

resurs]: URL: <https://www.irrodl.org/index.php/irrodl/article/view/4206/5017> (data podachi zayavleniya: 17.08.2023)

15. Starkey L. A review of research exploring teacher preparation for the digital age // *Cambridge Journal of Education*. – 2020. – Vol. 50(1). – P. 37-56 [Elektronnyj resurs]: URL: <https://doi.org/10.1080/0305764X.2019.1625867> (data podachi zayavleniya: 20.07.2023)

16. Dias-Trindade S., Moreira J.A. Technologies and Digital Competences in Portuguese Education: History of its Integration in Pedagogical Practices since the Beginning of the 20th Century // *Athens Journal of Education*. – 2023. – Vol. 10 (3). – P. 381 – 396 [Elektronnyj resurs]: URL: <chrome-extension://efaidnbmninnkacpcglclefindmkaj/https://www.athensjournals.gr/education/2022-4779-AJE-EDU-Trindade-05.pdf> (data podachi zayavleniya: 20.07.2023)

17. ElSary, Aree (2023) The impact of a professional upskilling training programme on developing teachers' digital competence. *Journal of Computer Assisted Learning*. Vol. 39 (4), P. 1154 – 1166 [Elektronnyj resurs]: URL: <https://onlinelibrary.wiley.com/doi/epdf/10.1111/jcal.12788?src=getftr> (data podachi zayavleniya: 12.07.2023)

18. Nedodaeva E.N. Cifrovizaciya i cifrovye tekhnologii v obrazovanii problem i perspektivy Elektronnyj resurs]: URL: <https://infourok.ru/cifrovizaciya-i-cifrovye-tehnologii-v-obrazovanii-problemy-i-perspektivy-550728.html> (data podachi zayavleniya: 10.07.2023)

19. Konceptiya razvitiya obrazovaniya v Respublike Kazahstan na 2022 – 2026 gody. Postanovlenie Pravitel'stva Respubliki Kazahstan ot 24 noyabrya 2022 goda №941 [Elektronnyj resurs]: URL: <https://adilet.zan.kz/rus/docs/P2200000941> (data podachi zayavleniya: 12.07.2023)

20. Ajmaletdinov T.A., Bajmuratova L.R., Gricenko V.I., Dolgova O.A., Imaeva G.R., Smirnov K.V. Cifrovaya gramotnost' dlya ekonomiki budushchego // M.: NAFI. - 2018.— 86 s.

21. Ajmaletdinov T.A., Bajmuratova L.R., Zajceva O.A., Imaeva G.R., Spiridonova L.V. Cifrovaya gramotnost' rossijskih pedagogov. Gotovnost' k ispol'zovaniyu cifrovih tekhnologij v uchebnom processe // M.: NAFI. - 2019. – 84 s.

IRSTI 14.25.05.

<https://doi.org/10.51889/2959-5762.2023.80.4.014>

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A COMPARATIVE ANALYSIS OF THE LEVEL OF ENGLISH PROFICIENCY AMONG FUTURE TEACHERS IN CLIL AND NON-CLIL GROUPS

Abstract

In the contemporary world, the acquisition of the English language is of paramount importance, on par with scientific knowledge. English serves as the language of instruction for numerous academic publications, the latest scientific breakthroughs, and international conferences. Moreover, it stands as the global language for education. One prominent method to facilitate this second language acquisition is Content and Language Integrated Learning (CLIL). This study centers on the evaluation of English language proficiency among students at K. Zhubanov Aktobe Regional University, distinguishing between CLIL students and Non-CLIL students. The assessment is conducted through a comprehensive survey, and the study delves into the positive impact of CLIL through interviews with the university's CLIL teachers. The study's findings unequivocally demonstrate that CLIL students exhibit a higher level of English language proficiency compared to their Non-CLIL counterparts. The interviews with CLIL teachers unveil several affirmative effects of CLIL on students, including enhanced English language skills, opportunities for international internships, academic mobility, and the ability to pursue further studies at the Master's degree and PhD study level.

