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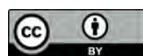
Collaborative Online International Learning: Experiences in Higher Education

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Abstract

Background/purpose. Collaborative Online International Learning projects have emerged as practices that connect students from different countries. Such actions can be appealing to universities but also arouse uncertainty. Hence, the purpose of this paper is to explore COIL experiences in HE reported in the scientific literature in terms of implementation and effectiveness, as well as the implications for the future of HE.

Materials/methods. Following the PRISMA protocol, the systematic literature review was conducted in the Web of Science and Scopus databases from 2000 to 2023. The search was conducted on the titles and abstracts of the documents, and Boolean operators were utilized.

Results. The findings regarding the implementation of COIL experiences in HE showed that they were concentrated in the last 4 years, with this form of learning being framed in social constructivism and not in a theoretical, epistemological framework. In the reported projects, intercultural and linguistic competence development was mainly promoted and implemented in English. Besides, assessment in COIL activities focused on the acquisition of intercultural competencies and satisfaction with the project undertaken. However, regarding effectiveness, the studies did not provide comparative results regarding the effects of different research designs or methodologies. The results also revealed that existing research did not typically suggest implications for the future of HE.

Conclusion. We conclude that COIL practices are planned from a practical point of view, although based on social constructivism, and these experiences involved a prevalence of English and Anglo-Saxon culture. The implementation experience is well documented but suffers from a weak design, without control groups and with an incoherent definition of variables. It also presents some challenges, such as the lack of professional recognition for professors and the need for research designs that examine their effectiveness for students learning and their contributions to internationalization.

1. Introduction

Universities are committed to promoting internationalization to enrich higher education offerings (HE). Internationalization activities include mobility programs, both national and international, as well as incorporating technology. Technology-mediated communication and connection activities in education have increased since the COVID-19 pandemic (De Klerk & Palmer, 2022); this provides universities with the opportunity to attract students from outside their geographical area, developing programs that can attract students from locations other than their own (Pouromid, 2019). They have also had the possibility of offering international and intercultural experiences to their students (Gutiérrez-González et al., 2023), who, in many cases, do not choose to engage in real mobility, typically for socioeconomic reasons (Maguvhe, 2015).

Technology in higher education thus presents a dual orientation. On the one hand, it is an enriching tool for training and mediating experiences to connect students from diverse geographical contexts. On the other hand, technology in education enables virtual mobility or internationalization at home (Lima et al., 2020), which is affordable and inclusive, available to all students (De Klerk & Palmer, 2022; Wimpenny et al., 2018), and sustainable because it does not involve travel (Shields, 2019).

The mobility experiences offered by HE institutions help develop transversal competencies that can enhance graduate employability (Succi & Canovi, 2020) and are not explicitly addressed in most degree courses. In this line, it is the responsibility of HE institutions to help students feel part of today's world, interconnected but also rooted in their local reality (De Wit & Altbach, 2021). Thus, opportunities for internationalization need to be inclusive and contextualized, as well as promote the development of transversal competencies (De Wit & Altbach, 2021; Gutiérrez-González et al., 2023). Among these competencies is intercultural competence (Jacobs et al., 2021), which helps to recognize other ways of acting that are different from those in one's own culture, embrace them, and see them as valid while banishing tribal ideas that are present in technology-mediated communication, especially in social networks. Developing this competence in HE enhances students' critical and creative thinking (Mestre-Segarra & Ruiz-Garrido, 2022). It helps educate responsible citizens who can value diverse messages and know how to connect with people from environments other than their own, valuing them positively under a broad, transdisciplinary perspective.

One of the educational offers that has emerged in recent years and leverages the opportunities of digital communication in the classroom and technology-mediated mobility is collaborative online international learning (COIL). It has been implemented across a variety of HE degree courses, primarily in foreign language learning, but also in other non-language degrees, such as nursing (Potter & Bragadóttir, 2019), architecture (Gutiérrez-González et al., 2023) or education for entrepreneurship (Steiner, 2018).

