

G.K. Tleuzhanova<sup>1</sup>, A.B. Mekezhanova<sup>2\*</sup>, Zh.M. Baigozhina<sup>3</sup>

<sup>1</sup>Karaganda university of the name of academician E.A. Buketov, Kazakhstan,

<sup>2</sup>Pavlodar Pedagogical University, Pavlodar, Kazakhstan,

<sup>3</sup>Toraighyrov University, Pavlodar, Kazakhstan

(Corresponding author's E-mail: brunettie@mail.ru\*)

ORCID 0000-0003-2302-1595<sup>1</sup>

## Metasubject Potential of Teaching English to Biology Students

The introduction of trilingual education into the Kazakhstani education system, due to its integration into the world educational space, has changed the setting of goals in the system of higher pedagogical education. Thus, the goals of preparing a subject teacher are complemented by the possession of a future specialist in a foreign language professional competence. The purpose of the study is to identify the meta-subject potential of a foreign language in the system of higher pedagogical education in Kazakhstan. The authors of the article studied the experience of teaching English as an EMI in the world, as well as the experience of implementing EMI in the Republic of Kazakhstan. The study was conducted on the basis of analysis and generalization of scientific and theoretical sources on the topic of research and questioning of students of the educational program "Biology". In the course of the study, the authors studied the definitions of the terms denoting foreign language teaching of specialized subjects (CLIL, EMI and ESP), present the experience of teaching in English in different countries, describe its national, institutional and personal interests. The authors of the article conducted a survey of students who in the future will teach their subjects in English, aimed at studying the relevance of activating the meta-subject potential of the English language for students learning the language for their future teaching activities and demonstrated further prospects for this potential.

*Key words:* metasubject potential, foreign language education, trilingual education, teacher, profile disciplines.

### Introduction

The globalization and internationalization of higher education has become a prerequisite for teaching profile subjects in English throughout the world. The Kazakhstani education system has not remained aloof from global trends, increasing its share in the international educational arena by teaching core subjects in English.

A foreign language "performs the functions of forming an intermediate language, ensuring the accumulation, improvement, and interconnection of linguistic and extralinguistic knowledge" [1; 314]. As part of the education development program for 2020-2025, the trilingual policy is being implemented, within the framework of which the disciplines of the natural sciences have been taught in English since 2019.

According to the state compulsory educational standards of the Republic of Kazakhstan, a special place is given to meta-subject results and the meta-subject potential of mastering the educational program, which "include the interdisciplinary concepts and universal educational actions (regulatory, cognitive, communicative) mastered by students, the ability to use them in educational, cognitive, and social practice, the independence of planning and implementation of educational activities, and the organization of educational cooperation with teachers and peers, building an individual educational trajectory" [1; 314]. At the same time, the meta-subject potential is realized fully if the English language becomes a highly used language.

Moreover, according to K. Volchenkova and E. Kravtsova, the use of English as the medium of instruction (EMI) is becoming "the driving force of internationalization and a prevalent phenomenon in tertiary education" [2; 186].

According to the requirements of the State Educational Standard of Higher Professional Education of the Republic of Kazakhstan, the meta-subject results of mastering the educational program can be implemented with the prospect of the **following results**:

- The graduate independently determines goals and builds a plan to implement primary and secondary tasks.
- A graduate can independently carry out his activities, choosing various resources and necessary strategies at his own discretion, including those in *foreign languages*.

- A graduate can independently assess the situation, apply cognitive reflection and make decisions [1; 318-319].

Using English as a meta-subject tool, students can rethink and supplement the knowledge gained while studying the subject and begin to perceive it in a new way, as cutting-edge recent discoveries in the field of natural sciences (the subject) are presented in English.

It should also be mentioned that when compiling a training course in English, the teacher focuses on general professional competences, indicated in the State Educational Standard of Higher Professional Education of the Republic of Kazakhstan, and in the qualification characteristics. Therefore, the teacher should be able to find materials about discoveries in the field of study, understand them and be able to tell his students about them. Thus, “the skills and abilities obtained in teaching certain subjects turn into strong educational skills and abilities and create strong ties that allow students to independently solve life-connected and professional problems” [1; 319].

### *Literature Review*

#### **EMI in the world**

In the scientific and methodological literature, the issue of teaching subjects in English has received fairly wide coverage. There are three closely related terms: CLIL, EMI and ESP.

