

Paper Title: Investigating Problems Students of Mathematics at Adrar University Face in English Courses (2023-2024)

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Received: 10/07/2024

Published: 10/12/2024

Accepted: 05/11/2024

Abstract

English has become a medium of instruction of other all over the world. The present study aims to find out the difficulties that mathematics students encounter in their ESP courses. To conduct our research, a quantitative method has been used; 465 students were assigned to fill out a questionnaire. The collected data have been analyzed with SPSS. The findings reveal that the deficiencies that students have in their English courses are due to the four skills of language (listening, speaking, reading, and writing), lack of vocabulary, and the low level in grammar.

Key Words: ESP; course; deficiencies; vocabulary; grammar.

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Introduction:

English for Specific Purposes, which might be the most effective and efficient language teaching approach, applies to all disciplines by providing specific etymology for them. According to Mackay and Mountford (1978: 2) “ESP is generally used to refer to the teaching of English for a clearly utilitarian purpose.” (MACKAY & MOUNTFORD, 1978) That is to say, English should be taught to achieve specific language skills using real-life situations, in a manner that allows students to use English in their future profession, or to comprehend English discourse related to their area of specialty. It gained such a popularity when it mingled between former teaching-learning theories to come up with a new-born method, added to it learner-centeredness, a pillar of ESP. In this present paper, we are going to briefly talk about a modern notion of ESP and its subfields, portrait it, shed light on its common and different features with some ELT approaches, review and critique the most two famous definitions of this discipline, and finally direct our focus to its integration as a course devoted to mathematics students as a means of instruction, the latter being the focal point of this paper.

According to the author, ESP is an English Language Teaching Assistant (ELTA) that treats current and/or future academic or occupational needs of learners. So, what are those needs? First, in its known definition, it is totally different from genre and skill which fortify it when it is used for a specific purpose, either for academic or occupational purposes. According to Swales (1990), genre refers to a spoken or written product of language. Skills are not only restricted to listening, speaking, reading, and writing (LSRW), but also pervade planning, noticing, problem solving, and so on. Second, materials and methods used in the process of teaching unify with pupils' needs to make up two faces of the same coin. Methods are the ones we are familiar with such as Grammar Translation Method (GTM), Direct Method (DM), and Competency-based Teaching CBT (SWALES, 1990, pp. 1-2), while materials can be case studies, data collection, or experiments. Trainees' needs depend on genre, skills, methods, and materials.

There are two main subfields of ESP: EAP and EOP. The former (English for Academic Purposes) is itself divided into English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP), and the latter (English for Occupational Purposes) has two sorts: English for Professional Purposes (EPP) and English for Vocational Purposes (EVP). Scholars like (J. Flowerdew) pointed that there are more narrowed subfields of the aforementioned sub-branches of ESP. (DU & ZHOU, 2019, p. 2)

If we try to portrait ESP, we will figure out that it is: First, a learner-centered approach; it embodied such a feature because learners themselves identify their target needs. Second, ESP is a multidisciplinary approach; it is based upon the perspectives of scholars in other disciplines through teaching. Third, it is a discipline

that spans both theory and practice. ESP practitioners adapt such an approach to real-world setting when the number of trainees' needs is bigger.

When ESP came as a remedy to the previous approaches; it was seen by most people as being ideal, but contemporary approaches and methods came to undercut it and to complement it. Among those approaches are Task-based Language Teaching (TBLT), which focused on learner-centeredness and linking what is learnt in class with the real world on one hand. On the other hand, Content-based Instruction (CBI), that was derived from Communicative Language Teaching (CLT) is based on the idea that learners will acquire language when they are exposed to highly motivating topics that they themselves may choose, and engage in those topics. (Brinton, SNOW, & WESCHE, 2003). To illustrate, if you teach students of mathematics their subject matter in English, they might enjoy the type of English being used since it is their specialty.

Using English as a medium of instruction for students of mathematics has faced a plethora of dilemmas in Algeria. Since the target population is English as a Foreign Language (EFL) learners of English, they encounter two problems: language proficiency and the appropriate procedure to follow while teaching ESP. If ESP practitioners are competent enough in General English (GE), they had better test their students' proficiency in English. Afterwards, they can come through the next phase of English as a Means of Instruction (EMI) application; the second stage will be harder since the lecturer must be competent in mathematics as well as in English.