Although some literature reviews have been found in this short period of COIL implementation (De Klerk & Palmer, 2022; Guimarães & Hildeblando Júnior, 2021; Lima et al., 2020) and some other work focusing on the organizational aspects, such as the one by Fernández-Cézar et al. (2023), still a gap exists regarding both academic effectiveness for students and organizational aspects. Therefore, a literature review of COIL experiences in HE is significant for various reasons. First, during the last five years, overall, since the COVID-19 pandemic, COIL has been a practice that has started in HE in different undergraduate and graduate programs, firstly to replace the real mobility that was forbidden by this health situation, but was later kept as a teaching methodology. However, a description of the organization of universities and professors taking part in the experience, the competencies that these experiences can promote in students, and the effectiveness of the teaching-learning process is significant to know whether it is worth the effort for professors and students,

which is still unknown. In this respect, the current study aims to conduct a literature review to address the following research questions:

1. What relevant information on COIL experiences in HE is reported in the scientific literature about its implementation and academic effectiveness for HE?
2. What are the implications of these projects for the future of HE?

This paper tries to shed light on the implementation and academic effectiveness of COIL experiences regarding students, university professors, and administrators so that they can be used more effectively to enrich students' learning experiences and university programs.

2. Literature Review

The acronym COIL first appeared when the pedagogy was developed at the State University of New York, but the approach was not formalized until 2020 at the same university's COIL Center (Suny, 2020). Over the years, other authors, such as Laal and Laal (2012), Rubin (2017), and Rubin and Guth (2022), have described what the COIL pedagogy involves.

Although Lima et al. (2020) acknowledge that pedagogy lacks a clear theoretical framework, there is consensus among these and the previously cited authors on the elements that make up this didactic approach, as contained in its title, namely, international and online collaborative learning. Thus, the practice of COIL involves internationally constituted groups communicating, working, and interacting through technology under the direction of HE teaching staff. In practical terms, undertaking a COIL educational activity requires at least two HE institutions from different countries, two lecturers and two groups of students, one per institution, and a technological framework connecting them. These elements are analyzed below.

Collaborative learning is considered an active methodology with an eminently social character, given that the constitution of the groups fosters the social interaction of its components (Smith & MacGregor, 1992). The collaborative learning that develops in the group in pursuit of a common goal or the solution of a common problem, performing a task, or creating a product, generates relational and emotional ties, such as positive interdependence in achieving the common goal and valuing others (Rubin & Guth, 2022).

Regarding the international dimension of COIL, by bringing groups of students of different nationalities together, it encourages connections between the local and the global, allowing students from different geographical, social, and economic settings to participate in the same educational experience through which they will develop their own intercultural competence (Hackett et al., 2023).

Regarding the development of this online learning, it could be considered virtual learning (VL) (O'Dowd, 2018), which refers to learning that is implemented by means of technology, that is, virtually. However, COIL is more than VL, as it has many elements that differentiate it from the latter, particularly the international character of the educational experience and the collaboration in mixed groups to achieve learning.

COIL goes beyond VL, which is typically a one-way process where the teacher is in one location and the student in another, connected by technology. However, COIL entails more directionalities since it requires that at least two professors from two different institutions agree to work together by forming groups with their students to deliver a course or part of one. Horizontal and vertical relationships are thus ensured. Moreover, it has implications not only for students but also for teaching staff. Implementing a COIL experience requires a high degree of trust among the participating teachers. It requires previous actions organizing the educational experience to determine the academic side, such as the content and the program, and the logistical side, including

the schedule, which will consider the differences in time zones, if any. It will also need to consider the possibility of synchronous and/or asynchronous actions and assess the technologies that can be used for students from both institutions to concentrate, communicate, and work in groups.

These activities could be of interest to HE professors who wish to enrich their courses with COIL activities and, in addition, have this experience themselves as well as their students. For professors to have access to this information and an overview of COIL projects already implemented in HE, literature reviews on COIL activities in HE that take a practical and organizational approach on a general level can be beneficial. To our knowledge, literature reviews have been published in the last three years but suffer from a certain bias. On the one hand, the review that provides the most wide-ranging conclusions is that by Lima et al. (2020), which is an integrative literature review that positions COIL as an internationalization action rather than a learning approach, suggests that the pedagogy's absence of a theoretical framework makes it difficult to determine the role of technology in this HE internationalization and underline the growing connections between internationalization, technology, and social networks.

Another work by Guimarães and Hildeblando Júnior (2021) considers COIL as an educational action in HE that is enriching for the participants, both students and teachers since it develops competencies related to technologies in education, internationalization, collaborative work in digital environments, and teaching in English (English Medium Instruction, EMI). The authors reviewed the literature to investigate the possibilities for Brazilian universities to undertake educational projects of this type. They conclude that such activities are highly demanding regarding time and dedication for teaching staff and that institutional support is a key element in the survival of such actions over time.