Keywords: CLIL positive effects, English proficiency, primary education, pre-service teachers, teaching.

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CLIL ЖӘНЕ CLIL ЕМЕС ТОПТАРДАҒЫ БОЛАШАҚ МҰҒАЛІМДЕР АРАСЫНДА АҒЫЛШЫН ТІЛІН МЕҢГЕРУ ДЕНҒЕЙЛЕРІН САЛЫСТЫРМАЛЫ ТАЛДАУ

Аңдатпа

Қазіргі уақытта ағылшын тілін меңгеру ғылым сияқты өзекті болып табылады, өйткені көптеген кітаптар, көптеген соңғы ғылыми жаңалықтар мен ғылыми зерттеу жұмыстары ағылшын тілінде жазылған сондай ақ халықаралық конференциялар ағылшын тілінде өткізіледі. Көп елдерде тәжірибеден өткен ағылшын тілі біліміне қол жеткізуге немесе меңгеруге қол жеткізу тәсілдерінің бірі CLIL болып табылады. Бұл зерттеуде Қ.Жұбанов атындағы Ақтөбе өңірлік университетінің арнайы CLIL бағдарламымен оқитын және бұл бағдарламамен оқымайтын болашақ мұғалімдердің арасындағы ағылшын тілі деңгейлері сауалнама арқылы салыстырылып, CLIL әдісінің оң әсерлері туралы университеттің CLIL оқытушыларымен сұхбаттасу арқылы талқыланды. Нәтижесінде, CLIL студенттерінің ағылшын тілін меңгеру деңгейі CLIL емес студенттерге қарағанда жоғары екенін көрсетті және CLIL оқытушысымен сұхбат барысында CLIL студенттерге ағылшын тілін дамыту, шетелде тағылымдамадан өту, академиялық ұтқырлық және оқуды жалғастыру сияқты оң әсерлері бар екені анықталды. магистратурада оқу.

Түйін сөздер: CLIL-дің оң әсерлері, ағылшын тілі білімі, бастауыш білім, болашақ мұғалімдер, оқыту.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ УРОВНЕЙ ВЛАДЕНИЯ АНГЛИЙСКИМ ЯЗЫКОМ СРЕДИ БУДУЩИХ ПЕДАГОГОВ В CLIL И НЕ В CLIL ГРУППАХ

Аннотация

В настоящее время овладение английским языком так же актуально, как и наука, потому что большое количество книг, многие из последних научных открытий и исследовательских работ написаны на английском языке, а международные конференции проводятся на английском языке. Одним из подходов к овладению вторым языком является CLIL. В этом исследовании сравнивается уровень владения английским языком студентов CLIL и не-CLIL Актюбинского регионального университета им. К. Жубанова с помощью опроса, а положительные эффекты CLIL обсуждаются с преподавателями CLIL университета посредством интервью. Результаты показали, что студенты CLIL владеют английским языком выше, чем студенты, не обучающиеся CLIL, и во время интервью с преподавателем CLIL было выявлено, что CLIL оказывает положительное влияние на студентов, таких как развитие английского языка, стажировка за границей, академическая мобильность и продолжение учебы, учиться в магистратуре.

Ключевые слова: положительные эффекты CLIL, знание английского языка, начальное образование, будущий учитель, преподавание.

Basic provisions. Nowadays, English language acquisition is as relevant as science, because the large number of books, many of the latest scientific discoveries and research papers are written in the English language and international conferences are held in English language. In the era of globalization and internationalization, it is undeniably true that the command of foreign languages – English being the lingua franca par excellence – is at the forefront of education agendas across the globe [1]. At present, when English in its role of the global language as a new phenomenon is becoming one of the major components of globalization [2]. Because of globalization, people all around the globe have become more reliant on the English language during the past several decades [3]. The increasing global and local demands to improve

English proficiency have augmented the significance of English education across the entire paradigm [4]. Proficiency in English is paramount in academic research, as it serves as the primary language for disseminating findings and advancing scholarly understanding. Knowing English will allow you to stay abreast of the most recent advancements in science, academics, and technology because most of these publications are written in English. This is according to another study that has been conducted on the issue. Because 75% of scientific literature is published in English, any researcher or expert who wants the most up-to-date knowledge or access to specific volumes must be fluent in English [5]. Fluency in English can significantly broaden the career prospects of professionals in the business world.