This piece of research will attempt to investigate the problems that students of Mathematics at Adrar University face in their English courses on one side. On the other side, on the light of the learners' deficiencies, we are going to make the department of English and that of Mathematics bridge to designing effective and efficient ESP courses for mathematics at Ahmed Draia University of Adrar (Algeria). The designation of this subject will be based upon the students' perspectives towards their English lessons in terms of their linguistics competence and readiness to study English, teaching methods, and the angles the tutors have to emphasize in their lectures. Based-on the above introduction and mainly on the research problem we have elaborated the following questions:

1. Does the type of English taught fit with their specialty?
2. If not, what solutions can students suggest to help their teachers design a relevant syllabus?

Research Hypotheses

1. We assume that students are competent enough to study English despite being concerned with mathematics.
2. The type of English being taught at mathematics department could be relevant to this domain.
3. Students may highlight the focal points that they need in their English courses to assist their tutors design appropriate courses including their needs.

In order to find a way out to solve the problem in hand, the quantitative method has been used through a questionnaire and anonymous observation as well.

I. Literature Review

Nowadays, most countries around the world are concerned with content subjects, along with mathematics, in English; this process is referred to as EMI (English as a medium of Instruction). (KURNIAWATI, 2021, p. 4) We were one of the forerunners to investigate the challenges that students of mathematics at Adrar University encounter in their ESP lessons. In order to have an insight about that, we reviewed the sorts of difficulties of teaching and learning mathematics in English on the light of some previous works mentioned in the following paragraphs .

In an article titled “Exploring Students’ Learning Needs: Expectation and Challenges”, POEDJIASTITUI and OLIVER (20017) tried to find out the reasons behind students’ minimal English proficiency achieved in their ESP Courses. To reach the goal of their study, the researchers used a mixed methods approach, specifically; large-scale, quantitative data was obtained using surveys circulated to 1000 students at University of Muhammadiyah Malang, Indonesia. There are two main causes that could generate obstacles of teaching mathematics in English on the teachers’ and learners’ perceptions in some universities. The first challenge is due to the low language proficiency on the part of trainers and trainees on one hand. On the other hand, the previous pitfall of proficiency, will naturally lead to classroom mismanagement and disinterest by learners. (POEDJIASTITUI & OLIVER, 2017)

Another survey was carried out by Máire Ní Ríordáin & John O’Donoghue in 2008, seeking “The relationship between performance on mathematical word problems and language proficiency for students learning through the medium of Irish”.(p. 11) Their research primarily focused on students (Gaeilgeoirí) in the transition from Gaeilge-medium mathematics education to English-medium mathematics education. The findings emerging from their study provided strong support for Cummins’ Thresholds Hypothesis at the key transitions—primary- to second level and second-

level to third-level mathematics education—in Ireland.. (RIODAIN & O'DONOGHUE, 2008)

ADONIOU, in the same line, issued an article under the title “Language, Mathematics, and English Language Learners” in 2014 dealing with integrating English with subject matter content, namely mathematics, in undergraduate students’ courses. He stated that the challenge for English language learners was acknowledged in the latest curricula in the USA Common Core Standards and the Australian Curriculum, but ways to manage those challenges were not proffered. (ADONIOU & KING, 2014)

Another study that we found insightful to our field of research was investigated by Olga VAVELYUK; she published an article titled “To integrate successfully: Language and subject studies in ESP teaching” in 2015. The chief purpose of her study was students mingle between their specialty’s courses of science and ESP lessons; such process is going to result in a successful integration into international academic community. In order to achieve the purpose of her study, VAVELYUK based her research methodology on an adjunct Content and Language Integrated (CLIL) model where language teaching runs parallel to the content. She could, by the end of her survey, design an ESP course for mathematicians with a special emphasis on calculus. (VAVELYUK, 2015)

The aforementioned contributions which we reviewed to solidify our literature review were interesting. What made them more important than old investigations is that they came to deal with their drawbacks on one hand and to analyze students’ needs in the field of mathematics. Consequently, the scholars that we have talked about could come up with relevant ESP courses with respect to the target population’s rate of readiness. In short, contemporary researches in the field of ESP might be more successful than the old ones, but the latter are considered a pillar on which we base our thinking.

II. Research Method

This paper highlights the obstacles that block mathematics students in their English courses at Ahmed Draia University of Adrar (Algeria); a quantitative method was adopted to collect data. In spite of the fact that all specialties that existed in the Faculty of Science and Technology (Computer Science, Mathematics, Biology..... etc.) were concerned with English courses, the researchers have targeted students of mathematics (465 students) in the Academic Year 2023-2024.