The third review by De Klerk and Palmer (2022) includes reflections on COIL actions. These authors consider COIL as an approach to internationalization that ensures access and inclusion in HE. They understand inclusion in a broad sense, with a focus on students of all economic and geographic contexts, and address how this aspect fits with South African legislation. They conclude that the pedagogy can be adapted to their legislation because education for all is enshrined in the principles of international organizations and South African laws.

All three literature reviews are narrative in nature (Rother, 2007) rather than systematic literature reviews. A systematic literature review, in opposition to a narrative one, is a rigorous method with a planned methodology that depicts the databases and the methodological approach to conduct the review, as well as the inclusion criteria to retrieved articles, with the purpose of giving answers to some research questions. Since none of the three mentioned studies are systematic reviews, the current study fills this gap in the literature on COIL experiences. Besides, to a greater extent, the previous reviews consider COIL as an internationalization option rather than a pedagogical action to enrich students' academic learning with an international perspective. In addition, the organizational aspects of professors and universities regarding the academic effectiveness of these actions are addressed in one of them but not in-depth. Reflections on the future of COIL in HE are not developed from an international perspective but rather located in the authors' geographical areas. Therefore, the current paper tries to complete the picture by conducting a literature review addressing the research questions cited in the introduction.

3. Methodology

This study conducts a systematic literature review (Rother, 2007) following the protocol established in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Statement (Moher et al., 2009; Page et al., 2021). The elements of the methodological approach, i.e., the databases, search elements, search terms, and Boolean operators, and inclusion criteria, are deeply described in what follows.

Databases: The Web of Science (WOS) and Scopus databases were selected as they generally include the most reputable journals in the scientific community and index articles with the highest level of impact, exhibiting the second most diversity of field and geographical area (Vieira & Gomes, 2009). Since COIL actions go hand in hand with technological developments as well as technology integration in education, which has been ongoing in this century, the search was framed in a broad period of time in the present century, involving years from 2000 to 2023.

Search elements: As reported by some authors, the same search elements can be used in different databases to make the search coherent (Cronin et al., 2008). Therefore, in this case, the search elements have been the title during the first search and the abstract during the second one, given that the first search produced a low number of publications.

Search terms and Boolean operators: The search terms used were "COIL" and "education" in the title (N-WOS=9; N-SCOPUS=5) and "COIL" and "Higher Education" in the abstract (N-WOS=88; N-SCOPUS=78), which were then connected with the Boolean operator "or" in order to access all documents meeting these criteria without any duplicates (N-WOS=94; N-SCOPUS=81).

Inclusion criteria: The inclusion criteria applied during document screening required that studies address COIL activities in higher education, that they were published in Spanish, English, Italian, French, or Portuguese between 2000 and 2023 (March), and that they were available in open access or accessible under the licenses of the institution to which the researchers belonged (University of Castilla-La Mancha). The final sample included 14 articles.

