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CA-CLIL: TEACHERS' AND STUDENTS' PERCEPTIONS OF IMPLEMENTING CLIL IN TERTIARY EDUCATION

Jaroslava Štefková,[1]
Mgr., PhD.
Institute of Foreign Languages, Technical University in Zvolen, Slovakia

jaroslava.stefkova@tuzvo.sk
ORCID: https://orcid.org/0000-0001-6500-2558

Zuzana Danihelová,[2]
Mgr., PhD.
Institute of Foreign Languages, Technical University in Zvolen, Slovakia

zuzana.danihelova@tuzvo.sk
ORCID: https://orcid.org/0000000273924664

Abstract. *These days, languages at non-philological universities are becoming an important tool of internationalization. However, language classes seem to be an additional subject to the obligatory technical subjects, and they are not given enough space in the technical study portfolios. Therefore, CLIL (Content and Language Integrated Learning), which focuses on technical content, can be applied to expand students' language exposure. CLIL activities might be carried out by content teachers and language teachers. The content teachers not achieving B2 level in English need some support introducing the foreign language into the instruction. The use of English during classes can be encouraged by Internet applications where the language input from the content teachers is limited, however, the application-based teaching activities still achieve the task of the target language learning. The paper deals with the perceptions of Internet applications tailored to teachers' needs, providing students with content and language practice. It discusses the role and use of CA-CLIL (Computer Assisted-CLIL) applied intensively after the COVID-19 pandemic. Internet applications used in the class include Learningapps, Kahoot, Mentimeter, and Youtube. The views are supported by action research based on the questionnaire survey of the 65-student sample and interviews with content teachers. The interviews with content teachers suggest that regardless of their foreign language mastery, they can manage to use English via applications. In addition, the students also praise such an instruction method. The results show that the CA-CLIL is perceived well and brings additional benefits such as perceptions of fun and competitiveness to university education.*

[1] Corresponding author, responsible for conceptualization, methodology, investigation, writing - original draft, funding acquisition.
[2] Co-author, responsible for writing – critical review & editing, visualization.

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1. INTRODUCTION

In the last three years, we have realized the massive impact of technology in every aspect of our life, including education. University education was one of the sectors impacted by the Coronavirus/COVID-19 pandemic to an extraordinary extent. The situation naturally had a lot of positive and negative side effects. Education at every level was conducted exclusively online for variously long periods; students at universities for the longest time, depending on the country. The university students in Slovakia returned to school on February 28, 2022. During online teaching, all teachers became more familiar with online teaching software; in our case, it was MS Teams and other available web applications and tools to improve their teaching, such as Interactive Worksheets, Learningapps, Kahoot, or Mentimeter. The newly acquired skills persisted in being used even in face-to-face education.

CLIL, or Content and Language Integrated Learning, is language education integrating content and language. It differs from the language for specific purposes because new content (professional knowledge) is learned through a foreign language. A foreign language is used to both acquire and produce information. It is a form of bilingual education because alternation of language inputs (native language and foreign language) is allowed, even desirable. Unlike immersion, also called content-based instruction (CBI), CLIL includes content (professional information) and language, which is not only a medium but part of the goal. Immersion is used in bilingual high schools and some university foreign language programs. In this type of language education, the entire content (e.g., mathematics, biology, physics, economics) is taught in a foreign language. No attention is paid to grammar or sentence structures of the foreign language because the language is considered acquired. CBI or immersion differs from CLIL in including the language in the instruction and the scope of a class (Boer, 2015; Cenoz, 2015: 11, 22). In addition, CLIL uses activities that encourage communication and cooperation among students and apply higher-order thinking skills; practice-related goals are preferred. In Slovakia, CLIL is used in some secondary and primary schools for occasional teaching of other subjects, e.g., biology, geography, mathematics, and music education, and is used by teachers of these subjects, not foreign language teachers. However, within CLIL tandem teaching can be applied (Boer, 2015). CLIL is a method of instruction that is dual-focused (content and language) and student-centered. The integral components of CLIL are called the four Cs, described by Coyle (2010) as Communication, Content, Cognition, and Culture. Another summary of the four Cs is given by Iyobe and Li (2013, p. 377):

Content: Progression in new knowledge, skills, and understanding.