Let's consider them. J. Dearden defines EMI (English as a Medium of Instruction) as “use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English” [3; 2]. That is, EMI refers to the use of English as a means of teaching a non-linguistic subject in an environment where English is not an official or state language. The studies related to CLIL (Content and Language Integrated Learning) should be noted, as well. Haijiao Chen, Jinghe Han, and David Wright state that there are subtle differences between CLIL and EMI: EMI is used to refer to teaching in English in the context of higher education, while CLIL is used at all levels of education, and not only English can be used as a language of instruction. However, despite these differences, researchers place these two studies in the same research area [4].

Using English in EMI teaching is impossible without English for Specific Purposes (ESP). According to researchers T. Dudley - Evans and M.J. St. John, ESP is characterized by adapting to the specific needs of students, the use of the main methodology of the specialty and the focus not only on the language component, but on the skills, genres and discourse that correspond to this specificity as well [5]. The teacher acts not only as a teacher, but also as a course developer, co-author, researcher, evaluator, supplier of materials [6; 434].

EMI has become widespread throughout the world, gradually becoming a global phenomenon. Teaching subjects in English became a goal of higher education reform in the 1990s and is reflected in the Bologna Declaration [7]. EMI was a step towards the internationalization of universities and the increase of their competitiveness in the developing globalized world.

EMI has been used by many states now. In particular, the use of English as a medium of instruction is practiced in many universities in Egypt, Jordan, the Persian Gulf countries and Lebanon, which, according to Maureen O'Day Nicolas, Samer Annous, is a sign of following the American education system, as well as a symbol of “modernity”, “technology” and “education” [8; 10]. In China and Japan, the state funding and university rankings are also largely dependent on teaching content in English. Thus, when hiring a teacher, an important selection criterion is the ability to conduct their classes in English, and students are required to master several disciplines in English in order to receive a diploma of higher education [9; 396].

In their work “Internationalisation, Higher Education and the Growing Demand for English: An Investigation into the English Medium of Instruction (EMI) Movement in China and Japan” Nicola Galloway, Jaroslav Kriukow and Takuya Numajiri consider the reasons for the development and implementation of EMI programs and mention the following of them: access to advanced knowledge, increasing the competitiveness of specialists in the labor market, increasing income, increasing the opportunities for students and teaching staff for academic mobility, increasing the level of English proficiency, using English as a lingua franca [10; 4].

EMI has a special place in higher education in China: there, EMI is part of the strategic plan for the development of higher education and attracting foreign students. If in 2001, in an effort to improve university education, the number of academic courses taught in English at leading universities was 5-10 % percent, then by 2006 their number was increased: out of 135 Chinese universities, 132 already provided their courses and educational programs EMI [9]. The number of joint educational programs of Chinese universities and foreign partners has also increased [9; 396]. Universities in Taiwan have the same goal of using EMI. International

enterprises operating in South Korea and Vietnam caused a demand for qualified specialists who speak English, which required changes in the education system by improving the quality of foreign language education [4; 2].

Thus, having analyzed the use of English as a medium of instruction in a number of countries, we can conclude that it is important to master English in a rapidly growing global educational environment.

### *Experimental*

The benefits and difficulties of implementing EMI programs are being actively explored in the modern methodology of foreign language professional education.

For example, G. Hu and J. Lei conducted a study and found three groups of benefits: **national, institutional and personal EMI interests**. National interests include improving international prospects and relations, institutional interests include improving the university's rating, and personal interests include mastering English, increasing mobility, and opportunities for further employment [11].

B. Wächter and F. Maiworm [12] found that European universities note the following *institutional advantages*:

- improvement of the international status of the educational institution;
- strengthening cooperation with foreign universities;
- improving teaching for international students.

For students, they noted the following *personal benefits*:

- improved English proficiency;
- expanded opportunities for academic mobility;
- providing a quality base for working in a foreign language and cultural environment;
- better employment opportunities;
- improving the quality of education [12].

As for the difficulties faced by students participating in EMI programs, Japanese researchers I. Aizawa and H. Rose mention such as problems with understanding and transferring the content of the discipline, the need to devote more time to mastering the course, more possibilities to give up studying, etc. [9; 398]

A review of the above studies demonstrates that EMI (or CLIL) issues are under intense scrutiny. However, not many studies have been devoted to the issues of evidence-based pedagogical training of students who will later teach their subjects in English.

This invites us to explore the **following questions**:

- What interests do students pursue when studying English as an EMI?
- What advice can you give to learners of English as an EMI?
- What difficulties do students face when learning English as an EMI?

