Content and Language Integrated Learning (CLIL) in a Medicine Program in Colombia: Results of a Perception Survey in Students

Aprendizaje Integrado de Contenidos y Lengua (AICLE) en un programa de Medicina en Colombia: Resultados de una encuesta de percepción de estudiantes

Aprendizagem Integrada de Conteúdo e Língua (CLIL) em um programa de Medicina na Colômbia: Resultados de uma pesquisa de percepção de estudantes

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Received: 23/07/2021
Sent to peer review: 03/09/2021
Accepted by peers: 04/01/2022
Approved: 26/01/2022

DOI: 10.5294/laclil.2022.14.2.2

To reference this article (APA) / Para citar este artículo (APA) / Para citar este artigo (APA)
Cabrales, R. A., Moreno, G. A., & Arcila, S. (2021). Content and Language Integrated Learning (CLIL) in a Medicine program in Colombia: Results of a perception survey in students. *Latin American Journal of Content & Language Integrated Learning*, *14*(2), 215–234. https://doi.org/10.5294/laclil.2021.14.2.2

LACLIL ISSN: 2011-6721 e-ISSN: 2322-9721 VOL. 14, No. 2, JULY-DECEMBER 2021 DOI: 10.5294/laclil.2021.14.2.2 PP. 215-234

ABSTRACT. This study collected the perception of medical students about the use of English for teaching through the use of a strategy based in Content and Language Integrated Learning (CLIL) approach at Universidad Tecnológica de Pereira (UTP) Colombia. A descriptive observational quantitative research was conducted in a group of 128 students of medicine who agreed to participate in the strategy called "Strategy for Paper's Bilingual Presentation (SPBP)" in the subjects of Surgical Clinic I and II. Of this group, 98.5% (126) considered learning English important in their training and 86% (110) essential to advance without difficulties in their studies. In addition, there was a 52.3% (67) of students who stated that the University should foster the use of English integrated with contents in specific programs. In reference to the teaching of English at the University, 85.9% (110) of the students considered that it should be integrated into the content of the academic programs. The didactic strategy was positively evaluated by 86.7% (111), and 61% (78) used English exclusively or preferentially. Scenic fear and lack of knowledge of technical language were arguments for the preferential use of Spanish in the session. Among the recommendations made by the students were the extension of the preparation time for the activity, the inclusion of clinical cases, and the selection of the assigned topics with the teacher. The didactic strategy used proved to be very useful and replicable in other semesters and training levels of the Medicine program. It is imperative to design and promote bilingual spaces that allow the use of English as a strategy to integrate contents and language in the teaching of Medicine.

Keywords (Source: Unesco Thesaurus): Higher education; teaching methods; bilingual programs; integrated education; medical education.

RESUMEN. Este estudio recopiló la percepción de un grupo de estudiantes de medicina sobre el uso del inglés en la enseñanza mediante una estrategia basada en la metodología de Aprendizaje Integrado de Contenidos y Lenguas Extranjeras (AICLE) en la Universidad Tecnológica de Pereira (UTP) (Colombia). Se realizó un estudio observacional descriptivo de corte cuantitativo en un grupo de 128 estudiantes de medicina, quienes aceptaron participar en la estrategia didáctica llamada "Estrategia bilingüe para la presentación de artículos" (EBPA) en las asignaturas Clínicas Quirúrgicas I y II. De este grupo, el 98,5 % (126) de los participantes consideró muy importante el inglés en su formación y el 86 % (110) lo consideró esencial para avanzar sin dificultades en sus estudios. Adicionalmente, un 52,3 % (67) de los estudiantes afirmó que la universidad debe fomentar el uso del inglés integrado a los contenidos específicos del programa. Con referencia a la enseñanza del inglés en la universidad, el 85,9 % (110) de los estudiantes consideró que esta debería estar integrada al contenido de los programas académicos. La estrategia didáctica fue valorada positivamente por el 86,7 % (111) y el 61 % (78) utilizó el inglés de manera exclusiva o preferente. El temor escénico y el desconocimiento del lenguaje técnico fueron argumentos para optar por el uso preferente del español en la sesión. Dentro de las recomendaciones realizadas por los estudiantes se destacan la ampliación del tiempo de preparación de la actividad, la inclusión de casos clínicos y la selección de los temas asignados con el profesor. La estrategia didáctica utilizada demostró ser muy útil y replicable en otros semestres y niveles de formación del Programa. Es imperativo diseñar y promover espacios bilingües que permitan el uso del inglés como una estrategia de integración de contenidos y lenguaje en la enseñanza de la Medicina.