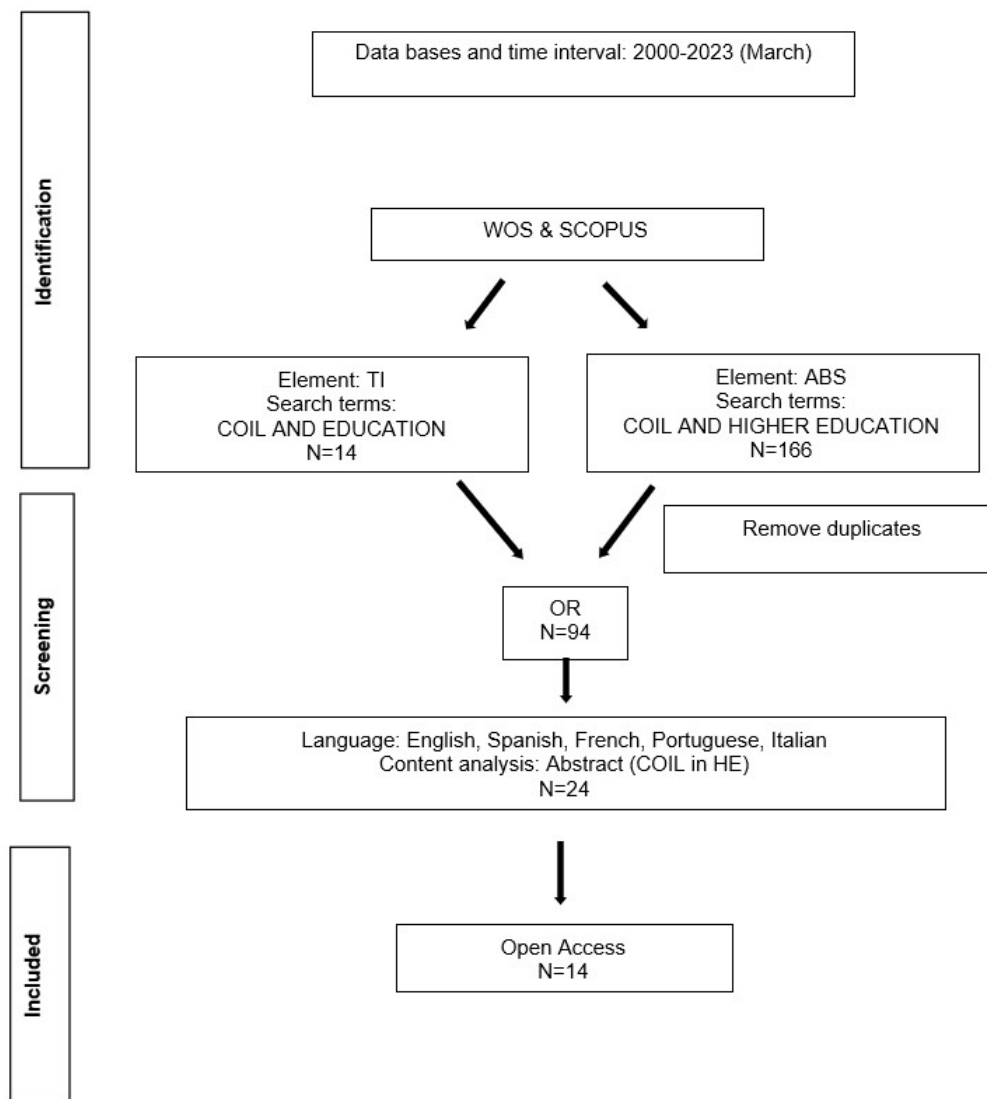The reported search flow is shown in Figure 1.

Figure 1. PRISMA diagram followed for the literature review

The analysis focused on different aspects of the implementation and academic effectiveness of COIL experiences reported, such as the theoretical framework, the courses where the experiences were gained, disciplines or competencies worked upon, geographical and institutional aspects, and the language of instruction. Regarding the implications for HE, the analysis focused on what COIL offers compared to other educational methodologies and/or other mobility experiences.

4. Results

The results are organized considering the research questions addressed by the study. To respond to what relevant information is reported about COIL implementation and academic effectiveness in higher education, the analysis focused on aspects such as the theoretical framework for COIL, the degree courses in which the experiences were undertaken, and the disciplines and/or competencies that were worked upon, the countries and the institutions involved, and the language in which the experience was implemented.

Table 1. Information reported on COIL in the scientific literature regarding theoretical framework, degree courses involved, country of the participant institution, and language.

	HE: Higher Education			
	*See complete references in the References section			
Reference*	Theoretical framework	Population and university degrees	Participant countries	Spoken language
Hackett et al. (2023)	Social constructivism	N=108 (total) Minor in English, students of English	Netherlands/US	English
Vahed & de Souza (2022)	E-learning	Dental technology (N=23) and dentistry (N=10)	South Africa/Brazil	English
Wimpenny et al. (2022)	COIL as an instrument for the digitalization of the third space and the internationalization of curricula	Students of English Language Teaching	Brazil, South Africa, Spain, and the United Kingdom	English
Cotoman et al. (2022)	Active and affective learning	N=41 total Political science/international relations	United Kingdom (public)/Japan (private)	English
Mestre-Segarra & Ruiz-Garrido (2022)	Parallels with CLIL and experiences of internationalization to promote learning English	N=23 total ELIT (English language for education or international trade) Master's degree in business	Spain/US	English
Wood et al. (2022).	COIL as a tool	N=28 total. Global public health/medical microbiology	US/Egypt	English
Hildeblando Júnior et al. (2022)	Internet-mediated virtual learning	N=14 total (10 Chileans and 4 Brazilians Degree in English/English Teachings	Brazil/Chile	English
Jacobs et al. (2021).	Not mentioned. Acronym defined	Degrees not specified.	Five institutions from South Africa/5 from the European Union	English
Liu & Shirley (2021).	E-learning	N=13 total. Economics (N=8) and mechanical engineering (N=5)	US/Germany	English