To study the questions above, we conducted a survey of students. 32 students of the Faculty of Biology and Geography of Karaganda Buketov University and 32 students of the Higher School of Natural Sciences of Pavlodar Pedagogical University took part in the survey. The survey was conducted among students of this educational program "Biology".

In the course of the research, we used the methods of questioning, collecting and obtaining information (including methods of observation, working with documents, the results of students' activities), as well as processing the data obtained.

### *Results and Discussion*

#### **Research Question 1. What interests do students pursue when studying English as an EMI?**

The answers of the respondents to the question "What interests do students pursue when studying English as an EMI?" are reflected in Figure 1.

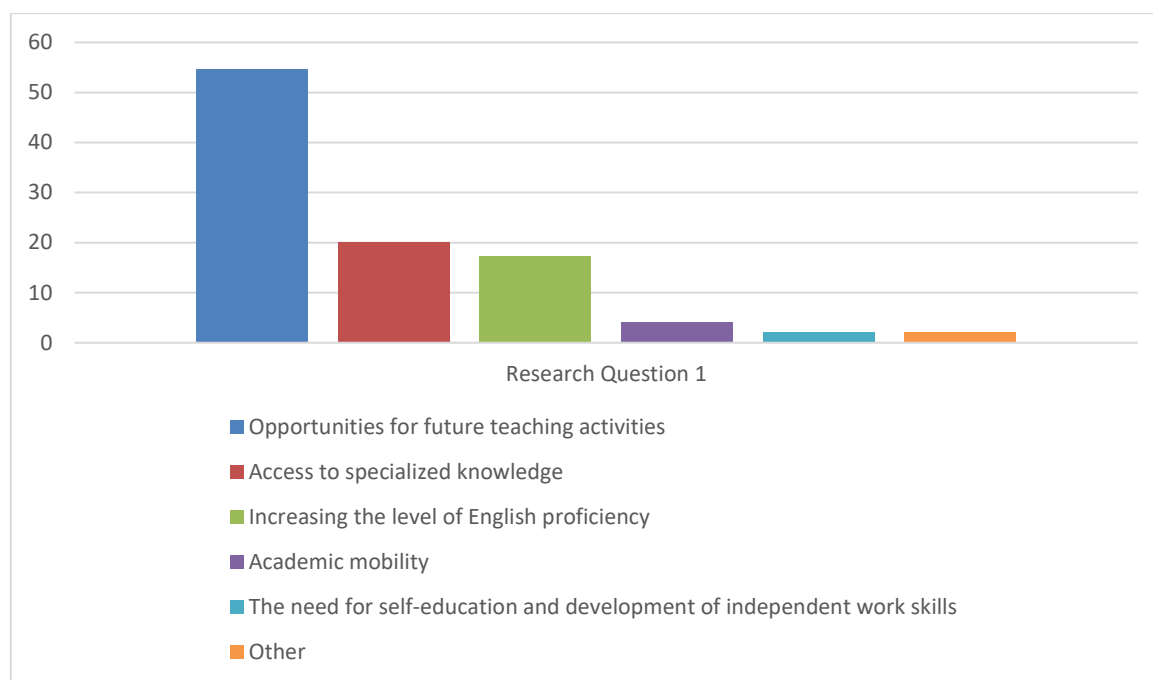


Figure 1. Interests pursued by students in learning English as an EMI

According to the results of the survey on this research question, most of the students (54.6 %) understand the urgent need to study a foreign language for their future professional activities, namely that knowledge of a foreign language will allow them to conduct classes in a foreign language in their future teaching activities. 20 % of students believe that this is a way to access specialized knowledge. 17.3 % noted the possibility of improving their English proficiency. 4.1 % noted the possibility of increasing academic mobility. 2 % each chose the answer “the need for self-education and development of independent work skills” and “other” (the opportunity to enter a master’s degree program in their specialty).

#### Research Question 2. What advice can you give to learners of English as an EMI?

Answers of the respondents to the question “What advice can you give to learners of English as an EMI” are shown in Figure 2. The respondents could choose several possible options for this question.