Communication: Interaction, progression in language using and learning.

Cognition: Engagement in higher-order thinking skills, problem-solving, and accepting challenges and reflecting on them.

Culture: "Self" and "other" awareness, identity, citizenship, and progression towards pluricultural understanding.

All Cs are equally important and need to be adapted to the age or level of students. The Content relates to the subject/content where CLIL is applied. It includes the subject terminology, laws, relations, and graphics. The Content might present Language for Specific Purposes (ESP or LSP) to point out the superiority of CLIL toward ESP. Communication expands on the language aspect of the instruction, and it happens not only between a teacher and students but also among students themselves. Cummins (1979) introduced two types of language that are encountered in classroom communication – BICS (Basic Interpersonal Communication Skills), also called conversational fluency, and CALP (Cognitive Academic Language Proficiency), called academic language proficiency. BICS and CALP both refer to the L2 language. The distinction between the two types of language skills was based on studies of bilingual students who learned English as their second language. In CLIL, the teacher should master both types of communication skills. Cognition fosters cognitive development and should challenge students' mental skills. For university students, it should employ higher-order thinking skills such as analyzing, applying, and evaluating. Furthermore, the last "C" referring to Culture embeds the cultural and territorial context of the subject and the interpersonal culture of communication and behavior.

Moreover, CLIL also uses 21st-century skills providing a modern methodology reflecting the needs of the present and future. Vukadin & Marković (2019) and Cinganotto & Cuccurullo (2019) confirm that CLIL fosters multiliteracies needed in a modern knowledge society, such as critical thinking skills, collaboration, creativity, communication, curiosity, persistence, and adaptability. The idea is well-explained by Goldoni (2008, in Cinganotto & Cuccurullo (2019), *"Multiliteracy is a meaningful social and collaborative experience where students can work with and learn from their peers and more experienced mentors. Multiliteracy is determined by social and cultural conventions that can be used and adapted based on specific purposes, modes, and audiences."* (p.67). The importance of collaboration and other 21st-century skills is supported by Martí Arnándiz, Moliner, & Alegre (2022), who used CLIL in mathematics as a peer-tutoring activity, increasing students' self-confidence and motivation for learning mathematics (p.13).

As CLIL links and entangles content and language, the students are exposed to the target language to a broader extent. Entanglement of language and content does not decrease the time devoted to the subject's content, as the content is learned through the language. The CLIL classes do not substitute the classes of the language; they are mainly added to them. The CLIL method naturally utilizes two languages, the native and the foreign, where the evaluation of the foreign language production is no longer the stress-posing factor (Horwitz, Horwitz & Cope, 1991, p. 131). Kamenická & Kováčiková (2019) note that code-switching significantly enhances learning and working due to changing the context of foreign language learning. Moreover, code-switching develops mental skills and supports neural connections in the brain. Bilingual and multilingual education effectiveness and positive perception of it is also described by Rubio-Alcalá et al. (2019, p. 202). Another aspect of CLIL presenting a positive impact of CLIL is a student-centered approach. As mentioned in the experiment on CLIL by Kashiwagi & Tomecsek (2015), “the children they (the content teachers) were teaching became more vocal and actively

expressed their ideas and opinions. As indicated by the surveys, the teachers found that engaging the children closely was very rewarding" (p.84).

As mentioned earlier, during COVID-19, education was carried out online, yet a new connection to CLIL emerged. A combination of CLIL and CALL (Computer-Aided Language Learning) resulted in how CLIL could be conducted online. Gajdáčová Veselá et al. (2011) defined CALL as *"the use of multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaboration"* (p.116). Two aspects of CALL need to be particularly emphasized. Firstly, CALL is learner-centered and easily accessible to everyone. Secondly, it can be done synchronously (i.e., instructor-led) or asynchronously (designed as a self-paced study). In her later work, Gajdáčová Veselá (2014, p.40) saw the future use of technologies as an inevitable development as "*the future generation of CALL can be called "ubiquitous CALL" with the omnipresent technologies and pervasive presence of foreign languages in every possible source",* further naming some of the most popular ones (Google Docs, Skype, TED talks, Prezi, Wikipedia, Audacity, Twitter). Each of the mentioned applications has made enormous development since then.