Introduction. Universities face the challenge of equipping their students with the most effective preparation for success in their respective fields, particularly in foreign languages, with English being recognized as the global lingua franca. Acquiring proficiency in the English language is of immense importance for pre-service teachers for several compelling reasons:

Global Communication: English is the lingua franca of the modern world. Pre-service teachers need to communicate effectively with colleagues, students, and academic communities worldwide. Proficiency in English enables them to share ideas, research, and best practices on a global scale.

Access to Resources: A significant portion of educational resources, including research papers, teaching materials, and academic journals, are available in English. Being able to understand and use these resources is crucial for enhancing their teaching methods and staying updated on the latest educational trends.

Enhanced Employability: Many international schools and institutions prefer hiring teachers who are proficient in English. A strong command of the language can open doors to career opportunities both in their home country and abroad, increasing their employability.

Effective Classroom Communication: English proficiency allows pre-service teachers to deliver lessons, engage with students, and manage their classrooms more effectively. It ensures that they can clearly convey instructions and facilitate discussions, which is vital for student learning.

Professional Development: English proficiency makes it easier for pre-service teachers to access professional development opportunities. They can attend international conferences, workshops, and seminars, broadening their horizons and learning from educators worldwide.

Adaptation to Diverse Settings: As educators, pre-service teachers may work in multicultural and multilingual settings. English proficiency equips them with the language skills needed to connect with students from diverse backgrounds and adapt to various teaching environments.

Student Empowerment: In a globalized world, English language skills empower students to become global citizens. Pre-service teachers who are proficient in English can inspire and equip their students to thrive in an interconnected world.

Research and Academic Growth: English is the primary language for academic research and publications. Proficiency enables pre-service teachers to contribute to the field of education through research, publications, and collaborations with international scholars.

Cultural Awareness: Learning English often involves exposure to various cultures and perspectives. This can foster greater cultural sensitivity and awareness, which is essential for teaching in diverse classrooms.

In summary, English language proficiency is an invaluable asset for pre-service teachers, as it not only enhances their career prospects but also equips them with the skills and knowledge to excel in an increasingly globalized and interconnected educational landscape.

Using English as a teaching language is one of major educational reforms in Kazakhstan, aimed at improving students' foreign language proficiency. The underlying rationale of the reform was to use Content and Language Integrated Learning (CLIL) pedagogy to provide intensive exposure to English language in content classes without adding extra language teaching hours in the curriculum [6]. Content and Language Integrated Learning", or CLIL, as it is more commonly referred to, is an innovative methodology that has been gaining traction in applied linguistics and language teaching in previous few years [7]. Content and Language Integrated Learning (CLIL) programs are often praised for bringing equity to foreign language learning[8]. Content and Language Integrated Learning (CLIL) programs are often praised for bringing equity to foreign language learning [8]. Content Language Integrated Learning (CLIL) is an educational approach with a strong impact on language learning. It has become a powerful tool and a motivating force to learn and offers a natural situation for learning language and content subjects [9]. CLIL describes an approach to teaching and learning where subjects such as science, history and geography are taught and studied through the use of a non-native language. In CLIL, learning a curricular subject in a second, third or sometimes fourth language involves best practice from a range of different educational contexts [10]. CLIL

is often defined as a pedagogical approach in which ‘a foreign language is used as a tool in the learning of a non-language subject in which both language and the subject have a joint role’ [11]. Originally, CLIL was frequently linked to very general language learning aims and glossed as an endeavour to make English more accessible to learners in mainstream education [12]. CLIL has a great potential for the language development that is claimed to be a necessary condition for success and content learning in English medium education [13].