Palabras clave (Fuente: Tesauro de la Unesco): Educación superior; métodos de enseñanza; programas bilingües; educación integrada; educación médica.

RESUMO. Este estudo compilou a percepção de um grupo de estudantes de medicina sobre o uso do inglês no ensino por meio de uma estratégia baseada na metodologia de Conteúdo Integrado e Aprendizagem de Línguas Estrangeiras (CLIL) da Universidade Tecnológica de Pereira (UTP) (Colômbia). Foi realizado um estudo observacional descritivo quantitativo em um grupo de 128 estudantes de medicina que aceitaram participar da estratégia didática denominada "Estratégia Bilíngue para apresentação de artigos" (EBPA) nas disciplinas de Clínica Cirúrgica I e II. Desse grupo, 98,5% (126) dos participantes consideraram o inglês muito importante em sua formação e 86% (110) consideraram essencial para progredir sem problemas em seus estudos. Adicional a isso, 52,3% (67) dos alunos afirmaram que a universidade deveria incentivar o uso do inglês integrado ao conteúdo específico do programa. Com relação ao ensino de inglês na universidade, 85,9% (110) dos alunos consideraram que deveria ser integrado ao conteúdo dos programas acadêmicos. A estratégia didática foi avaliada positivamente por 86,7% (111) e 61% (78) usavam o inglês exclusivamente ou preferencialmente. O medo do palco e o desconhecimento da linguagem técnica foram argumentos para optar pelo uso preferencial do espanhol na sessão. Entre as recomendações feitas pelos alunos, destacam-se a ampliação do tempo de preparação para a atividade, a inclusão de casos clínicos e a seleção dos tópicos atribuídos com o professor. A estratégia didática utilizada mostrou-se muito útil e replicável em outros semestres e níveis de formação do Programa. É imperativo conceber e promover espaços bilingues que permitam a utilização do inglês como estratégia de integração de conteúdos e língua no ensino da Medicina.

Palavras-chave (Fonte: Thesaurus da Unesco): Ensino superior; métodos de ensino; programas bilíngues; educação integrada; educação médica.

Introduction

The constantly changing social and communicative dynamics of our contemporary world have made it imperative for those involved in education to rethink the role of foreign languages in the teaching-learning process. The use of English has turned into a necessity for professionals of all fields, instead of a privilege of a few (Bonilla-Medina, 2012; García, 2011; Rubio-Alcala et al., 2019). In 2004, as a competitiveness strategy, the Ministry of Education of Colombia created the 2004–2019 National Bilingual Program (NBP) of Colombia, aiming at improving the proficiency in English as a Foreign Language (EFL) among the elementary, secondary and university students in Colombia.

Through this strategy, the Colombian government has made different efforts to incorporate its citizens in the current competitive world, which is shaped by scientific and technological progress, economic opening, intercultural awareness, and breakdown of communication barriers.

Recently, Decree 1330 of 2019 brought attention to the need to promote the internationalization of the curriculum and the learning of a foreign language, among others, as a qualifying condition for higher-education institutions. Universities must guarantee a minimum number of hours that allow recent high-school graduates to understand complex texts of their discipline and express themselves with a certain degree of fluency (Fandiño-Parra et al., 2012).

Nonetheless, the latest results report of the standard tests that Colombian undergraduate students take at the end of an undergraduate academic program, Saber Pro (2020), showed concerning results in terms of the relationship between the expected students' level of English proficiency when graduating and the real level that a big part of the tested population attained. In reference to this, the UTP has proposed different language policies in order to foster bilingualism. Taking this into consideration, it can be stated that policies should guide administrators and professors of professional programs, including medicine, to integrate bilingual teaching practices such as CLIL (Burbano et al., 2016).

In the field of health sciences, the 21st Century has accepted English as the international language of science and medicine. A high

LACLIL ISSN: 2011-6721 e-ISSN: 2322-9721 VOL. 14, No. 2, JULY-DECEMBER 2021 DOI: 10.5294/laclil.2021.14.2.2 PP. 215-234

percentage of current scientific articles and medical literature is produced in English, and many read it as an L2. This domain explains the interest of medical educators (in non-English-speaking countries) in designing courses and activities in bilingual contexts in such a way that students perceive English (L2) as an essential and mandatory foreign language in their professional performance (Abi-Raad et al., 2016; Alshareef et al., 2018; Zirene, 2012).