III. Respondents

We considered only those who filled out our questionnaire as a sample (about the fifth of the whole population); they all belonged to mathematics section of the academic year 2023/2024. Students were assigned to fill in an electronic questionnaire designed in Google Form.

IV. Instruments

Anonymous observation, interviews, and questionnaires are helpful means of data collection. (HARDANI, HANDAYANI, & SRIWIDODO, 2020) In this paper, data were gathered through an electronic questionnaire directed to the whole population of students. The instrument consisted of 17 questions to elicit information dealing with the topic of the study. The first section of our questionnaire consisted of 03 questions about the informants' general background while the second rubric included 14 questions to elicit information concerning ESP courses.

V. Data Analysis

Data had been analysed with the help of SPSS. When the respondents filled out our Google Form-based questionnaire, the information was forwarded to SPSS system in order to interpret them with statistical tables. Then, we summarized the data so that we could highlight our focal points: the challenges being detected in ESP courses and the way those difficulties could be alleviated. Students expressed their needs based on the challenges on the drawback of the way the lectures were presented. Drawing a conclusion was the last step after all data were complete and analysed

VI. Findings and Discussions

This study focused on the students' perspectives towards delivering learning materials in English. This section unveils the results of data analysis dealing with the students' challenges in their ESP lectures and the extent to which the strategies used in teaching mathematics in the English language work. Moreover, the results of this investigation are presented as a consideration in developing teachable ESP courses for mathematics teachers.

1. Personal Information

		Count	Column N %
Gender	Female	34	57%
	Male	23	38%
	no answer	3	5%
Level	B.A 1	21	35%
	B.A 2	18	30%
	B.A 3	5	8%
	M.A 1	8	13%
	M.A 2	2	3%
	no answer	6	10%
Type of Baccalaureate	no answer	5	8%
	Scientific	46	77%
	Technical	9	15%

Table 1: Students' General Background

The table above shows data about the participants' personal information, including three questions. The first question indicates that 57% of our respondents are females whereas 38% are males; this means that the former gender outnumbers the latter one as usual. Concerning the second question, we can easily observe that the majority of informants (35%) belonged to B.A 1 level. Most students (77%) came from scientific stream secondary school classes.

2. ESP Courses Challenges and Suggested Solutions

The second part of the questionnaire which included 14 questions resulted in the following:

		Count	Column N %
How long have you been learning English?	Eight years	7	11,7%
	More	7	11,7%
	Nine years	3	5,0%
	no answer	6	10,0%
	Seven years	15	25,0%
	Six years	16	26,7%
	Ten years	6	10,0%

Table 2: The Number of the Years of Studying English

As it is illustrated in the table above, the majority of the respondents had been studying English for six years, however; we were curious to figure out whether the long or the short experience denotes competence or not.

		Count	Column N %
How would you evaluate your level of English?	Average	28	46,7%
	Excellent	3	5,0%
	Good	9	15,0%
	Low	16	26,7%
	no answer	2	3,3%
	Very good	2	3,3%

Table 3: Students' Auto-evaluation of Their Level in English

When we asked the targeted students to evaluate themselves in English; the biggest ratio (46.7%) reflected that their level was medium. In other words, none of them exceeded the level of intermediate learner. (Level B)

		Count	Column N %
How often do you use oral English in your branch of study?	Always	11	18,3%
	never	6	10,0%
	no answer	3	5,0%
	Often	16	26,7%
	Rarely	24	40,0%

Table 4: The Frequency of Using Oral English

Since mathematics students, in a way or another, had to speak English, we questioned them about the frequency of speaking in English in the classroom. They were frank and confessed that they rarely talked in English with their teachers as well as with one another.

		Count	Column N %
How often do you use written English in your branch of study?	Always	8	13,3%
	never	7	11,7%
	no answer	5	8,3%
	Often	23	38,3%
	Rarely	17	28,3%

Table 5: The Frequency of Using Written English

In the same line, the fifth question regarding English Courses issues was about how frequently learners wrote in English in their branch of study. Frequency adverbs have been used to get logical responses. We did not find a salient difference between their responses; those who said they often used written English in their ESP courses represented the biggest rate (38.3%).

		Count	Column N %
Do you have a problem while using English?	No	11	18,3%
	no answer	3	5,0%
	Yes	46	76,7%

Table 6: Facing Problems While Using English

The next inquiry, which we considered the core stone to achieve our goal, sought whether mathematics students at Adrar University faced any difficulties in English in general or not. As we expected, most of them (76%) said “yes” whereas only 18.3% of the informants said they did not encounter any obstacles. The rest of the participants did not provide us with any answer.