There are a lot of publications about positive CLIL effects on second language acquisition of learners. The positive results of Content and Language integration on the development of students’ foreign language skills may have been overestimated by previous studies, since most studies failed to consider selection and preparation effects appropriately [14]. Nikula, Dafouz, Moore, and Smit (2016) wonder that second language learning is successfully scaffolded and achieved in the mainstream classroom across different settings where learners may exhibit heterogeneous levels of L2 language proficiency. This concern raises the issue of whether CLIL may be implemented with all learners, regardless of their L2 proficiency [15]. Pérez Cañado and Lancaster in 2017 did research over the course of a year with a half with students in 4th grade of CSE and followed them until Baccalaureate. The homogeneity of the CLIL and non-CLIL groups was guaranteed in initial pre-test and significant differences were found on both oral production and comprehension skills one year later, at the end of CSE, in favor of the CLIL stream [16]. However, in the long run, when these same students were in Baccalaureate, similarly to Pladevall-Ballester and Vallbona (2016), it was productive, as opposed to receptive, skills which were more positively affected by CLIL. The outcomes also provided interesting data on what aspects of oral competence are particularly amenable to being taught through CLIL (e.g., more cognitively complex listening activities) and which need to be developed over a longer time span in order to be significantly improved (e.g., pronunciation and fluency) [17]. Kao (2020) studied the effect of a CLIL module in a Taiwanese teacher education programme by lectures and seminars, results showed positive results as developing second language confidence, and succeeding in designing their own teaching materials alongside authentic materials in order to motivate the learners and integrate the curricular content and second language learning [18]. Maria Elisabetta Porcedda and Juan González-Martínez in his review which draw the characteristics to take into account to train future CLIL teachers, underline the need of pre-service teacher training at University, hitherto generally disregarded in favour of in-service preparation [19]. Ruiz de Zarobe and Lyster (2018) mention in their research that teaching disciplines in English at universities has been brought about due to a number of reasons as developing citizen skills in the home student body and increasing their employability, gaining access to cutting-edge knowledge and boosting global competitiveness, enhancing students and lecturer mobility, increasing income from education services, enhancing student and lecturer mobility, developing English language level, reflecting developments in English language teaching (ELT) and raising the quality of tertiary education [20]. Lasagabaster and Sierra (2009) revealed that CLIL students showed significantly more positive attitudes towards English as an FL than did EFL students. The authors suggest that this might be a result of the more meaningful opportunities to use the TL in the CLIL classroom as opposed to the EFL classroom [21]. Additionally, studying contents in a second or foreign language opens the door for academic mobility: students who receive education in English have more opportunities to continue their studies at other European and European universities [22].

Thus, to explore the differences on English proficiency of students, the English level of CLIL students studying in CLIL programme implemented in Chemistry, Biology, Mathematics and Physics education program and Non-CLIL students studying at the Primary education Degree of the K.Zhubanov Aktobe Regional University are compared and positive CLIL effects on students are discussed with CLIL teachers in the present study.

Methods and materials. The study focused on students at K. Zhubanov Aktobe Regional University, a prominent institution in West Kazakhstan. Participants included 2nd, 3rd, and 4th-year students in the Primary Education, Chemistry, Biology, Mathematics, and Physics education programs during the 2020-2021 academic year. Additionally, teachers from the university who instructed in English were part of the study.

Notably, specialized disciplines within Chemistry, Biology, Mathematics, and Physics education programs at the university have been taught in English since 2017. However, due to a shortage of English-proficient instructors, students in the Primary Education department did not receive specialized courses in English, despite the university's trilingual policy. Consequently, the study classified students into two groups: CLIL (students in the Chemistry, Biology, Mathematics, and Physics programs) and Non-CLIL

(students in the Primary Education program). The study aimed to compare the English proficiency of CLIL and Non-CLIL students through a survey developed by the researchers. Interviews were also conducted with CLIL teachers to assess the effects of CLIL on students.

The research employed both quantitative and qualitative methods. Quantitative research was used to determine the English proficiency of CLIL and Non-CLIL students, while qualitative research involved data collection methods such as monitoring, discussions, and data analysis. Qualitative research facilitated a comprehensive understanding of participants' experiences in their natural environment [23].

