Experience Report

The use of international collaborative online learning methodology in a medical course – a learning experience

O uso da metodologia de aprendizagem online colaborativa internacional em um curso médico - uma experiência de aprendizagem

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ABSTRACT | INTRODUCTION: The Collaborative Online International Learning (COIL) methodology uses a strategy called "Mirror classroom", where two or more teachers and students from different teaching institutions can share a course through the use of technological tools. The rise of the COIL methodology increased due to the COVID-19 pandemic, once Higher Education Institutions had to develop support strategies in digital formats to give continuity to the academic mobility processes. **OBJECTIVE:** The objective of this article is to present the COIL strategy as a hybrid education method that facilitates learning and peer interaction in a class at the Faculty of Medicine of a University in Colombia. **METHODOLOGY:** For the realization of the collaborative experience, the students with their groups must carry out a bibliographical search in databases (PubMed, Science Direct, and Embase) related to the topic under discussion related to genes, nutrition, and obesity. Based on the information they compiled, they will have to create a creative infographic where they will expose the importance of genetic expression and its relationship to the obesity process. Finally, make a video exposing the results of the research carried out. **CONCLUSION:** The international collaborative work methodology is an educational strategy that allows the development of soft skills in students and teachers, and the development of teamwork skills, among many others. This type of education allows interpersonal relationships with people who have different locations worldwide.

KEYWORDS: Learning. Teaching. Medical Education. COVID-19 pandemic. Education. Distance. Interdisciplinary Research.

RESUMO | INTRODUÇÃO: A metodologia *Collaborative Online International Learning* (COIL) utiliza uma estratégia chamada *"Mirror classroom"*, na qual dois ou mais professores e alunos de diferentes instituições de ensino podem partilhar um curso através da utilização de ferramentas tecnológicas. A ascensão da metodologia COIL aumentou devido à pandemia COVID-19, uma vez que as Instituições de Ensino Superior tiveram de desenvolver estratégias de apoio em formatos digitais para dar continuidade aos processos de mobilidade acadêmica. **OBJETIVO:** O objetivo deste artigo é apresentar a estratégia COIL como um método educativo híbrido que facilita a aprendizagem e a interação entre pares em uma turma da Faculdade de Medicina de uma Universidade na Colômbia. **METODOLOGIA:** Para a realização da experiência de colaboração, os estudantes com os seus grupos devem realizar uma pesquisa bibliográfica em bases de dados (PubMed, Science Direct e Embase), referente ao tema em discussão relacionado com genes, nutrição e obesidade. Com base na informação que compilaram, terão de criar um infográfico criativo na qual exporão a importância da expressão genética e a sua relação no processo de obesidade. Finalmente, fazer um vídeo expondo os resultados da investigação levada a cabo. **CONCLUSÃO:** A metodologia de trabalho colaborativo internacional é uma estratégia educacional que permite o desenvolvimento de competências transversais em estudantes e professores, o desenvolvimento de competências de trabalho em equipe, entre muitos outros. Este tipo de educação permite relações interpessoais com pessoas que estão em diferentes locais em todo o mundo.

Palavras-chave: Aprendizagem. Ensino. Educação médica. Pandemia de COVID-19. Educação. Distância. Pesquisa Interdisciplinar.

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Introduction

The Collaborative Online International Learning (COIL) methodology or online collaborative international learning uses the strategy called "Mirror Classroom", in which two or more teachers and students from different educational institutions share a course through the use of technological tools.[1,2]

This teaching and learning methodology involves online technologies to facilitate global learning and intercultural experiences through a simultaneous exchange of thinking approaches, culture, and knowledge in the classroom.[2-5]

The booming of COIL methodology increased due to the COVID-19 pandemic since Higher Education Institutions (HEIs) had to develop support strategies in digital formats to give continuity to academic mobility processes.[2] In Table 1 can be seen the characteristics of COIL methodology (see Table 1).

Table 1. Characteristics of the COIL methodology[2,6]

Teachers from different institutions located in different countries
Students from different institutions located in different countries
Co-creation of teachers and students
Co-teaching in learning processes
Co-managing of participating teachers
Different learning objectives between groups and teachers
Highly interactive activities, exercises, and shared projects
Communication, projects, and assignments under internet-connected technology

Source: The authors (2023).