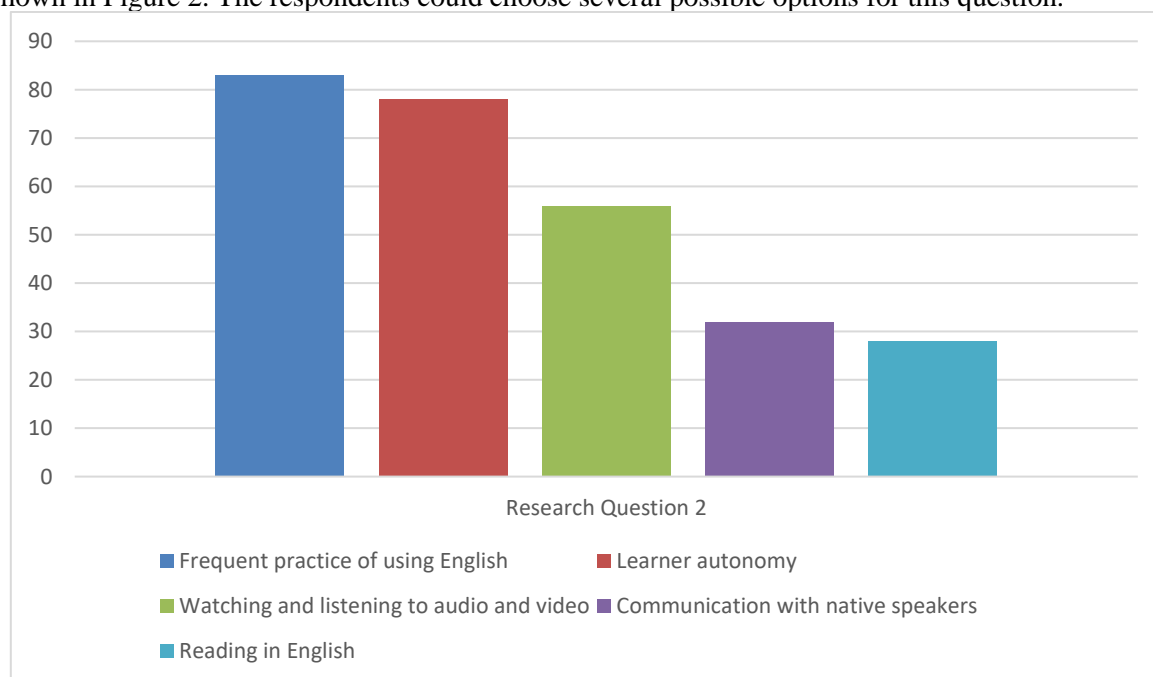


Figure 2. Advice given by students to students studying English for further teaching

83 % of students noted the frequent use of English. To master the English language, it is necessary to use it in communication as much as possible, while the practice must move from controlled to freer practice. 78 % of respondents give advice, which consists in the formation of students' autonomy, which implies that they must take responsibility for their learning, act independently in the choice of language and speech means. This is followed by watching films in English and listening to songs in English, communicating with foreigners in English and reading literature in English.

### Research Question 3: **What challenges do students face when learning English as an EMI?**

As for difficulties that arise when studying a foreign language as an EMI, 48 % of students indicated a low level of knowledge of a foreign language. 20 % of students believe that it will take a long time to master it. Among the least selected responses were a heavy workload in preparing for classes (14 %), a lack of teaching materials in a foreign language for biologists (11 %) and a lack of modern technical teaching aids (7 %), respectively (Fig. 3).