The survey, written in the state language, was administered to students via Google Forms and included questions about their background, age, gender, academic year, education level, and English proficiency.

Interviews with CLIL teachers, conducted in Kazakh, had an average duration of 30 minutes and were facilitated through voice messaging on WhatsApp. The interviews covered various aspects, including participant backgrounds, their experiences with teaching in English, and their perspectives on students' progress in both scientific and language learning through English.

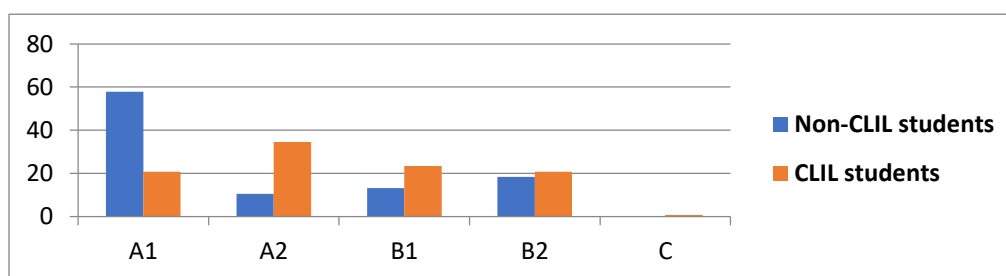
Participation in the study was voluntary, and participants were assured that all provided information would remain anonymous and be used exclusively for research purposes. Responses from surveys and interviews were translated into English for publication.

Results and discussion. The data from the survey which is conducted with CLIL and Non-CLIL students revealed that total number of students participated voluntarily in survey were consisted of 333 students studying at the Chemistry (n-77), Biology (n-93), Mathematics (n-69), Physic (n-56) and Primary education (n-38) Degree aged between 20 and 25 years old studying in 2, 3 and 4 courses. Among them female students were 87% and male students were 13%.

In survey result with Non-CLIL students, it was clear that large percentage of students (57, 9%) indicated beginner level and only low percentage of students indicated elementary (10,5%), pre-intermediate (13,2%) and intermediate level (18,4%).

As for CLIL students, low percentage of students English level were beginner (20.7%), 34.5% elementary, 23.4% pre-intermediate, intermediate 20,7% and advanced level 0.7%. We compared the results of English language level of the (pre-service primary education teachers) Non-CLIL students and CLIL students (pre-service teachers of Biology, Chemistry, Physics and Mathematics Degree); it was given in Table 1.

Table 1. English level of Non-CLIL and CLIL students



In Table 1, we can observe that there are differences on English level of CLIL and Non-CLIL students due to CLIL lessons. It means that CLIL students see themselves progress in learning subjects through English. CLIL lessons (Math, Chemistry, Biology and Physics disciplines) give the positive results on improving the students language competence.

Also 4 content teachers who teach EMI subjects in Math, Chemistry, Biology and Physics faculties are involved in interview. An interview helps to interpret the statistically obtained data. In particular, as Cohen et al. put it, interviews provide researchers with in-depth information and might act as a complementary research instrument for gathering relevant quality data[24]. They have an official English Certificates, but due to the lack of teachers with good command of English in the University it is impossible to require official language certificate and the University has forced to enable any teacher with Pre-Intermediate or Intermediate level of Language proficiency to teach their subject through English. Face to face interview was conducted in Kazakh language duration of 60 min and audio-taped. In particular, 30% of the disciplines are

taught through English in these faculties (from the 1st year to 4th year). Teachers of Biology, Chemistry, Physics and Mathematics taught the specialized disciplines in English for the 2nd 3rd and 4th year students.