Reference*	Theoretical framework	Population and university degrees	Participant countries	Spoken language
Pouromid (2019)	E-learning	N=34 (16 y 18) Students of English (proficiency)	Japan/Taiwan	English
Wimpenny et al. (2019, October)	Technology and e-learning	N=500 Engineering	4 European countries (Netherlands, United Kingdom, Slovenia, and UNIMED) and four universities from Jordan	English

4.1. Which theoretical framework were COIL experiences in HE grounded on?

In this regard, Lima et al. (2020) underline the lack of a clear theoretical framework on which COIL experiences are based. If a theoretical framework is understood as the epistemological theories that form the basis for an investigation, we would agree with these authors since in the studies analyzed, only the one by Hackett et al. (2023) explicitly positions it in social constructivism, where it had already been situated in the reflection study by De Klerk and Palmer (2022), who placed it in the participants' zone of proximal development.

On the other hand, if the theoretical framework is understood as the set of antecedents and previous actions that support the research, this can be said to be the most commonly used approach in most research since their focus on COIL is practical, analyzing what the actions consist of, and their possibilities, i.e., the practical uses of COIL. For example, some authors highlight that COIL is a way to foster the internationalization of HE as a sustainable and inclusive action that facilitates the expansion of international experiences (Guimarães & Hildeblando Júnior, 2021; Mestre-Segarra & Ruiz-Garrido, 2022; Wimpenny et al., 2022). However, most findings describe the meaning of its acronym, online international collaborative learning, to position it as collaborative learning in teams of mixed nationality and as Internet-mediated virtual learning actions (Cotoman et al., 2022; Hildeblando Júnior et al., 2022; Jacobs et al., 2021; Liu & Shirley, 2021; Pouromid, 2019; Vahed & de Souza, 2022; Wimpenny et al., 2019; Wood et al., 2022).

4.2. Which degree courses and languages were involved?

All the studies analyzed were conducted in English, although English was not the official language in all the participants' countries of origin. Thus, the experiences reported sought the acquisition or reinforcement of skills in English as a foreign language. English is widely used in international actions in both the academic and scientific communities (Lin, 2020; Phillipson, 2015; Shin & Sterzuk, 2019), and thus, the COIL experiences reported also reflect this dominance of Anglo-Saxon culture in HE respecting other cultures.

As for the types of university degrees involved, although COIL projects were primarily applied in language-related studies (see Table 2), COIL activities were also undertaken in non-language degrees. For example, Vahed and de Souza (2022) dealt with students of dental technology and dentistry, Cotoman et al. (2022) with political science and international relations students, Wood et al. (2022) with students of global public health and microbiology for medicine, Liu and Shirley (2021) with economics and mechanical engineering students, and Wimpenny et al. (2019) with engineering students. Although not explicitly, in these studies, the content was learned through a foreign language, English, assimilating COIL to content and language-integrated learning (CLIL) mediated by technology, as recognized by Mestre-Segarra and Ruiz-Garrido (2022), when they placed COIL in the same theoretical framework as CLIL, in the broader sense of social constructivism. According to the

authors, both the latter studies and those that work with language-related degrees, English being one of them, went beyond developing language competence by fostering communicative competence. The latter competence encompasses the former and includes non-verbal communication and social skills. In other words, COIL projects favor linguistic and cultural assimilation in intercultural encounters, bolstering the development of communicative, sociocultural, and strategic competencies, predecessors of what we now know as intercultural competence.[1]

To answer the second question on the implications of COIL experiences for HE, this literature review focuses on what COIL offers HE compared to other educational methodologies and/or other mobility experiences. For that purpose, we focused on the information reported regarding the design and methodology used in the research, that is, whether the research design allowed COIL to be compared to other methodologies, the variables analyzed, and the effect size reported, as well as whether the degrees or subjects involved were related to linguistic or intercultural aspects.

