficulties.

3.3. Data collection (students’ questionnaire)

The questionnaire is one of the most usual research instruments for gathering data from individuals. It is an instrument that has a purpose related to the objective of the research. In Richards’s words (2005, p. 60), ‘questionnaires are one of the most common instruments used. They are relatively easy to prepare, they can be used with large numbers of subjects, and they obtain information that is relatively easy to tabulate and analyse’.

A semi-structured questionnaire was distributed in December 2019 to 15 students to identify their language needs, with a particular emphasis placed on reading skills. The ten questions probed into students’ problems and preferences regarding the English language (Ishnaiwer, 2020). The main aim of the questionnaire, however, was to define more closely the difficulties students encounter when dealing with reading skills.

3.4. Results and discussions

Q. 1. Students’ previous experience of learning English

This question revealed that not all of the students had had the same years of instruction in the English language: 22% of the informants had studied English for 13 years, i.e., from the primary school till the university level. The others, however, had only studied English for a period of nine years. Table 1 illustrates the situation.

Table 1. Students’ Instructions in the English language

Number of students	Frequency	Percentage
5	13 years	33
10	09 years	66

Q. 2. How do you feel as an ESP student in English sessions?

In this question, it was obvious that the majority of third-year computer science students valued and enjoyed English sessions. Only 14% of them showed dissatisfaction and acknowledged that they got bored in English sessions. Figure 1 shows the overview.

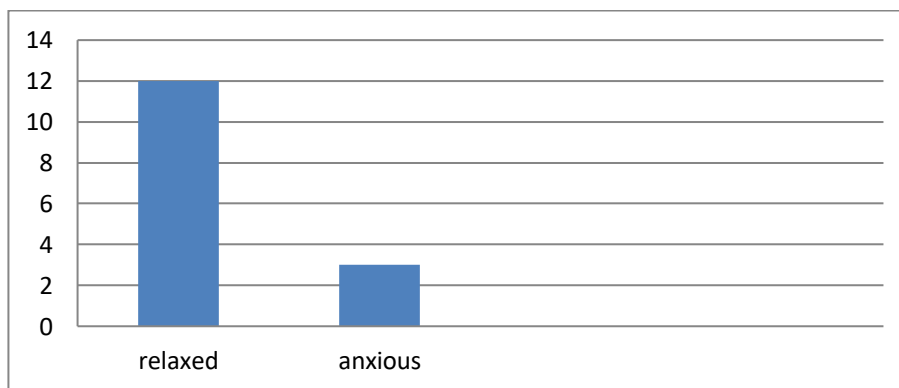


Figure 1. Students’ attitudes towards the English language

Q. 3. How often do you practice reading?

As far as the reading skill is concerned, in this question, the researcher wanted to know how many times students read English texts. In fact, all of the informants agreed that they did this once a week. They admitted that the ESP teacher focused more on speaking. They considered reading as an obstacle since they did not understand what they had to read.

Q. 4. Which skill do you prefer to study more?

The answers to this question revealed that the majority of the informants preferred the speaking skill over reading since they felt free to speak and had no anxiety. They agreed on the fact that reading for comprehension was more complicated than speaking, as one encountered new or difficult words while reading. Table 2 explains more the issue.

Table 2. Preference of speaking over reading

Preference of speaking over reading	Frequency	Percentage
Speaking	12	80
Reading	03	20

Q. 5. Students' reactions while reading

From this question, it was obvious that the majority of the informants felt stressed while being exposed to reading silently, with a percentage of 80%. They simply had a considerable anxiety towards reading because of the unknown vocabulary and new terms encountered in the teacher's handouts. Only 20% of them confirmed their self-confidence while doing their reading tasks. Table 3 presents well the situation.

Table 3. Students' attitudes while reading

Students' feelings while reading	Frequency	Percentage
Anxious	12	80
Confident	03	20

Q. 6. Do you appreciate reading?

This question reflected the real feelings of third-year computer science students since 86% of them said that they hated reading in English and that skill often burdened them. Only 13% of the informants claimed that they did not mind reading in English and they volunteered because it was an important skill. This is explained in Table 4.

Table 4. Students' feelings towards reading

Students' appreciation of reading	Frequency	Percentage
Yes	02	13
No	13	86

Q. 7. Do you face difficulties while reading?

The answer to this question showed that 80% of the informants confirmed that they encountered difficulties while reading, commenting that it was the second most difficult skill after writing. They added that they faced problems with new words and terms as they were not familiar with computer science terminology. Only 20% of them agreed that they sometimes had difficulties, but they had to read in English to train themselves to communicate effectively. Table 5 explains the same.

Table 5. The admission of having difficulties while reading

Students' difficulties while reading	Frequency	Percentage
yes	12	80
No	03	20

Q. 8. List the main problems students can face while reading

Third-year computer science students confessed that they faced great difficulties while dealing with reading. They were asked to classify the reasons according to their priority. In fact, the majority of students (80%) saw that the first reason was the new words they face while reading and the inability to understand text related to their field of study (Table 6). In addition, the lack of practice at free reading was seen as the second reason that hampered their reading skill development (13%). A few students acknowledged that they did not read in the English language and this might create problems in reading comprehension sessions. The last reason students mentioned was their lack of computer science vocabulary.

