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Aeronautical Engineering Students' Perceptions of ESP as Preparation for EMI in Higher Education

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Abstract

English for Specific Purposes (ESP) focuses on English language education in professional and academic settings. In internationalised higher education, ESP thus plays a dual role: first, to equip students with language skills required in the global workplace, and, second, to support learners during their studies in English-medium contexts. The interface of ESP and English-medium instruction (EMI) has started to attract increased attention from the scientific community. This contribution centres on the interplay of ESP and EMI, as it explores undergraduate engineering students' perceptions of ESP as preparation for an English-taught aeronautical master's programme. The sample (N = 26) consisted of 24 male and 2 female students, with a median age of 21 years, ranging from a minimum of 19 to a maximum of 27 years. This second-year bachelor's group who had received ESP instruction was given the Oxford placement test (OPT) [4] to determine its general English level and a questionnaire survey on ESP. The survey sheet contained demographic items and questions on students' experiences with ESP concerning EMI, their confidence when using English, and their self-assessment of English skills improvement. The group achieved an OPT median score of 44 points, with a minimum of 34 and a maximum of 54 points. Preliminary results indicate that participants perceived considerable improvement of their language skills through ESP. It is hoped that these results contribute to an increased awareness of the importance that ESP may assume for students enrolled in EMI programmes.

Keywords: *ESP, EMI, internationalisation, tertiary education, students, engineering*

1. Introduction

English for Specific Purposes (ESP) caters for English language education of students in professional and academic contexts. In tertiary education, its main goal is to prepare learners for linguistic tasks at work and during further academic studies, for instance in English-medium instruction (EMI) programmes. Already Bartik [1] pointed to the goals of undergraduate content-related language courses to provide learners with academic literacy skills and genre knowledge necessary for following Master's courses in English. This contribution treats the interface between ESP and EMI by exploring undergraduate engineering students' perceptions of ESP as preparation for an EMI master's programme in aeronautics.

There are indications in the literature that students struggle with EMI because of their English language proficiency. Soruç et al. [2], for instance, found that students' general English competence predicted challenges they had with academic language use in EMI. Another study [3] discovered that academic English in EMI caused difficulties for learners with regard to speaking and writing. In this context, it was deemed interesting to probe into students' opinions on the role of ESP with a view to postgraduate EMI studies.

2. Methods

A second-year bachelor's group who had taken an ESP course on technical English was given the Oxford placement test (OPT) [4] to estimate its general English skills. The students also received a survey sheet with demographic items and questions on their experiences with ESP regarding EMI, their confidence when using English, and their self-assessment of English skills improvement [5]. The questionnaire consisted of nominal and 5-point Likert-scale items. IBM® *SPSS*® *Statistics* [6] software was employed for descriptive statistical data analysis.

3. Results

The sample (*N* = 26) was characterised by a median age of 21 years, ranging from a minimum of 19 to a maximum of 27 years. It comprised 24 male and 2 female students, with a median duration of 10

years' previous English language education. In the Oxford placement test (OPT) [4], the group achieved a median score of 44 points, with a minimum of 34 and a maximum of 54 points. The results further revealed that only one student had already taken an EMI course at university. Table 1 shows the detailed descriptive statistics for the sample demographics.

Table 1 Descriptive statistics for biographical variables

VARIABLE	*M*	*Mdn*	*SD*	*MIN*	*MAX*
Age (in years)	21.5	21	1.9	19	27
English language study (in years)[a]	10.4	10	1.7	8	15
OPT score (0 to 60)	44.2	44	5.9	34	54

VARIABLE	LEVEL	FREQUENCIES	PERCENT
Gender	Male	24	92.3 %
	Female	2	7.7 %
Extracurricular English lessons	Yes	22	84.6 %
	No	4	15.4 %
EMI courses taken at university	Yes	1	3.8 %
	No	25	96.2 %

Notes. *N = 26*; *M* = arithmetic average; *Mdn* = median; *SD* = standard deviation; *MIN* = minimum in sample; *MAX* = maximum in sample
[a]Missing values because of nonresponse: *n* = 1

Table 2 depicts students' sense of being prepared for EMI on a 5-point Likert-scale ranging from 1 (*not at all*) to 5 (*yes, completely prepared*). The survey question asked if learners felt prepared to study a content programme or course taught through English after the ESP support they had received during the semester under consideration. The majority of learners felt rather well (50.0 %) and completely prepared (19.2 %) for EMI.

Table 2 Students' perceptions of being prepared for EMI

FEELING PREPARED FOR EMI	FREQUENCIES	PERCENT
Not much	1	3.8 %
To some extent	6	23.1 %
Rather well	13	50.0 %
Yes, completely prepared	5	19.2 %
Missing	1	3.8 %

Note. *N* = 26

Table 3 contains the group answers to the question whether students planned to take an EMI course in the near future, either in their own university or as part of a mobility programme. Here, the group was divided into two similar halves between having such plans and having none.