Biology teacher had training on CLIL in multilingual education centre which is a structural sub-department of Karaganda University of Kazpotrebsoyuz which provide her with methodological recommendations on teaching biology in English and 2 month training (including online course) in Al-Farabi Kazakh National University (Kazakhstan, Almaty). It provided her with experience and knowledge on teaching biology subject in English. When Biology teacher first taught her subject in English, she realized that she needs to work even more on herself. Student's English level was different and it was difficult for her at the beginning, but later they get improved their English level. In particular, student's English level who studies well was good. They were happy and motivated, because they realize that English language is an important for their future life and it is good moment to develop English language. She mentioned that she is constantly developing herself as reading biological journals, papers in English. Chemistry teacher had a certification on CLIL from this university.

When Chemistry teacher first taught her subject in English, she was scared that she thought she will do grammar or pronunciation mistakes at the lesson though she studied at the school with linguistic gymnasium №24 then she graduated from this university parallel she attended English courses (in Aktobe). Also she graduated her Master from the Ufa State Petroleum Technological University and here specialized disciplines for Master students were taught in English language to know chemical terms in English further writing paper for indexed journal in Scopus and etc. She tried to use innovative teaching methods at the lesson. As for students' progress in improving English level, she see their motivation in learning subject in English and according their feedback and she deals with the students feedbacks from the her phone sent after the lesson;

“Today's lesson was very interesting and useful. I think there will be more lessons in this format in the future. Our interest studying subject in English has grown. I hope, in future we will speak only in English. Thanks again)”

“Teacher, thank you so much for an interesting lesson, it improves our motivation more in studying disciplines in English...”

Math teacher dealt with her feeling in teaching mathematic disciplines in English in interview and she mentioned that she felt a great responsibility and intensively. She attended English courses when she was told to teach mathematical discipline in English. She had CLIL training from Zhubanov University. In CLIL lesson, she tries to use innovative methods and she noticed that year by year student's language competence is developing. Also students like to learn Math in English. She said that recently, one student was so grateful to her, because one student had an academic mobility in Poland. Studying subject in English helps Math postgraduate students to enter to Master degree. Physic teacher said that he teach physical subjects as Nuclear physics, Electricity and magnetism in English in interview. He mentioned that at the beginning of the course, it was so difficult to conduct lesson in English for him due to different level of English proficiency of students and he had to use Kazakh language in teaching new words, they translated it from English to Kazakh, but now he could say that student's language competence is developed. Finally, he didn't get any bad feedbacks on his lesson in English and he believed that students like to study their specialized subject in English.

Conclusion. In sum, this study allowed us to define the English language proficiency difference between CLIL and Non-CLIL learners. It was clear that CLIL programs has the positive results on English language learning of students of Chemistry, Biology, Mathematics and Physic education compared with English level of students of Primary education Degree who are not taught by CLIL programs. And during the interview with CLIL teachers, CLIL advantages for students are mentioned in interview, for example; students enter to the Master Degree without problem of English, some students of Mathematics Degree had an internship in one of Poland universities. Students develop English skills as writing, speaking, reading, listening and their English were in higher level compared to the first year of study. According to results of this study, CLIL application in Primary education department of the K.Zhubanov Aktobe Regional University would doubtfully be recommendable in order to boost English level of pre-service primary education teachers and prepare them for trilingual teaching in their future work. In Kazakhstan, trilingual education with CLIL technology is a key strategy for educating people who meet the requirements of the time. While training policies for teachers that will meet these needs are considered as a priority area of intervention, testing the teacher candidate's competencies in this area is an important role in the implementation of certain policies [25].

Primary education department of the university should transform their curriculum by including optional or compulsory courses on CLIL methodology to improve the students' English language communicative competence as well as integrating primary education disciplines with English language implementing multilingual plans through the use of CLIL rather than they will be CLIL teacher or not.

Future pre-service primary education teachers should possess competitive skills for bilingual or trilingual instruction, aimed at preparing globally competent students. They must acquire the necessary competencies and skills to ensure their future success. Teachers are the most important factor of CLIL; therefore, they are the cornerstones of a successful CLIL teaching and learning [26]. In summary, CLIL knowledge is not only valuable but increasingly necessary for pre-service teachers. It equips them with the skills, competencies, and global perspective needed to excel in their teaching careers and contribute to the success of their students in an interconnected world.