This classroom-based research delves into the creation of bilingual environments that allow for the development of both the cognitive domain and the L2 communication skills that medical students need for their professions. Such didactic strategies were framed under the principles of CLIL, which is an approach for teaching content subjects in a foreign language and, thus, emphasizes learning content while simultaneously developing language skills. CLIL promotes effective motivational language learning since it includes both occupational language skills and knowledge of interest (Gavrilova & Trostina, 2014). This strategy entails four dimensions that are expected to be developed throughout the learning process: content, communication, cognition, and culture. They constitute what is known as the 4Cs Framework (Coyle, 2010).

The dimension of *content* refers to the topics that students should learn; *communication* is related to the development of language skills that are necessary to negotiate meaning while learning the target content; *cognition* is about the thinking skills that students should develop, the ways in which students should be engaged with the content, and the type of tasks they should develop to foster higher-order thinking skills and critical thinking; finally, *culture* regards the intercultural awareness and understanding of otherness that students should develop (Coyle, 2010).

Finally, it is important to enhance the professional communicative competence in higher education, which frequently implies solving professional requirements in a foreign language. CLIL may bring about many benefits because the synergy between language and academic subject can result in what is needed to prepare highly qualified specialists (Banegas, 2015). Henceforth, CLIL can help universities to improve their language studies, reputation and student's preparation for the future. The comprehensiveness of this approach has gained in popularity

and it has been increasingly used by many educators in higher education settings around the world (McDougald & Ayure, 2020). Based on the possibilities offered by CLIL, its principles have been selected to frame the instructional design used with the population of this research.

Materials and Methods

Type of research

This study was developed under a descriptive observational quantitative research framework in a group of 128 medicine students who were exposed to a didactic strategy for teaching surgery in a bilingual environment.

Participants

One hundred and twenty-eight Medicine students of the Technological University of Pereira enrolled during the first and second academic semesters of 2020 and were invited to assess this didactic strategy. Students were split in two groups; Group 1 was composed of fourth-year students (8th semester), while Group 2 was composed of sixth-year students (12th and 13th semester).

Regarding the students' English proficiency levels, the Medicine Program at UTP demands from them to take at least five 64-hour English courses, out of the eight courses offered by the university's foreign languages institute (ILEX), as a graduation requirement. The competences to be developed in these courses are aligned to the CEFR standards (2020). Thus, courses 1 and 2 are devoted to reaching level A1; courses 3 and 4 are devoted to level A2; courses 5, 6, and 7 should help students develop the skills of a B1 language user; and the eighth course should place them in a basic B2 level.

With respect to the English courses taken before being exposed to the activity, most of the participants had taken six 64-hour courses at the Language Institute of the university (ILEX). This means that the participants should have reached a B1 level, which implies that students are able to understand the main points of clear texts in standard

LACLIL ISSN: 2011-6721 e-ISSN: 2322-9721 VOL. 14, No. 2, JULY-DECEMBER 2021 DOI: 10.5294/laclil.2021.14.2.2 PP. 215-234

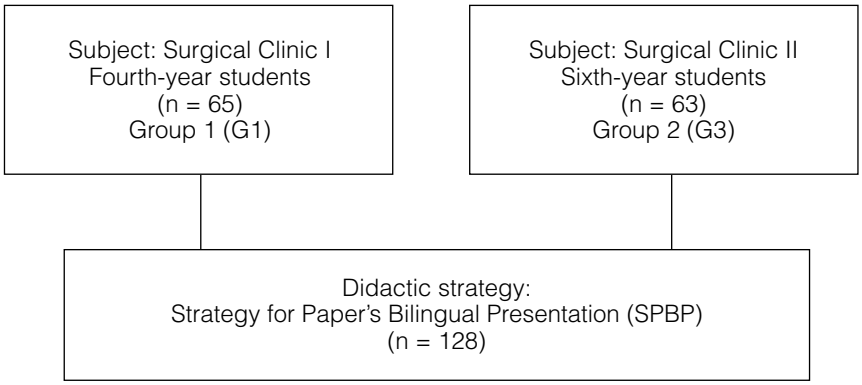
language if they are about topics with which they are familiar, whether in work, study or leisure contexts and produce simple, coherent texts about topics with which they are familiar or in which they have a personal interest, among other competences (CEFR, 2020).