		Count	Column N %
If yes, to which skill does it belong?	Listening	7	11,7%
	no answer	14	23,3%
	Reading	8	13,3%
	Speaking	26	43,3%
	Writing	5	8,3%

Table 7: The Skill that Makes an Obstacle

In order to go deeper, we asked the students a new close-ended question to figure out the linguistic skill that blocks them when they use English. As it is obvious in the table above, most learners (43.3%) found it hard to speak in English.

		Count	Column N %
The problem you face in English belongs to?	Both	28	46,7%
	no answer	8	13,3%
	your lack of vocabulary	18	30,0%
	your low level in grammar	6	10,0%

Table 8: The Source of the Problem

When each student acquainted us with the skill which makes an obstacle for him or her, we were just eager to know why the problem they encountered belonged to such or such a skill. As usual, our question was close ended by provided two choices provided. The majority of the respondents (46.7%) said that both choices generated language challenged for them (lack of vocabulary and low level in grammar).

		Count	Column N %
How many sessions of	no answer	14	23,3%
English courses do you	one session	31	51,7%
have per week?	two sessions	15	25,0%

Table 9: The Number of English Courses per Week

In addition, we were concerned with the number of sessions students had per week. The statistics in *Table 9* reveal that 51% of the target population studied on one session per week. We deliberately asked such a question because we think that the more students had ESP sessions, the more their level would improve.

		Count	Column N %
Are you satisfied with the	No	24	40,0%
way by your English teacher	no answer	12	20,0%
is teaching you?	Yes	24	40,0%

Table 10: Satisfaction or Dissatisfaction with the Teaching Strategy

The strategy being used by tutors in ESP courses in general could also affect learners' proficiency positively or negative. So, we aimed to know the attitudes of students towards the way their teachers adopted through a "Yes/No" question. Half of them were satisfied, but the other half were not.

		Count	Column N %
Does she/he follow certain	No	23	38,3%
methods in the classroom in	no answer	8	13,3%
order to make you more			
involved in the course and	Yes	29	48,3%
develop your English level?			

Table 11: The Use of Certain Teaching Methods in the Classroom

Based on the three approaches (Behaviourism, Cognitivism, and Structuralism), teachers ought to use a certain method such as the direct method and grammar translation method while teaching. If this point is marginalized, learners will get lost. The eleventh table shows that 48% percent of students said that their teachers used certain methods to attract their attention during the course and promote their English level.

		Count	Column N %
By which course's type would you prefer to be taught in your English course?	Choose a module to be taught purely in English	19	31,7%
	Grammar rules	16	26,7%
	Learning new vocabularies about mathematics	21	35,0%
	no answer	4	6,7%

Table 12: Learners' Favourite Course Type

The appropriate choice of the course type might help to fulfill the learners' needs in their ESP lessons. The statistics about students' preferences to a given course category reveal that most students (35%) of mathematics at Adrar University prefer to learn vocabulary about their branch of study. Some of them (31.7%) saw they had better choose a module themselves to be taught purely in English. The rest of learners consider dealing with grammar rules as vital.

		Count	Column N %
How often does your teacher use Arabic?	Always	11	18,3%
	Never	2	3,3%
	no answer	5	8,3%
	Often	24	40,0%
	Rarely	18	30,0%

Table 13: The Frequency of Using Arabic by the Teacher

We have already asked about the use of certain methods by the teacher in ESP sessions. We asked the question that is apparent in the table above to know how often the teacher translates some technical terms, fragments, or sentences, for instance, in Arabic. This process is not a shortcoming; consequently, it may work sometimes since it is a method that stands by its own (Grammar Translation Method). Most students told us that their teachers often spoke in Arabic to foster the teaching-learning process.

		Count	Column N %
In your opinion to what extension should teaching mathematics focus on?	Giving more attention to the relationship between English and mathematics	24	40,0%
	no answer	5	8,3%
	Teaching English within mathematics	15	25,0%
	Using more English and less Arabic by the teacher	16	26,7%

Table 14: The Focal Points of Teaching Mathematics in English

The pre-concerns for all ESP teachers are the most important things they have to highlight in their courses. In order to help students alleviate the challenges they face, we asked them to take the position of the teacher and suggest what teaching mathematics in English should focus on. The largest ratio (40%) was represented by those who asked for giving more attention to the relationship between English and mathematics as it is shown in the table.