According to a May 2013 poll of teachers across the US by Harris Interactive, 86 % of teachers think it is "important" or "absolutely essential" to use edtech (educational technology) in the classroom, and 96 % of teachers think edtech increases student engagement in learning. On the other hand, the information on teachers suggests the opposite according to the same source: only 14% of teachers use digital curricula weekly, only 19 % of teachers use subject-specific content tools weekly, and only 11 % of teachers are implementing BYOD (bring your own device), which might mean using your smartphone in the programs (Bates, 2016). The limited use of innovation in classrooms was reported by Vonkova et al. (2021). The technology used in the classroom might include the following: language learning apps, online ESL platforms, websites for highly authoritative global publications (*Smithsonian Magazine, the New York Times*, etc.), English language e-books, blogs, online worksheets, quizzes, and games (Seifert, 2021). The online applications help teachers develop their own materials designed specifically for their courses. The use of educational applications is usually in the form of "empty" activities ready to get the required content inserted into them and/or to choose from the activities prepared by the other application users. López Pérez & Galván Malagón (2017) described the process of technology classroom use when teachers used *HotPotatoes* and *Kahoot* to develop their own materials (p.636). The use of ICT resulted in the perception that the students were quite motivated toward their own learning processes after doing the tasks via ICT. Wirani et al. (2022) confirmed statistically that Kahoot affects positively learners' motivation (p.255).

Another advantage of educational technologies seen by Gimeno et al. (2010) is that edtech can solve the challenges related to material sources, large group samples, and possibly adapting materials to suit the tertiary level (p.3173).

On the other hand, using technologies is not the only skill teachers need to acquire. When CLIL is in question, teachers need to adapt their teaching styles to a student-centered approach and bilingual communication.

The effectiveness of CLIL methodology in tertiary education was described by Chostelidou & Griva (2014) in the example of a Greek tertiary class looking into their

reading skills. It is worth mentioning that the experimental group also showed a more positive attitude towards learning besides outperforming the control group in reading comprehension skills.

This present study aims to advance the understanding of the association between CLIL and teachers' use of educational technologies within their classes. Although the teachers' sample is rather limited, some hypotheses regarding CLIL in higher education might be anticipated, for example:

- teachers prefer using digital edtech apps to using non-digital activities,
- digital competitive and collaborative CLIL activities activate students,
- collaborative CLIL activities have positive impact on knowledge acquisition,
- stress and emotions play a positive role in students' learning.

The CLIL activities here refer to situations when classes or parts of classes were taught through a foreign language with dual-focused aims. There were two different investigations, one focused on content teachers implementing CLIL activities and the other on the students' perception of CLIL activities comparing computer-assisted and non-computer-assisted activities.

2. METHODS

The small-scale research was conducted at the Technical University in Zvolen focusing on the use of internet applications and ICT to implement CLIL in the instruction of content subjects at the Technical University in Zvolen in the period immediately after COVID-19 pandemic lockdowns when the students returned to school and studied in a face-to-face mode. The main areas focused on how computer-assisted CLIL activities affect teachers' attitudes and how students perceive computer-assisted activities regarding their perceptions and attitude toward learning.

The qualitative research participants (six content teachers) were asked to implement content-based activities in English in their content classes. The research participants were mainly teachers of fire sciences, particularly chemistry, fire safety in buildings, and crisis management. Two content teachers specialized in mathematics and statistics, and wooden constructions. The level of English language proficiency ranged from A2 to C1. The length of teaching practice also ranged from 5 years to 25 years. All teachers were trained to create activities in Kahoot and *Learningapps* applications. All workshops provided for a short, user-friendly manual on how to use the apps. They subsequently dealt with practical aspects of using the apps needed for implementing CLIL activities in their classes. The teachers had also been given short training in CLIL as a method of instruction.