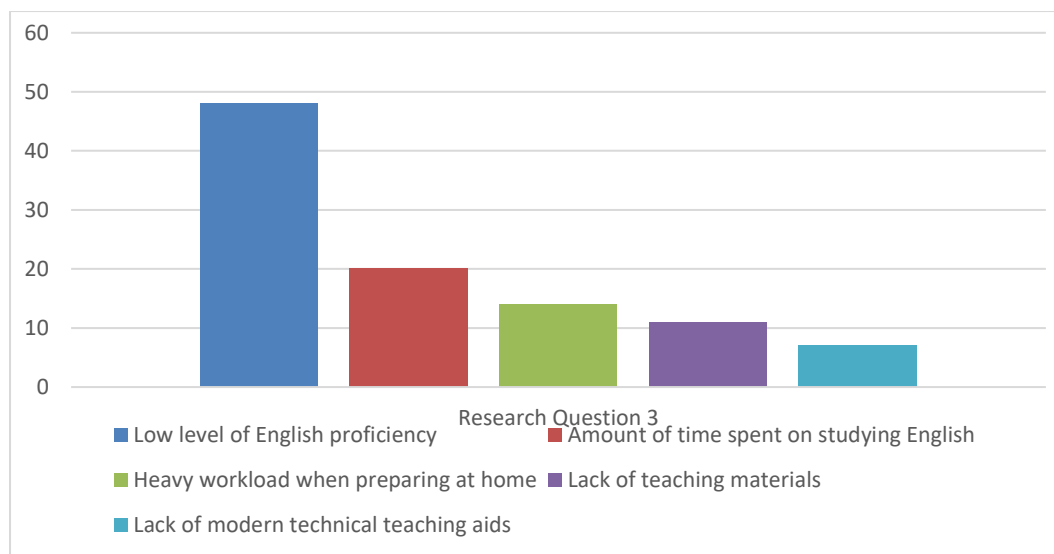


Figure 3. Challenges arising when studying a foreign language as an EMI

### Conclusions

In the light of the foregoing, it should be noted that modern research in the field of foreign language education and analysis of the results of the survey have shown the need to use the meta-subject potential of the English language in the process of teaching special disciplines. The survey showed the relevance of activating the meta-subject potential of the English language for students studying the language for their future teaching activities and demonstrated further prospects for this potential.

Most students, realizing the need to learn a foreign language for their future professional activities, nevertheless note that the possibility of teaching their core subject (biology) is possible in the near future, since they consider their level of foreign language proficiency to be insufficient to conduct biology lessons in it. The survey also showed that biology students both highlight the advantages of studying a foreign language for professional purposes, as well as the difficulties they face in doing so.

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## Биолог-студенттерге ағылшын тілін оқытудың метапәндік әлеуеті

Қазақстандық білім беру жүйесінің әлемдік білім беру кеңістігіне интеграциялануына байланысты үштілді оқытуды енгізу жоғары педагогикалық білім беру жүйесінде мақсатты өзгертулер енгізді. Сонымен, пән мұғалімін даярлау мақсаттары болашақ маманның шет тіліндегі кәсіби құзыреттілікке ие болуымен толықтырылады. Зерттеудің мақсаты — Қазақстандағы жоғары педагогикалық білім беру жүйесінде шет тілінің метапәндік әлеуетін анықтау. Мақала авторлары әлемде ЕМІ ретінде ағылшын тілін оқыту тәжірибесін, сондай-ақ Қазақстан Республикасында ЕМІ енгізу тәжірибесін зерттеген. Зерттеу «Биология» білім беру бағдарламасының студенттерін зерттеу және сауалнама жүргізу тақырыбы бойынша ғылыми-теориялық дереккөздерді талдау және жалпылау негізінде жүргізілді. Зерттеу барысында бейіндік пәндерді (CLIL, ЕМІ және ESP) шет тілінде оқытуды белгілейтін терминдердің анықтамалары зерделенген, әртүрлі елдердің ағылшын тілінде оқыту тәжірибесі келтірілген, оның ұлттық, институционалдық және жеке мүдделері сипатталған. Сонымен қатар болашақта өз пәндерін ағылшын тілінде оқытатын студенттерге сауалнама жүргізілген, бұл болашақ педагогикалық қызметі және тіл үйренетін студенттер үшін ағылшын тілінің метапәндік әлеуетін арттырудың өзектілігін зерттеуге бағытталған және осы әлеуеттің болашақ перспективаларын көрсетеді.

*Кілт сөздер:* метапән әлеуеті, шет тілінде білім беру, үш тілде білім беру, педагог, бейінді пәндер.

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## Метапредметный потенциал преподавания английского языка студентам-биологам

Внедрение в казахстанскую систему образования трехязычного обучения, обусловленного его интеграцией в мировое образовательное пространство, изменило постановку целей в системе высшего педагогического образования. Так, цели подготовки учителя-предметника дополняются владением будущим специалистом иноязычной профессиональной компетенцией. Цель исследования заключается в выявлении метапредметного потенциала иностранного языка в системе высшего педагогического образования в Казахстане. Авторами статьи был изучен опыт преподавания английского языка как ЕМІ в мире, а также опыт внедрения ЕМІ в Республике Казахстан. Исследование проводилось на основании анализа и обобщения научно-теоретических источников по теме исследования и анкетирования студентов образовательной программы «Биология». В ходе исследования авторами были изучены определения терминов, обозначающие иноязычное обучение профильным предметам (CLIL, ЕМІ и ESP), приводится опыт преподавания на английском языке разных стран, описываются его национальные, институциональные и личные интересы. Авторами статьи проведено анкетирование студентов, изучающих язык для своей будущей педагогической деятельности, направленное на изучение актуальности активизации метапредметного потенциала английского языка и демонстрирующее дальнейшие перспективы данного потенциала.

*Ключевые слова:* метапредметный потенциал, иноязычное образование, трехязычное образование, педагог, профильные дисциплины.