References:

1. Marsol A. *English language learning in CLIL and EFL classroom settings: a look at two primary education schools (Doctoral dissertation, Universitat de Barcelona)* 2015.
2. Svetlana G., & Vladimir S. *The language of worldwide communication and linguistic and cultural globalization. Language and culture, (2014). (1), 4-14.*
3. Tauchid A., Saleh M., Hartono R., & Mujiyanto J. *English as an international language (EIL) views in Indonesia and Japan: A survey research. Heliyon, 8(10). 2022.*
4. Alemayehu M.M. *Exploring factors affecting peer-led team learning in EFL classes: A case of secondary schools in Ethiopia. Indonesian Journal of Applied Linguistics, 11(3), 2022. 623-635.*
5. Widiyanto S.; Wulansari L.; Hasanusi F.S. *Pelatihan "english communicative" guna mempersiapkan sdm berkualitas dan "competitive". Intervensi Komunitas, 1, 2020. 125-131.*
6. Karabassova L. *English-medium education reform in Kazakhstan: comparative study of educational change across two contexts in one country. Current Issues in Language Planning, 22(5), 2021.553-573.*
7. Pérez J. E.M. *CLIL in Colombia: Challenges and Opportunities for its Implementation. GIST-Education and Learning Research Journal, 24, 2022., 7-24.*
8. Lorenzo F., Granados A., & Rico N. *Equity in bilingual education: Socioeconomic status and content and language integrated learning in monolingual Southern Europe. Applied Linguistics, 42(3), 2021. 393-413.*
9. Pistorio M.I. *Teacher training and competences for effective CLIL teaching in Argentina. Latin American Journal of Content & Language Integrated Learning, 2(2). 2009.*
10. Çekrezi R. *CLIL and teacher training. Procedia-Social and Behavioral Sciences, 15,2011. 3821-3825.*
11. Marsh D. *CLIL/EMILE-The European dimension: Actions, trends and foresight potential. 2002.*
12. Rieder-Bünemann A., Hüttner, J., & Smit U. *'Who would have thought that I'd ever know that!': subject-specific vocabulary in CLIL student interactions. International Journal of Bilingual Education and Bilingualism, 25(9), 2022. 3184-3198.*
13. Satayev M., Barrios, E., Fernandez-Costales A., Agaidarova S., Izbassarova R., & Balta N. *The Effect of CLIL Combined with Language Instruction on Language Learning and the Role of Individual and Institutional Factors in Students' Perspectives: Empirical Evidence from Kazakhstan. EURASIA Journal of Mathematics, Science and Technology Education, 18(10),2022.*
14. Feddermann M., Moeller J., & Baumert J. *Effects of CLIL on second language learning: Disentangling selection, preparation, and CLIL-effects. Learning and Instruction, 74, 101459.2021.*
15. Nikula T., Dafouz E., Moore P., & Smit, U. (Eds.). *Conceptualising integration in CLIL and multilingual education (Vol. 101). Multilingual Matters.2016.*
16. Pérez Cañado M.L., & Lancaster N.K. *The effects of CLIL on oral comprehension and production: a longitudinal case study. Language, Culture and Curriculum, 30(3), 2017. 300-316.*
17. Pladevall-Ballester E., & Vallbona A. *CLIL in minimal input contexts: A longitudinal study of primary school learners' receptive skills. System, 58, 2016. 37-48.*
18. Kao Y.T. *Understanding and addressing the challenges of teaching an online CLIL course: a teacher education study. International Journal of Bilingual Education and Bilingualism, 25(2), 2022. 656-675.*
19. Porcedda M.E., & González Martínez J. *CLIL teacher training: Lacks and suggestions from a systematic literature review. CLIL teacher training: lacks and suggestions from a systematic literature review, 2002. 49-68.*