The content teachers were interviewed before and after the CLIL activities. The interview consisted of 11 questions discussing three areas: their professional education and experience, pedagogical background and teaching styles, challenges, and opportunities in language education at the technical university. The results were described by Štefková et al. (2021), emphasizing the need for pedagogical development and language improvement. Nevertheless, the interviews found that content teachers are willing to use CLIL in their instruction. The next set of interviews was conducted after teachers implemented the CLIL activities in their content classes (group work, at least two

activities using one of the recommended Internet applications and teaching an entire class in English). After that, we discussed four questions: 1 What has changed in your teaching styles?, 2 What has changed in using English in your instruction?, 3 What helped you and stopped you from using English in your instruction?, 4 Which activity has proven to be very effective in your instruction? The students involved in the small-scale research were mainly students in the study program of Fire Protection and Safety in their 1st, 3rd, 4th year (together 72 students), additional students of Enterprise Management in their 2nd year (18 students), and doctoral students in the subject of Mathematical Statistics (6 students), thus the final number totaled 96 students. The students were given an electronic questionnaire via *iAnkety.sk* (see Appendix), examining their perception of CLIL activities. The return ratio was 65 questionnaires, i.e., 67.7 %.

The computer-assisted activities were based on *Kahoot.com, learningapps.com, youtube.com,* and one lecture by an expert from practice conducted via MS Teams. Other CLIL activities included a mock fire safety inspection tour at the building of the university and a total physical response description of a process. However, the present paper will focus solely on computer-assisted activities. After implementing the CA-CLIL activities in the classes, a structured interview with teachers in a focus group and a questionnaire with students were carried out. The teachers' responses were recorded, and data were processed. The questionnaires were also processed using descriptive statistical tools.

As far as we know, there is a dearth of research examining web-based applications, specifically Kahoot, used within CLIL or CA-CLIL.

Web-based applications

Kahoot.com

Registration in the application is free in its basic form. However, for our research, it was upgraded to a paid Premium version so that we could use it for more than ten students. Kahoot is an interactive app that can be used in an online or face-to-face class. It is an application with multiple uses (quiz, presentation, poll). However, for the research, it was used for quizzes. The quizzes were tailored to the topic according to the teacher's content. It was played at different class stages, in the revision stage, or during the main exposure to the content. The quizzes were prepared by a teacher, only once prepared by students as a class activity and then played together. The quizzes have a strong competitive aspect where the correct and fast responses were awarded more points. The final ranking thus reflects not only the correct answers but also how quickly a student reacted. Compared to similar platforms focusing on Student Response Software, such as Quizizz and Google Form, Kahoot! has a more significant influence on participant concentration, perceived learning, enjoyment, engagement, and satisfaction than other platforms, according to Wirani et al. (2022).

Learninapps.org

This free application offers ready-made activities and a wide selection of activity formats (flashcards, cloze, matching pairs, simple order, quiz, matching pairs with images, crossword, word grid, the millionaire game) which can be tailored to the needs of every user. The instructions are given in six languages. The finished activities can be sent to

students as a link or QR code or embedded in the study materials. The activities in this app are not competitive but are mainly designed for students' homework or individual work.

3. RESULTS

Teachers' Feedback

The answers in the interview were recorded and analyzed. As there were teachers of different subjects, they used different ways how to tackle CLIL activities. Another factor strongly affecting teachers was their English proficiency. Those more proficient teachers felt comfortable and competent in using English to manage the class. On the other hand, those less proficient in English were not confident and comfortable using spoken language (BICS) to manage the class. However, they were able to prepare some web-based activities in English (e.g., Kahoot, learningapps). The answers of teachers were summarized as follows:

CLIL activities in the content subjects:

- Group work (Gallery walk/ presentations/ Wordcloud) – entertaining, activating, appreciated by students, bringing good mood, students collaborating, expanding and enriching vocabulary for both students and teachers.
- *Kahoot* – entertaining for students, manageable for the teacher, creating an atmosphere of competitiveness and challenges.
- *Learningapps* – a tool customized for the specific content, used as homework or self-study activity.
- Video work and video group work offered recognition of the known terms and expanded vocabulary for new terms for both students and the teacher.
- Statistical software in English was practical and challenging for students.

Benefits of CLIL mentioned by the content teachers in this research:

- For some content teachers, who used English language during their content classes for the first time – *English is no longer threatening!", „An evening English language course attended simultaneously with the project duration helped me a lot*".
- Methodological course in Ireland (a 7-day course on CLIL and Innovative Technologies) provided great help not only because of the new theoretical learnings but also because of experiencing the activities by doing them.
- Methodological advancement – digital skills were improved by using applications unknown before, which required learning.
- Social interaction between students themselves and students and teachers improved.
- Connecting English with practical tasks/practice.