Instructional design

The Surgical Clinic I and Surgical Clinic II subjects are taught in the fourth and sixth years of Medicine, respectively. They include theoretical activities (lectures) and an important group of practical activities (clinical rounds, presentation of cases, attendance at shifts, paper reviews, performance of procedures and practice in operating rooms, among others).

The new didactic strategy was called Strategy for Paper's Bilingual Presentation (SPBP), and it was implemented under the theoretical principles of CLIL and the parameters of an effective lesson with bilingual content, as proposed by Echevarría et al. (2006) to allow for the voluntary use of L2 and the development of additional skills (speaking, listening, conversation) in specific surgery contexts (Figure 1).

Figure 1. Subjects, groups, participants and didactic strategy



Source: Own elaboration.

The strategy included two phases. Phase 1 implied preparation and Phase 2 the oral presentation. During Phase 1, Preparation, the students explored the content, read the article, created the presentation, and

uploaded it to the Learning Management System. During Phase 2, Presentation, the students did the oral presentation, expressed their opinion and participated in the group discussion. Table 1 and Table 2 summarize the detailed process for both Phase 1 and Phase 2, respectively (see Tables 1 and 2).

Table 1. Strategy for Paper's Bilingual Presentation (SPBP) — Phase 1

Phase 1. Preparation			
Steps	**Activity**	**Description**	**Days before presentation**
1	Access to the activity available in the Learning Management System (LMS) Google Classroom: https://classroom.google.com/c/MzM0MDYwMDk5NjNa	Students are invited by the professor to access the LMS and explore all the course and the academic activity contents.	8
2	Assignment of the article in English (original research or review articles).	The professor sends the assigned articles by email for all students to read and prepare the presentation.	6
3.	Selection of students for the oral presentation.	The professor selects the students who will perform the presentation.	6
4.	Delivery of the file with the visual support of the presentation (in English) on the LMS.	Students upload the presentation on the LMS to be read by all the participants of the session.	1

Source: Own elaboration.

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Table 2. Strategy for Paper's Bilingual Presentation (SPBP) — Phase 2

Phase 2. Oral presentation				
Steps	**Activity**	**Description**	**Language component – Skill. Spanish (L1) – English (L2)**	**Time**
1	Opening	The professor begins with a short introduction and presents the expected learning outcomes.	Oral presentation (L2). Communicative competence.	5 min
2	Oral presentation	The student presents the article using the standard structure of the body of research manuscripts: Introduction, Materials and Methods, Results, Discussion and Conclusions.	Oral presentation and use of ICT. Main use of L2. L1 is an option. Communicative competence. Use of ICT.	12 min
3	Personal opinion	The student expresses his/her opinion about the content of the article and the importance of the results in the global and local context.	Main use of L2. L1 is an option. Critical review of the literature.	3 min
4	Discussion	All the participants in the session make comments about the paper, relevance, resolution of doubts and potential applications.	Main use of L2. L1 is an option. Communicative competence. Critical thinking.	5 min
5	Final reflection	The professor and the students make general comments on the activity, a final reflection about the presentation, how to improve it and the importance of the activity in their professional development. Qualitative self-assessment and co-assessment.	Use of L2. Reflective thinking. Metacognition. What I learned. Mistakes that I noticed. How I can improve.	5 min

Phase 2. Oral presentation				
Steps	**Activity**	**Description**	**Language component – Skill. Spanish (L1) – English (L2)**	**Time**
			What I taught / explained to my partner.	
			Suggestions. Comments.	
			Next session.	

Source: Own elaboration.

Assessment of the strategy

At the end of the respective academic semester, the students participating in the study were invited to fill in an anonymous online survey in English, available in Google forms. The survey included seven multiple-choice questions (Likert scale) and open questions related to the importance of English in medical training, its applicability in disciplinary contexts, and the degree of satisfaction in the activity performed (Table 3). The results were tabulated in Excel and analyzed with the Stata package v15. Univariate analysis through frequency distribution was developed, along with central tendency and dispersion measures. Chi square tests were used to establish the dependency ratio between categorical variables. Nonparametric (Mann-Whitney U tests) were used to compare quantitative variables that did not accomplish assumptions of normality. The significance level established was 0.05. Categories and frequency distribution were defined for the responses to the open-ended questions.