Table 6. Causes of students' problems in reading

Causes of difficulties in reading	Frequency	Percentage
Facing ambiguous words	12	80
Lack of practicing free reading	02	13
Lack of vocabulary	01	07

Q. 9. What language skills motivate you most?

The answer to this question suggests that nearly all of the students (86%) were extremely motivated when dealing with both speaking and listening skills, since they allowed them to express themselves without fear or anxiety. They added that they sometimes used even their mother tongue in expressing themselves during these sessions. Speaking was followed by the reading skill, since 13% of them liked reading in English and felt very interested in reading in front of their classmates even though they made mistakes. Concerning the writing skill, it scored lower (7%) for it represented the most difficult task which made the students very anxious. The majority of the informants expressed their boredom about writing. This is well illustrated Table 7.

Table 7. Students' motivation while dealing with the language skills

Students' preferences	Frequency	Percentage
Listening and Speaking	12	80
Reading	02	13
Writing	01	07

Q. 10. Do you have a desire to overcome your reading problems?

The striking point about this question's results is that 86% of third-year computer science students showed a great interest in finding solutions to their reading problems since in reading exams they most of the time were asked to read and answer comprehension questions. Hence, they insisted on taking some remedial actions to develop their reading skills and lessen their anxiety while reading to an audience. Two students admitted that they did not care about having problems in reading since they did not know even how to read in the English language.

4. Conclusion and recommendations

In this study, the researcher used a students' questionnaire to elicit information about the teaching of ESP in general and the reading skill in particular. She desired to know more about third-year computer science students' deficiencies students when reading for comprehension. The results were interesting since they captured useful information about students' problems in English sessions. None of the informants could deny the importance of the English language in their field of study. They insisted on English as an important foreign language that needed great attention since they knew that it would be useful in their future jobs. The questionnaire results revealed great anxiety felt by almost all the students while being asked to read and answer and the questions. Since reading is one of the prominent language skills, ESP students need to be aware of its importance. At the university level,

ESP students always deal with reading activities that may seem dull. However, they need reading as they are exposed to materials and articles written in English which must be understood with applying appropriate and effective reading strategies. In particular, vocabulary was identified as a problem, and so ESP teachers need to develop a two-pronged approach: they must provide exercises and teach strategies to help students acquire a larger specialised vocabulary, and also show them how to cope better when they encounter new words in the text.

4.1. Motivating students to practice reading

Motivation to learn can be boosted by positive experiences of study and achievement. Certainly, the teacher's behaviour represents the powerful motivation tool, since he/she is the one who gives and transfers knowledge to the students, i.e., he/she is not simply the source of information, but must act to support the students while they are acquiring new knowledge.

ESP teachers play an important role in the development of students' motivation. If teachers present reading texts and motivate students to practice reading, they will surely develop a higher level of proficiency and positive attitudes in the learning process.

4.2. The use of ICTs

It is important to mention that ESP teachers' attitudes towards using ICTs are essential. Regarding new technologies in teaching/learning the language, interactivity, the use of authentic materials and new resources should be well understood by teachers. ESP teachers must be well trained and maximise their benefit from the use of ICTs in teaching the four skills in general and reading in particular to fulfil the task of teaching effectively.

ESP teachers, then, should understand ways of using both computers and the internet to prevent the risk of teaching/learning failure. Therefore, they must stop considering the use of the internet as a threat and learn how to operate various tools. Knowing how to handle these affordances will give us more chance of becoming highly efficient and productive teachers.

4.3. Teaching–reading strategies

Both EFL and ESP students need effective strategies for learning language skills. ESP computer science teachers should teach and apply reading strategies that allow students get the desired meaning from the text. Teachers should be well trained and qualified in designing a reading comprehension lesson, taking into account the students' needs.

It is vital to teach ESP students strategies to promote comprehension, since the majority of them struggle in finding the meaning of unknown words while reading a text. It is a must to teach them reading strategies that help overcoming their problems. Many researchers opt for strategies such as: skimming, scanning, predicting, inferring and summarising. These all help students to be more skilled in reading. Since vocabulary appears to be a problem, it is also essential to teach students guessing strategies so that they can deduce the meaning of a word from its context.

Skimming and scanning can help ESP students develop their reading abilities in the sense that they allow students to get an overview of the article or identify relevant sections of the text. ESP teachers should teach the two strategies to enable their students to get information rapidly, thus lowering their sense of frustration.

4.4. Teaching computer science terminology

All scientific fields have a certain terminology related to their field of study. Third-year computer science students should be made familiar with terms about computing, in order to be able to manage

in ESP situations and read business documents more easily. ESP teachers should be well trained to identify relevant ESP and develop exercises in order to equip students with specific terms. The fact that third-year computer science students often encounter problems with unknown words while reading underpins the need to make them aware of specific terminology. Having definitions and explanations of terms, in the form of a glossary or specialised dictionary would also be very useful for the development of the students' reading skills.

To sum up, the researcher is convinced that learning the English language must be encouraged in scientific fields where it is important, so that future professionals can cope better with the new demands of globalisation. It is important to develop reading in ESP classes, and so ESP teachers should be well trained and competent to deal with reading strategies applied to specialised texts, and related competences.

More importantly, in the concrete case of Algerian universities, it is essential to make use of specialised ESP teachers to give students valuable instructions and methods, boosting their language skills. Those teachers have to use modern methods of teaching, enhanced by audiovisual affordances, which will make the teacher's task easier.

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