Needs of the teachers implementing CLIL activities found in the small-scale study:

- To employ an ICT maintenance worker who would provide support in case of their use and manage downloading and updating of all the software or applications.
- All teachers expressed the need to improve BICS.

- The most time-consuming activity was not creating the activity but finding suitable materials.

Students' Feedback

In the questionnaire, five questions were asked to investigate students' perceptions of all CLIL activities: *1 Which CLIL activities did you enjoy most? 2 Which activities would you like to have in the future? 3 Can you grade how interesting the CLIL activities were for you? 4 How would you describe your feelings during the CLIL activities? 5 Can you describe what you liked or disliked at the CLIL activities (an open-ended question)?*

The responses were processed and are shown in Figures 1 to 4. Based on responses to the first question, we can say that the students in our research enjoyed most Kahoot activities (43 %), followed by group work 22 %. Video work and the mock inspection tour ranked third and fourth with 15 % and 12 %, respectively. The remaining 8 % accounts for other activities.

The responses to the second question are shown in Figure 2. They can help to adapt the future classes. What students would appreciate most is speaking, represented by 43 %. The next 25 % belong to Kahoot quizzes, followed by no changes presenting 23 %, and final group work adding 9 % to the total.

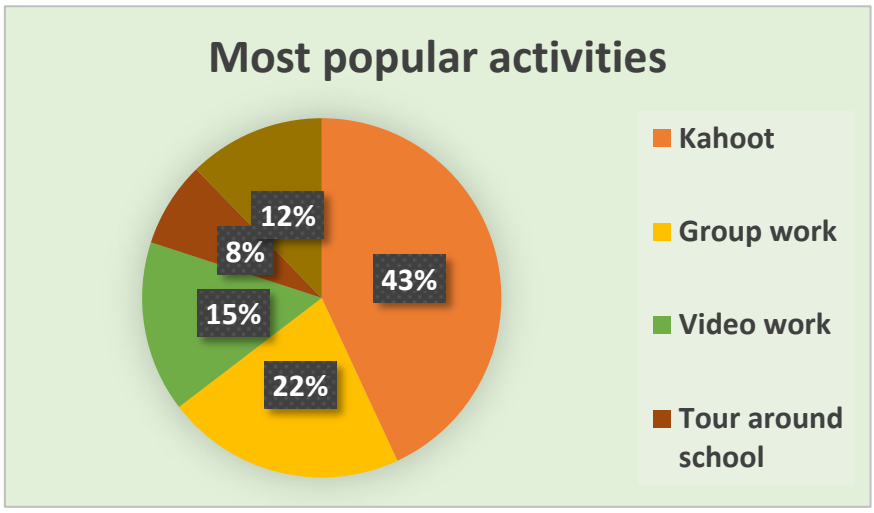

Figure 1: The most popular activities across the classes

The following figure (Figure 3) shows the comparison of CLIL activities including web-based applications and collaborative tasks and an activity based on connection to real-life practice. It is seen that Kahoot was the most exciting activity achieving 85 % on the "interesting very much" level. Supposingly, it was due to its competitive nature. However, competitive quizzes are rather stressful for some students, but the stress also works as a motivator to think and do the task quickly. The complex relations between stress and other states of mind, and knowledge acquisition are discussed by neuroscience in education as described by Kelly (2017). The collaborative tasks were also very interesting for students accounting for 65 % at the level "interesting very much". However, this item included group tasks on Youtube videos and group tasks dealing with processing some technical texts. The lecture of an expert achieved the lowest percentage of being

interesting, accounting for 55 %, and it was the only one that achieved 10 % in the ranking “not interesting”; the other items did not show disinterest by the students.