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Table 3. Questions of the survey

Categories	Statements		Likert scale
Importance of English in learning medicine	Statement 1. (S1)	Communicating (speaking, listening, reading and writing) in another language (English) is currently very important for a physician.	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
	Statement 2. (S2)	The knowledge of English has been necessary to advance without difficulties in my academic program.	
Professors' use and promotion of English in the Medicine program	Statement 3. (S3)	The UTP Medicine Program, through professors and subjects, encourages students to use the English language.	
	Statement 4. (S4)	The use of English in the teaching of medical subjects should be encouraged in other subjects and semesters.	
	Statement 5. (S5)	English language learning should be done using specific content of the undergraduate programs offered by UTP.	
SPBP. Implementation and difficulties	Statement 6. (S6)	During the preparation for the oral presentation of the assigned article, I had some difficulties in terms of reading, understanding, and/or selecting the content.	
	Statement 7. (S7)	The activity "SPBP" carried out seems important to my training.	

Categories	Statements		Likert scale
Use of English language during oral presentations	Question 8. (Q8)	The oral presentation of the assigned article was made.	1. Exclusively in English 2. Predominantly in English 3. English and Spanish in equal parts 4. Predominantly in Spanish 5. Exclusively in Spanish
	Open-ended questions	1. If your presentation was predominantly/exclusively in Spanish, what do you think could be the reason?	
		2. Please, write here if you have any recommendation to improve this didactic activity.	

Source: Own elaboration.

Results

Participants

The questionnaire was answered by all the participants (128) (see Figure 1), 64.1% of whom were women (82) and 35.9% were men (46). There was not any significant difference in terms of answers between female and male participants. The socio-demographic characteristics are described in Table 4. The average age was 23 years for G1 and 25 years for G2. Inside each group, there was not any significant difference in the relation sex/age. Fifty-seven percent (73) had taken six or more English courses, while 43% (55) had taken five English courses or fewer.

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Table 4. General characteristics of participants

Variable		G1 (n=65)		G2 (n=63)		Total	
		n	%	n	%	n	%
Sex	Male	22	33.8	24	38.1	46	35.9
	Female	43	66.2	39	61.9	82	64.1
English courses	5 or less	31	47.7	24	38.1	55	42.9
	6 or more	34	52.3	39	61.9	73	57.1
		Median - (IR)		Median - (IR)		Median - (IR)	
Age	Male	23 (22–24)		24.5 (23–27)		23 (22–26)	
	Female	23 (22–24)		25 (24–25)		24 (23–25)	

Source: Own elaboration.

Importance of English in learning medicine (S1, S2)

For 98.5% (126) of those surveyed, English is very important in the exercise of the profession, and for 86% of them (110) learning it is necessary to advance without difficulties in their academic program.

Professors' use and promotion of English in the Medicine program (S3, S4, S5)

The use of English to teach Medicine contents by the professors of the program generated varied responses. For instance, the students who considered that the program encourages the use of English in their subjects represented a 52.3% (67). In contrast, 18% (23) disagreed with this statement, while 29.7% (38) of respondents remained neutral. Similarly, 85.9% (110) agreed with the possibility of a change in the institutional strategy for learning English (as an external requirement) and its incorporation in other subjects and semesters of the Medicine program and other programs of the University. Finally, there was a 9.4% (12) of students who disagreed with this statement, and 4.7% (6) provided a neutral answer.

SPBP. Implementation and difficulties (S6)

In relation to the total of respondents, 52.3% (67) denied having difficulties in preparing the oral presentation of the assigned scientific paper. About 28.9% (37) expressed some issues in relation to reading

comprehension or selection of the content, and 18.8% (24) recorded a neutral response.

Use of English language during oral presentations (Q8)

In reference to the use of English during oral presentations, 61% (78) of students made exclusive or predominant use of the English language, while 10.1% (13) used Spanish and English in the same proportion. For 28.9% (37) of the students, Spanish was their main language. When inquiring about the reasons for not using English, they mainly expressed an elementary development of oral skills, stage fright and insecurities in terms of phonological aspects of medical language: "I master reading in English because it has been absolutely necessary, the other components have been relegated and a lot of practice is needed (E8, Q3)" or "It is not easy for me to speak English, I practice it very little and doing it in front of several people, colleagues and interns, is intimidating and embarrassing you knowing that I do not do it well (E6, Q6)[1].