Table 2. Research designs and variables analyzed in the COIL experience

| Linguistic = L; Intercultural = I | | | | |
| ***** See complete reference in the References section | | | | |
Reference*	Method and Research Design	Comparison with other teaching	Linguistic or Intercultural Degrees or Subjects	Analyzed variables / Effect size
Hackett et al. (2023)	Quasi-experimental with control group and pre/post measurements, as well as mixed methodology.	Yes: COIL vs regular	L and I	Cross-cultural competence; cultural intelligence; multicultural personality/moderate effect size
Vahed & de Souza (January 2022)	Case studies and interpretative methodology	No	I	Open-ended questions about the use of Instagram in dentistry/not reported
Wimpenny et al. (2022)	Not stated	No	L and I	Strengths and weaknesses of COIL as a third space for learning/not reported
Cotoman et al. (2022)	Not stated	No	I	No variables reported/not reported
Mestre-Segarra & Ruiz-Garrido (2022)	Case study with interpretative and mixed methodology	No	L and I	Expectations about language learning, intercultural awareness, cross-cultural competencies, teamwork, problem-solving, negotiation, critical and creative thinking /not reported

Reference*	Method and Research Design	Comparison with other teaching	Linguistic or Intercultural Degrees or Subjects	Analyzed variables / Effect size
Wood et al. (2022)	Quasi-experimental design without a control group and qualitative methodology.	No	I	Explicit: Content learning through adapted guidelines for reflection. Actual variable: satisfaction with the course and contribution to their global public health perspective/not reported
Hildeblando Júnior et al. (2022)	Case study, auto-ethnographic, and qualitative methodology	No	I	Intercultural communication and technologies/not reported
Jacobs et al. (2021)	Case study and interpretative methodology (collective narratives)	No	I	Outstanding aspects of COIL for participants based on their narratives /not reported
Liu & Shirley (2021)	Quasi-experimental without a control group and mixed methodologies	No	I	Intercultural competence/not reported
Pouromid (2019)	Ethnomethodological and qualitative methodology	No	L	Communication skills in English (as a foreign language)/not reported
Wimpenny et al. (2019, October)	Quasi-experimental without control group and qualitative methodology	No	L and I	Communicative competence in technology-mediated intercultural environments/not reported

4.3. Which research designs were used when comparing COIL with other methodologies?

Most of the articles analyzed lacked an experimental design in which COIL was compared with other methodologies and thus reported no effect sizes. Among the studies shown in Table 2, only the study by Hackett et al. (2023) had a quasi-experimental design with experimental and control groups and provided a comparison of COIL with the teaching methodology typically used in the course. The authors reported a moderate effect size when comparing the measures taken before and after the pre-and post-intervention, although the effect of COIL detected was non-significant, given that this effect size was similar in the experimental (COIL) and control groups (traditional teaching method). Therefore, they concluded that the COIL methodology used in this research, given its effect was measured, did not reveal any difference regarding the development of the participants' language and intercultural competencies when compared to the traditional pedagogy used in this particular course, which the authors considered as widely international in its philosophy. The other studies examined

reported positive findings for COIL activities, with the results being collected using different instruments (questionnaires and open-ended or narrative questions). However, they were conducted with non-experimental designs, which do not allow for the comparison of COIL with other methodologies. They also lacked experimental and control groups, which weakens the highly positive conclusions reported.

4.4. Which variables were analyzed?

Although five of the studies focused on contexts in which COIL was implemented in non-language degree courses or subjects (See Table 1; Cotoman et al., 2022; Liu & Shirley, 2021; Vahed & de Souza, 2022; Wimpenny et al., 2019; Wood et al., 2022), satisfaction with the intercultural experience and the contribution to intercultural competence of the COIL activity were taken as variables in all the studies in the sample. The only exception was the work by Pouromid (2019), a qualitative, ethnomethodological study examining how participants constructed meaning in a social context, taking into account the order and prioritization of the verbal/nonverbal language used. The study focused on only language competence as a variable (see Table 2). Given that the work focused on not only verbal but also nonverbal language, we infer that it particularly measured communicative competence.[2]

Continuing with the analysis of the variables, four of the experiences involved language and intercultural competence as variables, albeit with different purposes. In the study by Hackett et al. (2023), scales were used to measure intercultural competence, cultural intelligence, and multicultural personality of English language learners through interviews. The study by Mestre-Segarra and Ruiz-Garrido (2022) analyzed the expectations of the participants in a COIL project, students of English and international business, concerning language learning, intercultural awareness, and other transversal competencies, such as teamwork, problem-solving, negotiation, critical and creative thinking.