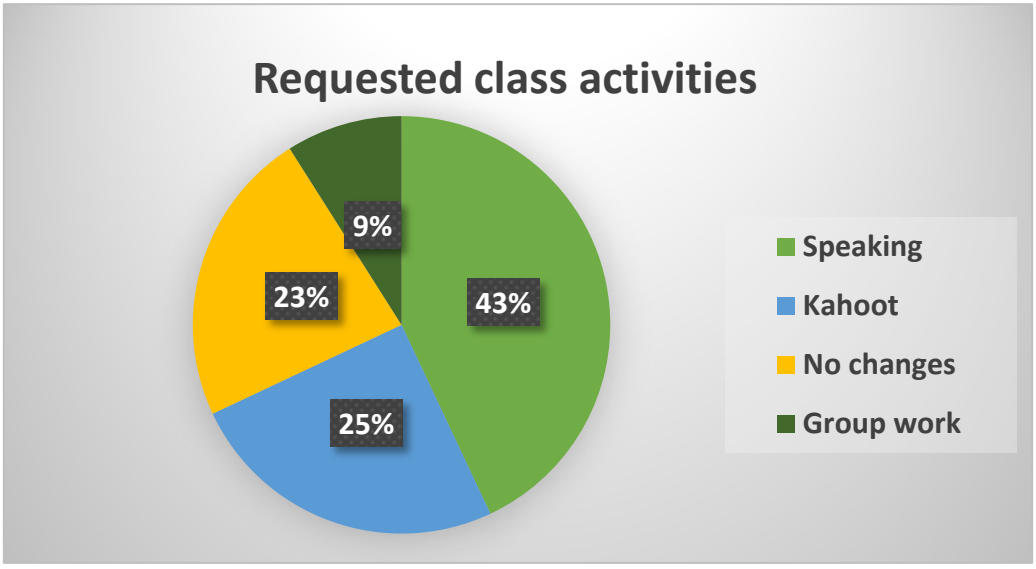

Figure 2: The activities requested by students

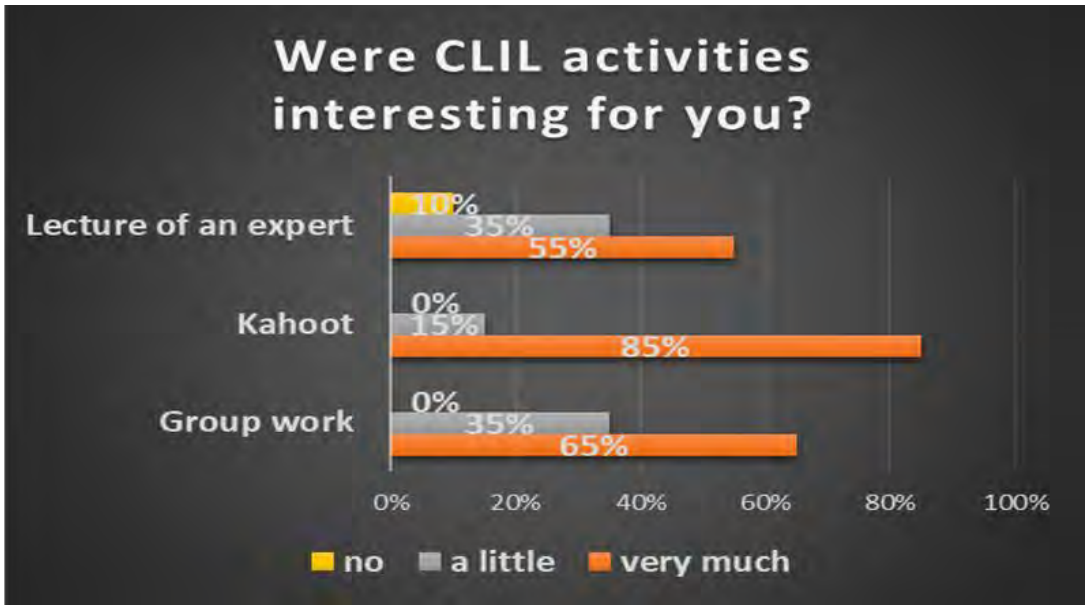

Figure 3: Interestingness of activities for students

The question focusing on the students' perceptions of the CLIL activities offered 12 options – six positive ones (inspiring, promoting collaboration, activating, enjoyable, discovering, motivating further studying) and six negative ones (complicated, feeling incompetent, difficult, discouraging, promoting cheating, very simple – primitive). According to the APA Dictionary of Psychology, perception is *"the process or result of becoming aware of objects, relationships, and events using the senses, which includes*

such activities as recognizing, observing, and discriminating". This differs from "feelings" or "emotions". The responses to the question on perceptions of the CLIL activities were as follows (Figure 4): inspiring, promoting collaboration, activating, and enjoyable, enquiring with 17 %, 17 %, 15 %, 13 %, and 10 %, respectively. Out of negative perceptions, Complicated, Feeling Incompetent, Difficult, and Discouraging recorded the following percentages 7 %, 6 %, 6 %, and 3 %, respectively. Nobody perceived and marked perceptions of Promoting Cheating and Very Simple (0 %). The "Very simple" item was included in the scale on purpose. The activities were conducted at university classes addressing complex topics; therefore, the option was given to determine if CLIL does not simplify the content too much. As can be seen from this result, it was not proved as nobody chose this option.