The courses in which COIL methodology is implemented can be developed between academic disciplines that share themes, but the learning environments are positioned in different countries. Therefore, interactions of students from the countries of origin allow them to get to know each other and share tasks that imply an exchange of points of view on a specific topic.[5,6]

COIL methodology facilitates the assignment of projects and promotes the participation and commitment of students in this shared learning process. It can serve as a significant tool through which students cultivate an appreciation of their world point of view.[5]

Internationalization strategy can be achieved by various means in academia, and online collaborative learning is seen as a sustainable option.[7] Students who have participated in this methodology identify the developed relationship with an international partner as a motivator to sustain good study habits; they also described an improved conceptualization of the course content, considering having to explain it to their international counterparts.[7,8] In Table 2, we expose other types of global online learning strategies (see Table 2).

Table 2. Other types of global online learning[2]

Types	Characteristics
Collaborative Online International Learning (COIL)	Online learning based on exchanges with partners
Work-integrated Learning (WIL)	Allows student cooperation in resolving real-life business problems, working with international corporations
Internships and practices with international organizations	Allows students to expand their communication teamwork, besides communication-solving skills, as they work across diverse cultures, time zones, and languages.

Source: The authors (2023).

The objective of this article is to present the COIL strategy as a hybrid education method that facilitates learning and peer interaction in a class at the Faculty of Medicine of a University in Colombia

COIL Experience in Molecular Biology

Our experience began in 2021 with a call by the Mexico's Universidad del Valle de Atemajac (UNIVA) program entitled Global Online Applied Learning (GOAL) that was created based on the COIL methodology to make an internationalization strategy between teachers and international students. After applying and acceptance, the process of rapprochement between participating teachers from different countries began through virtual meetings. In these, different categories in which it was possible to participate were announced.

Once the program was known, contact was made with the teachers with whom the project was going to be carried out. In our case, we merged 61 medical students from Universidad Pontificia Bolivariana (UPB) and 29 nutrition and dietetics students from UNIVA. In addition, two teachers were present, one representing each university together with the team of teaching monitors for the medical students. A subject encompassed by natural sciences and biology was chosen so it could have an interdisciplinary approach from both professional programs.

The theme chosen was "Identification of the genes involved in the development of obesity, regulation of its gene expression and recommendations for healthy eating" in order to make an approach from genetics, a topic dealt with in the area of Molecular Biology, and in the same way important for nutrition students. At the time the topic was chosen, subsequently, the presentation of students of both programs was made through a synchronous virtual meeting where a cultural contextualization of both countries, Mexico and Colombia, distribution of equipment, delivery times, and other aspects took place.

Work groups were formed by nutrition and medical students in equal proportions. They were distributed in 10 groups with an equal number of students. They had to make a creative infographic where they exposed the importance of genetic expression and its relationship with the obesity process. Besides, they had to make a video presentation on the assigned topic together with an infographic summarizing the information collected.

For the qualification of the infographic and video, a grading rubric was executed in order to rate students' works and choose a winning team. Therefore, three finalist teams were chosen to exhibit their work (infographic and video) virtually at the end of October 2021 as evidence of their final work based on the experience. Finally, the winning students were given a bonus in the grade of the subjects they were studying at the time, and finally, no additional evaluation process was carried out. In the following link can be seen some of the evidence of the work done: https://onx.la/b536d

This experience opened the doors for students to interculturality and multidisciplinarity since, in medical practice, they will not only have their medical colleagues, but a group formed of various professions to provide integral care for patients. In the same way, it allows them to live and learn in a different way about topics of importance for their professional life. For teachers, it allowed us to provide students with new pedagogical methods that allow them to learn more simply and didactically and, at the same time, helped us to create new learning models for the next generations.

Tools for the application of COIL

Currently, there are multiple technological tools that enable working under the COIL methodology. Among them are the synchronous editing applications in real-time, such as the applications presented in clouds of different servers of both Microsoft and Google, including many others. In addition, other tools that were mostly used to teach classes virtually during the COVID-19 contingency were Zoom, Microsoft Teams, and Google Meet, among others.

