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Computer supported collaborative learning: A peer-to-peer experience at the Ph.D. level

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ABSTRACT
Learning, as a social phenomenon, is enhanced when it is achieved in a collaborative manner, such as through Computer supported collaborative learning, which involves interaction, communication, and collaboration among a group of people mediated by technology, to achieve a common learning goal or to resolve a situation which requires a creative response. This paper includes a compilation of doctoral-level students' learning experiences and is written autonomously by two participants enrolled in an online course on comparative education. The objective of this paper is to describe the experiences and difficulties of implementing computer-based collaboration at a doctoral level, with focus on the challenge of learning from and with others without immediate reference. Learning is founded on the interference of participants who, by their presence, establish an online collaborative environment. The interaction between the authors and the participants has an impact on the learning process, which strengthens the collaborative learning relationship. Computer-supported collaborative learning (CCL) relies on the use of information and communication technologies (ICT) in such a way that they facilitate the learning process and make learning possible [2]. CCL is currently becoming increasingly popular because of its ability to overcome the barriers that time and place impose on distance education.

This document summarizes the CCL experience of Ph.D. students enrolled in an online course on Comparative Education in the period between January and May 2018. This collaborative learning experience took place spontaneously and voluntarily since it was not included in the course syllabus. The objective of this paper is to present the results of students' experiences so that the CCL strategy be considered in the syllabus of postgraduate online courses, especially in virtual contexts.

This present work is integrated by a conceptual framework that helps to identify the most relevant dimensions of the topic. Next, the methodology used to achieve the research objective is described, and the results obtained in light of the comparison of other investigations, and the results obtained are described. To end with the conclusions that collaborate with new knowledge on the subject.

2 CONCEPTUAL FRAMEWORK
Collaborative learning, whether manifested directly or indirectly, is one of the oldest strategies in educational processes. Collaborative learning refers to situations in which two or more students learn together to achieve a common goal or solve the task at hand, mostly through peer-directed interactions [5]. These interactions are a significant part of traditional education, but they are even more important in online education because, in this case, schools are obliged to transform their infrastructure into digitalized and accessible content spaces [6].

The learning process, as a social activity, requires the individual to understand that more effective results are achieved from collaboration, since coming up with solutions to diverse educational problems requires teamwork [7]. An immediate reference in this regard is group learning, which is based on the interactions between members. According to Díaz-Ramírez et al. [5], more than physical presence, what influences the
members of a group or the interactions between them, which manifest themselves in changes in members’ behavior, beliefs, values, or opinions. It is in these educational interactions that the value of collaborative learning lies, particularly for distance education.

Educational interactions, framed in a particular context and on a specific task with more or less defined objectives, substantially favor the construction of shared knowledge [4]. This idea is supported by sociocultural psychology which postulates that learning occurs mediated by the influence of others [9]. According to Aikenhead et al. [10], educational interactions become significant when the individual can theorize concepts, establish explanatory frameworks, or solve problems. CSCL refers to collaborative learning which is supported by the use of information and communication technologies, which facilitate the group learning process [6]. The appropriation of information and communication technologies in educational processes helps overcome the time and space restrictions caused by a lack of communication, which is necessary to collectively build knowledge in both face-to-face and remote interactions [11, 12]. Therefore, for the purposes of this research, CSCL will be understood as technology-driven intentional communication, and collaboration between a group of people to achieve a common learning goal or resolve a situation that demands a creative response.

It should be noted that this research is based on collaborative learning, not cooperative learning, which is limited to groups formed expressly for the performance of a specific task in formal settings, and which highlights the elements of motivation, reward, participation, and interdependence and their incorporation into institutional models which promote the transmission of skills [1, 2]. Collaborative learning, on the other hand, refers to asymmetrical interactions between peers, which in formal or informal settings, with reciprocal awareness and with a common learning objective, so that degrees of responsibility may vary during the process, based on negotiations and communicative exchanges [1, 15].

2. State of the art on comparative education: an assignment

The experience described in this paper was part of the online course called Comparative Education, specifically one of the assignments corresponding to its module 1, Nature of Comparative Education, which was developed as part of an integrating project called State of the Art of Comparative Education. Table 1 shows in detail the competences and sub-competences, both disciplinary and transversal, which the activity seeks to transmit to the student.

This activity was to be developed on an individual basis and counted as 15% of the final grade. From the development of the transversal sub-competences, two of the students enrolled in the subject shared their results using the CSCL strategy. Thus, the objective of this study is to present the students’ results with the aim that CSCL among peers is considered in the syllabus of online postgraduate subjects. This is considered particularly relevant since almost 70% of courses worldwide are online [2].

3. Method

This document records the experience with collaborative work, particularly CSCL, of two students from a doctoral program at a higher education institution in northeastern Mexico. The postgraduate degree is considered one of the highest standards of quality and mobility by the National Council of Science and Technology (CONACyT) and is included within its National Quality Postgraduate Programs (PINFQ). The experience recorded here is with the subject of comparative education, which involves comparing the educational systems of different countries, while addressing the nature of comparative education, studying worldwide benchmarks in education, as well as the social, economic, and political implications that affect the comparison of such systems. It is necessary to specify that the course in comparative education follows the competency-based approach and is taught online.