20. Ruiz de Zarobe Y., & Lyster R. Content and language integration in higher education: Instructional practices and teacher development. *International Journal of Bilingual Education and Bilingualism*, 21(5), 2018. 523-526.
21. Lasagabaster D., & Sierra J.M. Language attitudes in CLIL and traditional EFL classes. *International CLIL research journal*, 1(2), 2009. 4-17.
22. Vázquez V.P., & Gaustad, M. Designing Bilingual Programmes for Higher Education in Spain: Organisational, Curricular and Methodological Decisions, 2(1), 2013. 82-94.
23. Creswell J.W. *An introduction to mixed methods research*. Lincoln, Nebraska, USA: University of Nebraska, 23.2007.
24. Cohen L.M. (2016). L. and Morrison K.(2007). *Research methods in education 6th edition*. London: Rouledge.
25. Kadyrbayeva G., Stambekova A., Svetlana U., Gulsim N., & Gulvira M. Preparing Future Primary School Teachers for Trilingual Teaching with CLIL Technology. *World Journal on Educational Technology: Current Issues*, 13(4), 2021. 617-634.
26. Sepešiová M. Chapter twenty-five new perspectives in pre-service teacher training in CLIL via vle.

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STEAM БІЛІМ БЕРУ ЖАҒДАЙЫНДА ТЕХНИКАЛЫҚ МАМАНДАРДЫ ДАЯРЛАУ ҮШІН ЖОҒАРЫ МАТЕМАТИКА МАЗМҰНЫН ЖӘНЕ ОҚУ КЕШЕНІН ӘЗІРЛЕУ

Андатпа

Техникалық мамандықтарда оқитын студенттерді кәсіби даярлауда әрбір оқу пәнінің өзіндік алар орны бар. Дей тұрсақ та, математикалық білімнің алар орны ерекше. Бірақ біз, мамандар даярлаудағы математиканың орны туралы айтпаймыз. Бұл мақалада, STEAM білім беру жағдайындағы техника саласы мамандарының кәсіби құзіреттілігін қалыптастырудағы математикалық білімнің мазмұны және әдістемелік кешенін даярлауға байланысты пікірлерімізбен бөлісеміз. STEAM білім беру болашақ техника саласының мамандарының кәсіби құзіреттіліктерін қалыптастырудың әдістемелік жүйесін математика пәнін оқыту мысалында қарастыратын боламыз. Бірінші кезекте бұл құзіреттіліктерді қалыптастыруға байланысты, пәннің тараулары бойынша әдістемелік кешеннің қажет екені белгілі. Мақалада «Жоғары математика» пәнінің барлық тараулары бойынша қарастырған мысалдардың барлығын көрсете алмаймыз, мысалда солардың негізгілеріне шолу жасаймыз. Сонымен қатар, STEAM білім беру жағдайындағы оқытушының рөлінің, әдеттегі оқытушыдан, басқа сапаға ауысуы туралы да баяндаймыз. Мақалада «Жоғары математика» пәнінің техникалық мамандықтарда оқыту мазмұны бойынша тапсырмаларды негізгі үш түрге бөліп қарастырдық. Олар: математиканың айналадағы құбылыстарға негізделген бөлігіне арналған тапсырмалар; АКТ құрылғыларын қолданып орындайтын тапсырмалар; мамандардың кәсіби біліктілігін айқындайтын тапсырмалар. Бұл тапсырмалардың кешені STEAM білім беруді жүзеге асырудың ең көп тараған пәндік интеграциясы әдісі мен пәнаралық байланыс принципін негізге алып даярланды. Әрине, осы белгіленген тапсырмалар аясында STEAM білім берудің (ғылымилығы, технологиясы, инжиниринг, шығармашылығы, математикасы) мазмұны ашылды. Әрине тапсырмалар кешені даярланатын болса, оларды бағалаудың критерийлері туралы айтпай өтуге болмайды. Мақаланың қорытынды бөлімінде мысалдарда тапсырмалардың бірнешеуін қарастырып, оларды бағалаудың критерийлерін кестеде көрсеттік (критерийлері, дескриптор, баллдық бағасы).

Түйін сөздер: STEAM білім беру, кәсіби құзіреттілігі, математикалық тапсырмалар, бағалау, критерийлер, дескриптор.