

OPIICS 2019**International Conference of Psychology, Sociology, Education, and Social Sciences****COOPERATIVE LEARNING FOR FIRST-YEAR EARLY
CHILDHOOD EDUCATION STUDENTS**

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Abstract

Cooperative learning is a transversal competence that has been applied specifically to university education since the creation of the European Higher Education Space. It is presented as an experience based on a retrospective study of the implementation of cooperative learning during the 2018–2019 academic year on a sample of 70 students enrolled in the first year of the Early Childhood Education at Zaragoza University and assessed by means of the questionnaire by González and García Ruíz. The results indicate that the skills perceived by students to be the most developed are autonomy, initiative, self-assessment and involvement, with a high overall score obtained for the use of this methodology (82.9% of students). Furthermore, aspects of communication and interaction with the group-class, skills of analysis and reflection, and the development of constructive criticism are given as positive aspects of its use. However, weaknesses are presented associated with social skills required to resolve difficulties related to team work, to the use of creativity, to the distribution of work, loads and acknowledgement in terms of involvement. Cooperative learning is perceived as a powerful tool for the development of transversal competences in higher education. Consideration is given to the possibility of enhancing basic instrumental, interpersonal and systemic skills, together with motivation and ethics as essential elements on which teaching staff should focus in order for cooperative learning to be effectively put into practice in university education.

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1. Introduction

The implementation of cooperative learning as a learning strategy to foster development and acquisition of transversal competences has become a reality in our classrooms today. This teaching and learning model has been associated with the establishment of the Bologna Process and the creation of the European Higher Education Area (EHEA). There are a number of works dealing with the application and effectiveness of cooperative learning. This study aims to examine cooperative learning and to analyse the potentialities and difficulties related to its implementation in the first year of the Early Childhood Education degree course.

Cooperative learning is a transversal competence that has been specifically included in university syllabuses since the creation of the EHEA. Transversal competences were defined by the National Agency for Quality Assessment and Accreditation of Spain (ANECA) based on the Tuning project (González & Wagenaar, 2003), and these were systematised into three types: instrumental competences, which include cognitive skills, methodological abilities, technological and linguistic skills; interpersonal competences, which include individual abilities and social skills; and systemic competences, which include skills related to the understanding of complex systems. Cooperative learning is an interpersonal transversal competence included in this systematisation as teamwork, despite its connection with the other skills, given that they all comprise the human skills involved in teamwork.

Cooperative learning was defined by Johnson, Johnson and Holubec (1999) as “the didactic use of small groups in which students work together to maximise their own learning and that of others” (p. 14). This methodology was extended to the field of university education as a consequence of the establishment of the Bologna Process.

There are numerous advantages of using cooperative learning techniques in the field of education. These advantages have been contrasted in different research works, as summarised by García, Traver, and Candela, (2001). González and García (2007) highlight several of these, such as the direct learning of attitudes and values, improved academic motivation, the practice of pro-social behaviour, gradual loss of egocentricity, the development of greater independence and autonomy, among others. They therefore encourage efforts to continue to improve and evaluate its consequences and real transcendence for learning.

1.1. Use and application of cooperative learning in university education

The appraisal of active methodologies is important given that Spain is a country where educational practices have traditionally been conducted according to a technological paradigm (García, Díaz, & Ubago, 2018). It is therefore of interest to ascertain to what extent the Bologna Process is being adequately implemented in our universities and, specifically, how cooperative learning is being implemented, given the current relevance of this methodology.

On the one hand a study conducted at the University of Brasilia (Santos, Mariano, Miranda, Monteiro, & Lucía, 2018) by means of a questionnaire completed by 53 members of the teaching staff showed a positive association between the use of active methodologies and the commitment of the institution of higher education to teacher education. The most important association found was active teacher education, which implies that interest and commitment to the use of active methodologies by

teaching staff is more relevant in the process or intention to use active methodologies that that existing as a result of the commitment of the institution of higher education. From this perspective, in a systematic review of research conducted in our educational context related to the implementation of active methodologies, the authors highlight the importance of generating instructional leadership between the teaching staff and educational institutions in order to bring about such practices in the future (García, Díaz, & Ubago, 2018).