The state of the art is understood as a research strategy that allows students to determine how a subject has been treated, how the advancement of its knowledge is going at the time of research, and what the future trends are [14]. This task involves reviewing the titles and abstracts of one of the five suggested Comparative Education journals published in the period from January 2013 to December 2018, compiling 29 references in total. The journals chosen were Comparative Education Review and Comparative Education since they are considered reliable sources of analysis as they are both located in the best quartile, Q1, of the Scopus Journal & Country Rank. The state of the art was obtained from answering the guiding questions, such as:

Table 1: Competences to be developed in the assignment State of the art on comparative education

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Competence</th>
<th>Sub-competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrative Project: State of the art on Comparative Education</td>
<td>Disciplinary analysis of the educational event, carried out in an interdisciplinary manner to create educational projects based on Comparative Education, which considers the relationship between the local and global contexts.</td>
<td>Analyzes the different educational systems which exist. Establishes comparative relationships between different systems at a given educational level. Communicates conclusions from the comparative analysis. Interacts with colleagues from different backgrounds in a constructive way in an environment of tolerance and respect.</td>
</tr>
</tbody>
</table>
• Who are the authors who have published the most in this period in the journal?
• How have they defined Comparative Education?
• What are the similarities and differences between each of their definitions?
• What are the most recurrent topics being studied in Comparative Education in the last five years?
• Which countries are most in the comparisons?
• What are the predominant trends in researching Comparative Education? Are there any significant changes in these methodologies?

When the students individually completed their state of the art, they proceed to integrate it, autonomously and voluntarily, through the CISEL ontology, placing emphasis on the novel and relevant results in terms of criteria and determining factors in the comparison processes of the last five years.

4 RESULTS

For the development of the state of the art, based on the Comparative Education Review journal, a total of 25 articles were randomly chosen. In the case of the Comparative Education journal, the most visited articles, as indicated by the journal's metric, were selected in each quarterly publication, and a total of 25 articles were chosen. The results of the analysis are presented in six sections, as Table 2 shows.

In the first section - Trends of Authors and Affiliations - it is observed that studies based on the comparative methodology are still usually carried out alone rather than by research teams since more than 90% of the articles are signed by a single author. Likewise, it can be noted that higher education institutions position themselves as the main generators of research in comparative education.

The second section - Definitions, Similarities, and Differences of Comparative Education - highlights that a single definition of comparative education does not exist, but rather, it varies depending on the topic and focus of the research. Furthermore, comparative education seeks to reveal tensions and ambivalences in the phenomena studied, which is why it always involves a deep understanding of society and culture [15, 16].

Regarding the third section - Recurring Themes in Recent Comparative Education - two articles were identified. One is on the analysis of the results of standardized tests implemented by international organizations. The other concerns the educational reforms which are currently being carried out in various countries [17, 18].

Regarding the fourth section - Countries and Trends in Comparative Education Research - there are two regions which stand out: The United Kingdom and East Asia. It is not easy to say that most of the research in comparative education uses a qualitative approach. Highlighting the regression analysis for the study of educational and social practices and policies. However, there has been an increase in the use of mixed and qualitative methods in comparative research. This is largely due to the fact that qualitative methods allow an analysis which usually overlaps positive views [19, 20].

In the fifth section - Aspects, Criteria, and Comparison Factors in Comparative Education Research - the political character present in the design of comparative education is emphasized. The fundamental role which defines comparative education on a large scale-

Table 2: Results of the analysis of the state of the art

<table>
<thead>
<tr>
<th>Section</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trends of Authors and Affiliations</td>
<td>Studies are still usually carried out alone rather than by research teams. Higher education institutions as the main generators of research in comparative education.</td>
</tr>
<tr>
<td>Definitions, Similarities, and Differences of Comparative Education</td>
<td>No single definition of comparative education, but it always involves a deep understanding of society and culture.</td>
</tr>
<tr>
<td>Recurring Themes in Recent Comparative Education</td>
<td>Analysis of the results of standardized tests. Educational reforms which are currently being carried out in various countries.</td>
</tr>
<tr>
<td>Countries and Trends in Comparative Education Research</td>
<td>Most of the research in comparative education uses a qualitative approach. Exposing and understanding the different contexts in which any educational activity occurs as the fundamental role. Increasingly being considered because they mean to make the quality of educational content more transparent.</td>
</tr>
<tr>
<td>Aspects, Criteria, and Comparison Factors in Comparative Education Research</td>
<td>Ranking and classification systems.</td>
</tr>
</tbody>
</table>

5 DISCUSSION

Based on the results, certain aspects of this experience can be viewed as a specific exercise of CISEL. It is important to emphasize that the task, as designed in the course, is individualistic and summarized into a single journal. However, in the spirit of building participants’ knowledge of an area of knowledge in which they have
The ability of students to learn and communicate with teachers and peers enhances the quality of the learning process. An additional value to this exercise as a formative practice would be the experience of students interacting with others, sharing ideas, and learning from each other. This paper explores the potential of using IT tools to facilitate collaborative learning in the classroom.

6 CONCLUSIONS

In light of the research, this paper argues that CSCL should be incorporated into the didactic designs of all subjects, especially those that allow for collaborative work. This means that when information and communication technologies (ICT) are applied to educational processes, they should be used to support collaborative learning.

Thus, it is observed that the combined effort of the students and the didactic designs of all subjects, especially those that allow for collaborative work, enhances the quality of learning. The ability of students to learn and communicate with teachers and peers enhances the quality of the learning process. An additional value to this exercise as a formative practice would be the experience of students interacting with others, sharing ideas, and learning from each other. This paper explores the potential of using IT tools to facilitate collaborative learning in the classroom.

REFERENCES