Conclusions

The international collaborative work methodology is an educational strategy that allows the development of soft skills in students and teachers and the development of teamwork skills, among many others. This type of education allows interpersonal relationships with people in different locations worldwide.

Some of the limitations that were found during the construction of the experience were the lack of continuity with the learning process and the employment of other sources to evaluate the COIL methodology with both groups. Moreover, having a punctual experience, in addition to the cultural differences, the teaching methodologies in both institutions, as well as having two different programs, could lead students could set some information biases and represent a challenge for the different teams.

Authors' contributions

Martinez-Sanchez LM participated in conceptualization, formal analysis, research, methodology, project management, resources, supervision, validation, visualization, and writing – original draft, proofreading, and editing. Cuartas-Agudelo YS and Duque-Echeverri L participated in conceptualization, formal analysis, research, methodology, project management, resources, and writing – original draft, review, and edition. Saavedra-Valencia ME and Castañeda-Palacio S participated in the formal analysis, research, methodology, design, supervision, writing – proofreading, and editing.

Competing interests

No financial, legal, or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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References

1. Adell J, Castañeda L. Las pedagogías escolares emergentes. Cuad. Pedagog [Internet]. 2015;462. Available from: https://www.cuadernosdepedagogia.com/Content/DocumentoTDC.aspx?params=H4sIAAAAAAAEAO29B2AcSZYlJi9tynt_SvVK1-B0oQiAYBMk2JBAEOzBiM3mkuwdaUcjKasqgcplVmVdZhZAzO2dvPfee--999577733ujudTif33_8_XGZkAWz2zkrayZ4hgKrIHz9-fB8_IorZ7LOnb3bo2dt7uHN__xde5nVTVMvP9nZ27-_u3tvBB8X59dNq-uZ6lX92npVN_gvzSVW9Dd77_U37_weFpoGFUQAAAA==WKE

2. Gaytán-Oyarzun JC, Cravioto-Torres R, Mendoza-Meza EY, Ortiz-Zarco E. Implementation of the COIL methodology, as a strategy to enhance the teaching-learning process and academic and student mobility in the virtual mode. Revista de Innovación y Buenas Prácticas Docentes. 2022;11(1):141-49. https://doi.org/10.21071/ripadoc.v11i1.14142

3. Pérez MAC, Vinueza MAP, Yupangui HRA, Parra ADA. Information and Communication Technologies (TIC) as an interdisciplinary research with an intercultural approach to the process of student training. E-Ciencias de la Información. 2019;9(1):44-59. http://dx.doi.org/10.15517/eci.v1i1.33052

4. Rubin J. Embedding Collaborative Online International Learning (COIL) at higher education institutions. Internationalisation of Higher Education [Internet]. 2017;2:27-44. Available from: https://studyabroad.uic.edu/wp-content/uploads/sites/256/2020/08/Rubin-Embedding-Collaborative-Online-International-Learning-at-Higher-Education-Institutions.pdf

5. Castro AB, Dyba N, Cortez ED, Benito GG. Collaborative Online International Learning to Prepare Students for Multicultural Work Environments. Nurse Educ. 2019;44(4):E1-E5. https://doi.org/10.1097/nne.0000000000000609

6. University of Washington Bothell. Resources for developing a COIL-enhanced course or program. COIL Resources [Internet]. Available from: https://www.uwb.edu/globalinitiatives/academic/coil-initiative/coil-resources

7. Naicker A, Singh E, Genugten T. Collaborative Online International Learning (COIL): Preparedness and experiences of South African students. Innov Educ Teach Int. 2022;59(5):499-510. http://dx.doi.org/10.1080/14703297.2021.1895867

8. Skagen D, McCollum B, Morsch L, Shokoples B. Developing communication confidence and professional identity in chemistry through international online collaborative learning. Chem Educ Res Pract. 2018;19(2):567-82. https://doi.org/10.1039/C7RP00220C

9. Western Sydney University. Collaborative Online International Learning [Internet]. Australia: Western Sydney University; 2020. Available from:https://www.westernsydney.edu.au/__data/assets/pdf_file/0009/1735686/Guidelines_for_Developing_COIL_1.0.pdf