Assessment of the SPBP and recommendations (S7 and open-ended questions)

There were different responses in relation to the strategy applied. For example, 86.7% (111) valued the activity positively and 12.5% (16) expressed themselves in a neutral way. In terms of the recommendations provided by students, 68 answers were collected (Table 5). Students comments included the suggestion to maintain the activity, and extend it to other semesters and courses.

Table 5. Recommendations to improve SPBP activity

Category	Number of comments	%
To maintain the activity	21	30.9
To implement in other subjects and levels	15	22.1
To give more time for preparation	3	4.4
To select small groups for the presentations	2	2.9

1 Translated from the original quotes.

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Category	Number of comments	%
Individual presentations on a topic	2	2.9
Students' participation in the selection of a topic	3	4.4
To include clinical training and diversify the topics	5	7.4
To schedule longer sessions with more presentations.	3	4.4
To send instructions for the design and oral presentation	2	2.9
The activity did not impact positively	2	2.9
To choose the didactic during presentations	1	1.5
To design a glossary of medical terminology	1	1.5
To switch between English and Spanish in the activity	2	2.9
To apply assessment before and during the session	6	8.8
TOTAL	68	100

Source: Own elaboration.

Regarding the recommendations to improve the activity, only 2.94% of open-ended answers provided negative feedback. This means that most answers expressed a positive view about the activity: "I think that this activity is very important for me, because it takes me out of my comfort zone, it forces me to use another language, which is essential because it is the most used in the literature (E4, Q14)."

Furthermore, 31% of the responses emphasized the need to maintain the activity, and 22% considered that similar activities should be implemented in other semesters of the Medicine curriculum. In addition, 8.8% of respondents considered the importance of including an input/output test as a strategy to maintain the participants' attention.

> I think it is a very valuable exercise that should be encouraged in other semesters and subjects. Nowadays English in medical education is really important not only for the general doctor but in the future in order to apply to residencies. I think the use of tools like kahoot or those online quizzes help a lot in the learning progress and should be used in all the sessions. (E 7, Q3)

Other recommendations expressed by students included the potential advantages of presenting clinical cases (5.8%), the extension of

preparation periods (4.4%), and the collective selection of topics for the presentations (4.4%), among others.

> I liked it very much because it is a good opportunity to practice my "speaking" because we, as students, have to read a lot of articles in English but we don't have the chance to talk in English with others; and it's not about who speaks more fluently or have better accent, it's about stop being afraid of the language and just do it and this is a great opportunity to do so. (E3, Q2)

Finally, with the purpose of avoiding confounding variables related to the differences in students' training level, answers were grouped in an abbreviated Likert scale of three options: agree, disagree, and neutral, for both groups. Questions S2 and S7, related to the importance of L2 and the strategy used in this study, revealed statistically significant differences when comparing G1 and G2 ($p=0.006$ and $p=0.012$, respectively). These differences can be explained by the higher number of neutral answers in G1.

Discussion

Didactic strategies like the one presented in this paper provide students with a more contextualized learning of a foreign language as they combine the language skills (reading, writing, speaking, and listening) in the learning process but applied to a specific academic program. Generally, CLIL courses within the clinical training in the medicine curriculum should focus on communication, medical terminology, and everyday health terminology, but also appropriately emphasize on writing and reading. Similar to Roca et al. (2015), a good number of students had a high perception of the importance of L2 in Medicine (98.5%) and a favorable opinion for replicating these experiences in this and other university programs (85.9%).

However, since basic knowledge is learnt and essential natural scientific foundations are discussed in the basic sciences learning in the first stages of the medicine training, it might be of greater benefit to implement CLIL in the clinical training stage. One reason is the complexity of different topics that already have to be integrated in the first

LACLIL ISSN: 2011-6721 e-ISSN: 2322-9721 VOL. 14, No. 2, JULY-DECEMBER 2021 DOI: 10.5294/laclil.2021.14.2.2 PP. 215-234

semesters (pre-clinical stage). Likewise, subjects such as Chemistry, Molecular Biology, and Physiology, for instance, might be of great difficulty to understand in a foreign language. Students might feel insecure and not well prepared when this fundamental knowledge is learned through English (Stapel, 2016).