Additionally, the work by Wimpenny et al. (2019) presented data on communicative and learning competence in intercultural contexts using assistive technology. The data were collected using a satisfaction survey, which was not included in the study. The work by Wimpenny et al. (2022) analyzed the strengths and weaknesses of COIL projects, considering it a third space for learning in HE, together with in-person, physical, digital, or virtual environments.

The studies that presented measures reported only intercultural variables, such as intercultural competence. We also identified differences and weaknesses, given that they showed inconsistencies between the conclusions on interculturality drawn by the authors and the instruments used. For example, Vahed and de Souza (2022) conducted a case study in which they examined the use of images in social networks, specifically on Instagram, in degree courses in dentistry and dental technology, using communication in this social network as a variable. Since this social network was mainly about images, they measured the intercultural issues related to image codes rather than intercultural competence. Another study by Pouromid (2019) assessed communication skills in English while gathering data on both verbal and non-verbal language use. It can be assumed that communicative competence in the English language was what was actually measured in the study.

Continuing with the studies that measured intercultural variables, the study by Cotoman et al. (2022) did not explicitly describe the study design nor indicate the intercultural variables measured. However, it provided relevant information on the advantages and disadvantages of

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[2] Centro Virtual Cervantes [Cervantes Virtual Center]. 1997-2023. Diccionario de términos clave de ELE. *Competencia intercultural*. https://bit.ly/3IDnV4t

COIL projects in HE that may be of interest to researchers. These included language barriers in the case of students with a different mother tongue or problems related to learning a foreign language, poor Internet connections, time differences (which can be up to nine hours, depending on the participating countries), and lack of familiarity with group members. Despite there being room for improvement in the presentation of the results, the study did shed light on points that could be of crucial significance for teaching staff wishing to undertake COIL projects in HE.

The study by Wood et al. (2022) explicitly measured medical and microbiology students' learning of course content using prompts for reflection on COIL. However, what was apparent from the instrument used was that they asked participants about their satisfaction with the course and its perceived contribution to their global public health perspective.

Similarly, studies by Liu and Shirley (2021) and Hildeblando Júnior et al. (2022) reported that intercultural competence was analyzed in the former and intercultural competence together with technological competence in the latter. In both cases, these studies used similar variables.

Finally, the study by Jacobs et al. (2021), although the authors stated their analysis was on interculturality, addressed the COIL project itself as a variable, drawing on the participants' narratives to construct the most salient aspects of COIL. Similarly, the previously referenced work by Wimpenny et al. (2022) addressed the strengths and weaknesses of educational actions through COIL. In both studies, the conclusions were positive in terms of reinforcing or bolstering the intercultural competence of participants in COIL.

5. Discussion

This systematic literature review aimed to answer the following research questions: What information on COIL experiences in HE was reported in the relevant scientific literature concerning its implementation and academic effectiveness for HE, and what are the implications of these projects for the future of HE? For this purpose, a systematic literature review was conducted using studies accessed from WOS and Scopus databases.

Regarding the first research question on the implementation of COIL, the findings state that studies on COIL experiences were published in the last four years, with the trend likely boosted by the recent pandemic situation (COVID-19), which prevented real mobility and launched technology into environments, such as HE, where its presence was still weak (Cotoman et al., 2022; De Klerk & Palmer, 2022). COIL is generally not positioned in a theoretical, epistemological framework, although when it is, the perspective is practical, based on the didactic content signaled in its acronym: collaborative learning. When framed in this respect, however, it is situated within social constructivism. COIL involves the socialization of students from different countries, which contributes to an integral conception of learning, not only academic achievement. Studies largely reported that the development of intercultural competence, including communicative and language, was promoted. These projects were typically undertaken in language subjects and mainly in English. However, in the case of learning non-language content, COIL activities were implemented through methodologies similar to CLIL, which is also grounded in social constructivism (Mestre-Segarra & Ruiz-Garrido, 2022).