		Count	Column N %
How often do you make vocabulary mistakes?	Always	22	36,7%
	no answer	4	6,7%
	Often	24	40,0%
	Rarely	10	16,7%

Table 15: The Frequency of Making Vocabulary Mistakes

Vocabulary mistakes are the most famous type of errors that all EFL learners suffer from. We asked our informants about the frequency of spelling mistakes, with the help of a four-choice close ended question. The majority (40%) said they often made vocabulary mistakes while some of them (36.7%) always committed such mistakes. Meanwhile, some students (16.7%) rarely encountered this problem. The rest of the respondents did not provide any response to this question as it is displayed in the table above.

VII. Conclusion

The adoption of a given curriculum so as to use English as a medium of instruction requires having a good command of the medium by teachers and students so that the former can successfully deliver the message of the subject being taught on one hand. On the other hand, learners will be successful recipients of knowledge. All in all, to be a good ESP student of mathematics, for example, you must be

proficient in your specialty, good at English, and a sieve who knows what to learn and what to discard in your ESP courses. The following paragraphs tell about the main results of our research and some recommendations and solutions that might alleviate ESP courses difficulties.

There are eight main challenges that students of mathematics at Adrar University suffer from. First, most of them have got a low. Second, they rarely speak in English in the classroom. Third, their speaking skill is shaky. Fourth, they lack the enough quantity of English vocabulary. Fifth, their low level of grammar also obstructs them. Sixth, the number of ESP sessions is insufficient. Seventh, some teachers adopt inappropriate teaching methods. Eighth, learners commit numerous vocabulary mistakes. In order, to lessen those challenges, we included some questions to see our respondents' suggestions and solutions.

The informants see that English lessons can be more effective and efficient if more sessions are devoted to ESP courses on one hand. On the other hand, teacher should rely on suitable teaching methods which make them involved in the course and improve their level in English. In addition, they want their instructors to give more attention to the relationship between English and mathematics.

The topic of our paper had already been investigated and still being carried out in many universities around the world. There is no doubt the findings will be different since all the variables differ from one place to another and change through time.

Appendices

Questionnaire for the students

Dear student

This questionnaire is an essential component of a study about the relationship between ESP that you are learning in English courses and vocabulary. Lack of vocabulary is the core of this work. You are kindly requested to answer all questions as truthfully and accurately as possible. So please fill in the questionnaire by ticking your answers in the corresponding box (es) that you would think more appropriate.

Section One: General background

1. Gender

☐ Male

☐ Female

2. Level

☐ B.A 1

☐ B.A 2

☐ B.A 3

☐ M.A 1

☐ M.A 2

3. Type of Baccalaureate

☐ Scientific

☐ Technical

Section Two: ESP Courses Challenges

4. How long have you been learning English?

☐ Six Years

☐ Seven Years

☐ Eight Years

☐ Nine Years

☐ Ten Years

☐ More

5. How would you evaluate your level English?

☐ Low

☐ Average

☐ Good

☐ Very Good

☐ Excellent

6. How often do use oral English in your branch of study?

☐ Always

☐ Often

☐ Rarely

☐ Never

7. How often do written English in your branch of study?

☐ Always

☐ Often

☐ Rarely

☐ Never

Section two: English Courses Problems

8. Do you have problems while using English?

☐ Yes

☐ No

9. If yes, to which skill does it belong?

☐ Listening

☐ Speaking

☐ Reading

☐ Writing

10. The problem you face in English belongs to

☐ Your Lack of Vocabulary

☐ Your Low Level in Grammar

☐ Both

11. How many sessions of English courses do you have per week?

☐ One Session

☐ Two Sessions

☐ Three Sessions

12. Are you satisfied with the way your teacher is teaching you?

☐ Yes

☐ No

13. Does he/she follow certain methods in the classroom in order to make you more involved in the course and develop your English level?

☐ Yes

☐ No

14. By which course's type do you prefer to be taught in your English course?

☐ Grammar Rules

☐ Learning New Vocabulary about Mathematics

☐ Choosing a Module to Be Taught Purely in English

15. How often does your teacher use Arabic?

☐ Always

☐ Often

☐ Rarely

☐ Never

16. In your opinion to what extension should teaching mathematics focus on?

☐ Teaching English within Mathematics

☐ Giving More attention to the Relationship between English and Mathematics

☐ Using More English and Less Arabic by the Teacher

17. How often do you make vocabulary mistakes?

☐ Always

☐ Often

☐ Rarely

☐ Never

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