CLIL represented an appropriate approach for the positive reception of bilingual practices in the classroom, according to the participants of this study. Similar to SPBP, in the case of teaching a technical language, the material that is relevant to the objectives of the program is derived directly from the field of interest of the students, along with the implementation and design of more and new strategies for using the language and gradually incorporating it as an instructional language in the upper semesters (Alshareef et al., 2018; Rus, 2019). This approach increases opportunities for intrinsic learning motivation and faster development of reading, speaking, and comprehension skills, as well as for solving professional activities in a foreign language (Stapel, 2016).

The comments expressed by the participants on the importance of learning English integrated with medical content show the advantage of CLIL in this context. Gavrilova and Trostina (2014) and Dale and Tanner (2012) report the positive impact of the implementation of CLIL on the motivation of undergraduate students. These authors sustain that CLIL is directly linked to the academic interests of students because it actively involves them in the learning process. However, the implementation of this learning modality is complex, since the teaching of a foreign language from the content of the programs must combine the purely linguistic objectives and the specialized context (Arias, 2017).

Stapel (2016) highlights how challenging it is for learners who are non-native speakers of English to develop academic tasks, such as an oral presentation. This circumstance explains why almost a third of the contestants decided to conduct their presentations in Spanish. Therefore, it implies that, even after having mastered an independent level of proficiency in English, some students express different degrees of reluctance towards oral production of the foreign language. The high number of neutral answers for S2 and S7 submitted by G1 can be associated with low awareness of the importance of English in medical education. Students may believe that the course is

taught in a foreign language only to enhance their foreign language proficiency.

This "awareness of the need" could be explained in terms of the way in which English learning is implemented at the university. Students at this level interact with "specialized" medicine learning materials even though they did not have the opportunity to interact with more "general" materials in an earlier stage of their learning process. Regarding this, Hutchinson et al., (1987, p. 53) stated that "if learners, sponsors and teachers know why the learners need English, that awareness will have an influence on what will be acceptable as reasonable content in the language course".

A creative didactic strategy like the one proposed in this article marks a next desirable superior level in modernizing and maximizing learning experiences through teaching strategies. In this way, the full potential of a student's abilities can be activated and the desire for independence and originality, for competition, for searching novelty, and working better in the language classes can be encouraged and the learners' best interests are satisfied. Creative teaching strategies foster motivation and self-assessment, which is a catalyst of learning (Lee, 2017; Rus, 2019).

Conclusions

The main goal of this didactic strategy was to improve the students' ability to recognize and produce spoken and written language in order to effectively interact with colleagues, academic teams, and patients. Another objective was to prepare students in such a way that they identify and understand medical concepts, hospital culture, and the corresponding discourses in Spanish (L1) and English (L2).

The results of this study showed that students positively valued the inclusion of bilingual spaces within their disciplinary training. High motivation and an attitude towards its diffusion in other settings of the curriculum are expressed. Variables such as the increase in performance and the increase in the cognitive domain of academic language proficiency should be the subject of further studies. The need to

LACLIL ISSN: 2011-6721 e-ISSN: 2322-9721 VOL. 14, No. 2, JULY-DECEMBER 2021 DOI: 10.5294/laclil.2021.14.2.2 PP. 215-234

implement more strategies for the use of the language is ratified since the students are in favor of receiving them.

This premise encompasses higher education didactics, the role of language in CLIL settings by paying particular attention to the features of scientific language, and the implications for teachers. In order to realize CLIL programs, a needs analysis should be carried out before actions begin (Ruiz-Garrido & Fortanet-Gómez, 2009). A diagnostic English test including sections on grammatical knowledge, reading and listening comprehension as well as writing and speaking skills may be required to ensure that students are not failing in CLIL settings due to certain language barriers (Gavrilova & Trostina, 2014, p. 11). Additionally, a short course on specific medical glossary could be useful to facilitate oral presentation and understanding of documents.

Finally, teaching future professionals how to communicate in a foreign language in a specialized working environment is deeply related to the interconnected society of the 21st century (the last of the four C's). The goal of an SPBP project would therefore be that of helping students to adapt to this purpose.

Ethical Approval

This research was evaluated and endorsed by the Bioethics Committee of Universidad Tecnológica de Pereira (Code 03-130420).

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