Even when the courses in which the COIL activities were undertaken were not language-focused, the variables analyzed dealt with intercultural and language competencies. The language used in most of the studies was English, which aligned these experiences with the dominant role of this language as well as Anglo-Saxon culture recognized by authors (Lin, 2020; Phillipson, 2015; Shin & Sterzuk, 2019), without resulting in an experience for broadening the visibility of other cultures different from the Anglo-Saxon one. In most cases, however, the instruments measured the satisfaction of the pedagogical action. In the same vein, the authors stated that they were measuring

intercultural competence, which meant that the instruments were inconsistent with their purpose of measurement, given that the instruments they used only measured satisfaction with the project.

Regarding the contributions of COIL compared to other methodologies, the studies lacked a design that could offer a response in this sense, and only one by Hackett et al. (2023) utilized study a quasi-experimental design. These authors compared the group in which COIL was implemented with another group of international students who were also taught English. They highlighted that the internationalization practices applied in the regular course did not differ notably compared to the ones using COIL.

Therefore, from an empirical point of view, the studies reviewed did not provide evidence of the effectiveness of this pedagogy on academic learning or intercultural competence; on the one hand, their design was not appropriate to answer this question, and on the other, there was incoherence between variables addressed and instruments used to measure them, no matter whether the studies were carried out from a quantitative or a qualitative perspective.

To answer the second research question regarding the implications for HE, based on the articles analyzed, we concluded that those professors and institutions who designed and developed COIL projects had a positive attitude towards its use, which might confer a certain "bias" to the interpretation of the results. No verifiable evidence was provided concerning the variables related to students' academic effectiveness (learning or competencies developed) as the studies included neither addressed well-determined variables aligned with the measures nor adopted experimental designs that allowed for comparison with other methodologies, although all of them drew positive conclusions regarding COIL project under investigation. These positive results regarding the participants, teachers, and students, gains from COIL projects should be taken into account, but without forgetting the disadvantages suggested by Cotoman et al. (2022), in the sense that teachers need to spend much time coordinating and designing the tasks, and that scheduling is complex, as is the planning of the interactions between students in the international groups due to time differences in most cases. In addition, there tends to be a lack of trust among the components of the groups, which can also reduce the effectiveness of the project in developing intercultural competence since this also has affective and emotional elements, of which the most significant are a special attitude, sensitivity and empathy towards cultural differences.[3]

6. Conclusion

To conclude, respecting the first research question we posed in the introduction, relevant information on COIL experiences in HE reported in the scientific literature about implementation and academic effectiveness, it can be concluded that the COIL practices are planned from a practical point of view regarding theoretical framework, although based in social constructivism, like CLIL, for language learning. However, not only language is taught in these courses. From the point of view of educational research, these experiences suffer from a weak design, without control groups and with an incoherent definition of variables. Therefore, to this question, we can say that professors implementing COIL were enthusiastic about the implementation, with just a few pointing to the hard effort required of professors and institutions. They also exhibited enthusiasm by introducing certain biases, like measuring students' satisfaction, while stating that they were measuring academic effectiveness. Therefore, from an empirical point of view, there was no evidence of the effectiveness of this pedagogy provided by either quantitative or qualitative studies.

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[3] Centro Virtual Cervantes [Cervantes Virtual Center]. 1997-2023. Diccionario de términos clave de ELE. *Competencia intercultural*. https://bit.ly/3IDnV4t

Regarding the second question, this literature review showed that COIL actions were mainly used to promote international issues, such as intercultural and/or language competencies, but not from a broad scope, with the dominance of English and the Anglo-Saxon culture, although the countries belonged to a variety of continents. Besides, the results highlighted the emergence of COIL as a technology-based practice for university education that widens the scope of universities.

Critical reflection on these results also suggests that universities promote these kinds of projects because they count positively in world rankings. However, these institutions do not offer complete support to the professors involved for their effective implementation. Currently, the teaching staff implements COIL projects with great effort without receiving any extra support or recognition from HE institutions, mainly universities.

7. Implications and Limitations

This systematic literature review depicts the situation of COIL projects in HE but has some limitations. Data search was completed using two databases, WOS and Scopus, which are the most reputed but not the most democratic. During the review, it was observed that the most interested countries were not the most developed ones; it could be that some experiences reported were out of these two databases. Therefore, widening the search to other data sources could give a wider picture of the situation.

One implication derived from this literature review is that better evidence must be provided by improving the research designs and measurement tools, enriching variables addressed by these studies, and focusing on experiences from a variety of country contexts and courses in which English is not the only medium of interaction. Whether COIL will stand out in HE or remain a weak teaching option is uncertain. Time will help us answer this question.

Declarations

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