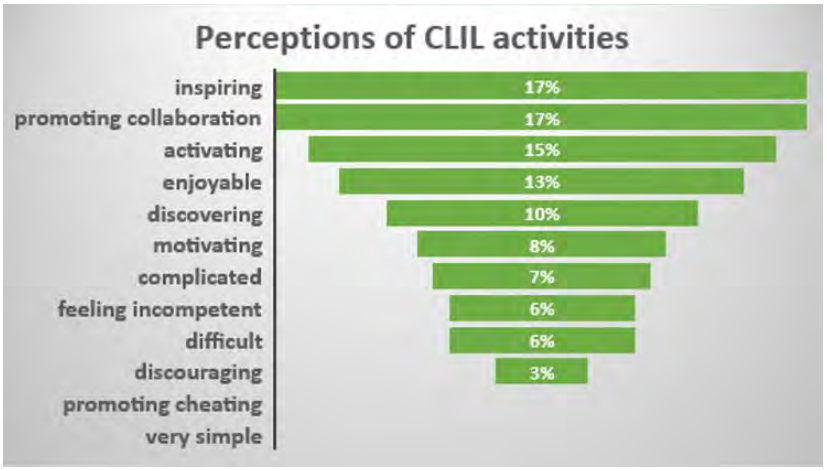

Figure 4: Perceptions of the CLIL activities

The replies to the last open-ended question provided some insights into the students' perceptions. The replies mostly contained a positive perception of the activities as new, manageable, and short. It was also a way to expand their technical vocabulary. Some of the replies appreciated the teacher being very understanding and supporting their learning of technical content in general. A few examples of the responses follow:

• *I liked the activities. They were presented in an interesting way. We learned some technical terms, and it is motivating to learn a foreign language.*

• *I really liked the GIS subject in a foreign language. The activities were fun, easy, but at the same time informative. We took the class at the beginning of the semester, so the timing was ideal since we did not take difficult stuff, and it was understandable even in English. I do not think it was anything difficult, and I would easily take more such classes.*

• *I liked the connection of teaching with a fun form of activities in a foreign language.*

• *Plus – the fun form, it was not in the form of a test, minus – the instructions for developing the activity were missing; the first steps were trial and error on the side of the students until they understood what it was about (activity no. 2)* (referring to learningapps activity).

4. DISCUSSION

The results of research on the topic of CLIL or CA-CLIL are rather often conducted on a qualitative basis and in local, small-scale experiments; therefore, they are often lacking statistical conclusions with a higher statistical power (Rubio-Alcalá et al. 2019, p. 191; Vonkova et al., 2021). It is necessary to mention that the present research is an example of small-scale, qualitative research conducted in the conditions of one university. Regarding the students' feedback, it needs to be said that because the teachers were free to create activities according to their current needs, we were unable to plan and include all the conducted activities in the questionnaire, which, therefore, might have affected the results.

On the other hand, some teachers participated in foreign courses on CLIL (1 teacher) and innovative technologies (2 teachers), where they could see and experience many activities, which they consequently used in their classrooms. The participants of the courses did appreciate the impact the courses had on them and their pedagogical skills. The teachers who had not participated in foreign language courses still participated in the workshops dealing with team tasks, sharing activities online, how to divide the online class into different groups (rooms in MS Teams), and internet applications, particularly Kahoot, organized at the university within the project. However, such short trainings cannot be compared to the proper didactic training, the teacher at secondary and primary schools receive. According to Mesmaeker & Lochtman´s (2014) study, the Belgian teachers from secondary schools (N=80) had on average 4.5 years of CLIL education (p.198). There has not been done any similar survey on content teachers at university level, not mentioning their pedagogical skills, professional identity, as in Mesmaeker & Lochtman (2014). The methodological and digital training of subject teachers is considered essential. Tarasenkova et al. (2022) see the training and the ability of CLIL teachers, who might/should also be the subject teachers, to design their teaching CLIL materials as a crucial factor in implementing CLIL in higher education institutions (p. 257). The COVID-19 lockdowns, during which teachers' instructional methods had been somewhat limited, forced them to use some digital tools, increasing their openness towards using digital educational applications.