Table 3 Students' plans to take EMI in the future

PLANS TO TAKE EMI	FREQUENCIES	PERCENT
Plans to take an EMI course	15	57.7 %
No plans to take an EMI course	11	42.3 %

Note. *N* = 26

Table 4 reveals the group answers to the question if the course helped students to improve their confidence in academic or professional communication in English. A clear majority of 84.6 % provided an affirmative reply to this item.

Table 4 Students' perceptions of communicative confidence

CONFIDENCE	FREQUENCIES	PERCENT
Improved confidence	22	84.6 %
No improved confidence	4	15.4 %

Note. *N* = 26

Participants also perceived substantial improvement of their language skills through ESP. Table 5 shows the descriptive statistics for learners' self-assessment of their improvement during the course. Each item was rated on a 5-point Likert-scale ranging from 1 (*very little*) to 5 (*very much*). Items with the highest improvement ratings were *Vocabulary*, *Reading*, familiarity with written and spoken technical English, and *Spoken interaction*.

Table 5 Descriptive statistics for students' self-assessed improvement during the course

ITEMS	Range	*MIN*	*MAX*	Mode	*Mdn*	*M*
Vocabulary	2	3	5	4	4	4.00
Reading	3	2	5	4	4	3.77
Familiarity with technical English (written)	3	2	5	4	4	3.65
Familiarity with technical English (spoken)	4	1	5	4	4	3.54
Spoken interaction (dialogue)	3	2	5	3	3	3.15
Spoken production (monologue)[a]	3	1	4	3	3	2.92
Pronunciation	4	1	5	3	3	2.92
Listening	3	1	4	3	3	2.65
Grammar	3	1	4	2	2	2.42
Writing	3	1	4	2	2	2.19

Notes. *N = 26*; *MIN* = minimum in sample; *MAX* = maximum in sample; *Mdn* = median; *M* = arithmetic average
[a]Missing values because of nonresponse: *n* = 1

4. Discussion

These results suggest that structured and systematic ESP support can effectively prepare students for EMI programmes (Table 2). They further indicate that the current ESP course achieved its aims of developing learners' written and spoken technical English skills, vocabulary knowledge, and spoken interaction competence (Table 5). Speaking and writing academic English are precisely those skills that have been identified as challenging for students in other contexts [3]. The fact that the general language skills of listening, grammar, and writing were rated lower in terms of improvement may be due to the less prominent space that these areas were given in the course. However, it should be noted that learners' general English language proficiency may significantly contribute to their academic language success [2]. In a secondary-school context, Bruton [7] argues that whether or not equipping curricula taught through a foreign language with such foreign language classes is a key issue, which means that it may represent a major contributor to the success or failure of EMI programmes. In addition to the potential linguistic merits of ESP for EMI programmes, there is the boost in communicative competence that participants identified as a beneficial aspect of this English language course (Table 4). This finding is corroborated by a broader study among two Spanish and

the current Austrian higher-education institution [5]. It is thus reasonable to assume that ESP courses in content disciplines may also increase the linguistic confidence of students.

5. Conclusions

ESP and EMI are closely interlinked fields where ESP focuses on learners' linguistic improvement, while EMI tends to cater for students' content knowledge. This paper is expected to raise the awareness of the crucial role that ESP may assume for students of EMI programmes. Researchers have called for institutionalised language support that focuses on productive skills with discipline-specific orientation [3, p. 12] to prepare students for EMI. Soruç et al. [2] further demand that also students enrolled in EMI programmes should receive "continuous language support throughout the duration of their studies" [p. 10]. To this end, Little [8] demands that English language specialists should be involved in EMI programme design. The socioeconomic importance of English in global industries, "has the potential to immediately exclude individuals who are not proficient in the language from educational and professional opportunities" [9, p. 84], which means that the presence or absence of ESP in certain regions and institutions may determine the careers of students and graduates. In that sense, ESP may be regarded as high-stakes instruction, as the economic lives of individuals partly depend on their English skills improvement, not to mention the personal fulfilment and access to social participation it entails.

This study allows for the tentative conclusion that participants found merit in the current ESP course for future EMI, although this cannot be generalised and should be treated as a case from one tertiary setting. Nevertheless, it is hoped that this case inspires similar investigations from higher-education institutions where both ESP and EMI have been implemented to improve student learning. The potential for fruitful interaction between ESP and EMI is considerable and may become decisive for future engineering students and graduates in the aeronautical and further sectors.

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