Štefková et al. (2021) claimed that subject teachers at universities request further training in English and their didactic/methodological skills. The willingness to develop pedagogical skills is seen as a necessity that can be used to foster quality teaching at universities. Meyer (2010) describes seven strategies used for successful CLIL implementation which are: rich input, scaffolding, rich interaction and adding inter-cultural dimension, making it H.O.T. (higher-order thinking), and sustainable learning. What is more, he introduces a CLIL template which might also work for content teachers. He also emphases the importance of task-based teaching and multi-modality of as input as output. (Meyer, 2010, p. 25, Figure 4). Other aspects of the needs of CLIL teachers include understanding the value of CLIL and harmonizing the "public order" for CLIL, institutional support, and their personal acceptance of CLIL implementation. Another aspect of CLIL implementation in classes was the collaboration between language and subject teachers, when they discussed mainly specific terminology and set up the applications for a particular class. The collaboration between subject and language teachers is also

supported by Arnó-Marcia & Mancho-Barés (2015, p.72), especially in implementing CLIL in content subjects and ESP classes.

Regarding ESP and CLIL in higher education, we see that teachers' training in changing the teaching styles into student-centered, multi-modal, embracing collaboration at students' and students-teacher's levels and utilization of digital technologies need to be addressed thoroughly.

5. CONCLUSIONS

The conducted research might be considered a small-scale study due to the limited number of participants and providing an evaluation of results using only descriptive statistical methods. Despite this feature, we determined some preliminary findings which could serve as hypotheses for further research.

Based on the results of the analysis of teachers' responses, the following can be assumed:

- CLIL provides more contact with the target language, in our case English, as the content teachers prepared and conducted about 24 web-based activities, several video analyses, and group work, all within their content subject classes.

- CLIL diversifies the methods and forms of classroom practice. Most teachers have used a new type of activity that they have not conducted before, e.g., video group work, Walk in the Gallery (a CLIL activity), and Kahoot as a quiz method.

- CA-CLIL makes it easier for less-language-able teachers. Some of the content teachers expressed that feeling. The connection between the language level of a teacher and feelings of anxiety perceived during the instruction needs to be studied on a bigger sample of teachers.

- CA-CLIL offers methodological advancement for teachers. All content teachers participated in two online methodological workshops, and five of seven completed a foreign one-week course designed to improve teachers' methodological skills.

The students' questionnaire suggests the following conclusions:

- Students' responses indicate that implementing CLIL or CA-CLIL activities can create an environment where students feel activated and enjoy collaboration. Students perceive positive perceptions of being motivated, challenged, and meanwhile having fun. Students do not see the web applications as bringing up simplified content. However, this subject needs further investigation that will study the anxiety and stress-free atmosphere in CLIL classes thoroughly.

- CA-CLIL employs modern technologies and makes learning attractive for students. Students would welcome to have more such activities, especially Kahoot. However, some questions still need to be answered including: What is the ratio or balance when the activities are still perceived as entertaining? Do web-based activities affect learning positively? Do web-based activities match the university's educational content demands?

More specifically, focused research should be conducted on a broader sample of students and CLIL teachers to answer them thoroughly. As found in the research, university teachers, as a specific group of teachers distinguished from primary and secondary school teachers, need to receive sufficient instruction on CLIL methodology and sufficient instruction on and practice in utilizing internet applications and IT tools specially

designed for the university level. Despite positive experiences and findings, introducing CLIL practices into a university or higher education environment is relatively slow and vague and offers a multi-faceted field to be examined.

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Conflict of interest

The authors declare no conflicts of interest

Appendix

The link to the questionnaire: www.iankety.sk/dotaznik/428946627/

The descriptions web-based CLIL activities are available upon request.