With regard to the implementation and effectiveness of educational practices related to cooperative learning, there are many studies that deal with its effectiveness, several of which are highlighted. A study carried out by Mendo, León, Felipe, Polo and Iglesias (2018) on a sample of 346 undergraduate Primary Education students in Spain indicates that cooperative learning is effective as a method for developing the social skills necessary for teamwork. The study also stressed the importance of restricting the number of students in the group (three or five), the basic social skills and academic level of the students as key factors associated with its effectiveness, where continuity of the use of this method over time makes a difference in the development of social skills. The authors underscore the importance of how when students are requested to work autonomously in groups, in order to enhance social skills, adequate structures tend to be produced that guarantee minimum conditions for participation, which allows these skills to be suitably developed.

Izquierdo, Asensio, Escarbajal and Rodríguez (2019) conducted a study on a sample of 525 undergraduate Primary Education students that established a comparison between first-year students and students who had several years' experience of university education. They highlighted, as main results, that the students developed a concept of teamwork that remained stable over time. However, their notion of its usefulness could change depending on the influence of context. Furthermore, when the students were satisfied with the work carried out by their group, they trusted more in their own skills and abilities for building their knowledge.

Another study involving undergraduate Primary Education students (Larraz, Vázquez, & Liesa, 2017) observed the importance of the use of cooperative learning in relation to the development of transversal competences, such as negotiation, leadership, professional reflection, autonomy, the development of social skills, commitment and solidarity, which was reflected in the atmosphere in the classroom and on the interaction taking place. Similar results were observed in other studies conducted in universities (González & García, 2007; Garrote, Jiménez-Fernández, & Martínez-Heredia, 2019; Izquierdo et al., 2019), with special emphasis given to the findings observed in the improvement in the students' social skills (Mendo et al., 2018) and learning (Saavedra, 2018).

What is demonstrated in the reviewed studies is that cooperative learning offers advantages and great potentialities if applied in an adequate way to university education, but we should bear in mind that its effectiveness will depend not only on its application but on students' basic social skills in order to produce satisfactory results. Therefore, in order for teamwork to take place in a cooperative manner, students need to possess a suitable level of social skills (Mendo et al., 2018).

2. Problem Statement

Active methodologies are currently being used in university education; however, there is little available research on its implementation and effectiveness. In this sense, cooperative learning is a strategy that should be developed and its effectiveness assessed in the field of university education.

3. Research Questions

To ascertain whether cooperative work is a useful tool for university students, to describe its potentialities and weaknesses in order to draw recommendations for improving its implementation in university education and teacher education.

4. Purpose of the Study

The three aims of this study are described below:

- To analyse the effectiveness and benefits of cooperative learning for university students, more specifically for undergraduate Early Childhood Education students.
- To assess whether cooperative work is an effective instrument that allows students to acquire knowledge through processes of communicative interaction.
- To assess the opinion of students experienced in the methodology of cooperative learning

5. Research Methods

A retrospective study was designed in which the cooperative learning methodology was applied to a sample of 70 students for the duration of one academic year. The results of its implementation were analysed through the cooperative learning questionnaire by González and García (2007) and an observation process in which checklists were made of the teamwork activities carried out in the classroom.

The methodology that supports this work combines quantitative and qualitative procedures, meaning that the quantitative and qualitative data obtained are taken into account in order to address the results in a comprehensive manner.

5.1. Participants

The study was conducted at the Faculty of Education of the University of Zaragoza on undergraduate Early Childhood Education students taking the first-year subject of Psychology of Development I, a compulsory subject with a weighting of six ECTS, in the 2018–2019 academic year. The mean age of the students was 20.9 years, comprising 92% women and 8% men. Sampling was intentional and the intervention was carried out on the two groups enrolled in the subject, making a total of 70 students. Participation in relation to class attendance was 90%, whereas participation in the questionnaire was 70%.

5.2. Instruments

The cooperative learning questionnaire by González and García (2007) was used. This instrument was designed to assess cooperative learning in university education. The questionnaire is based on an adaptation of the Students' Evaluations of Educational Quality (SEEQ) created by Marshy Roche and the Social Competence Questionnaire (SCQ) developed by Torbay, Muñoz de Bustillo and Hernández (2001). It contains a total of 25 items with five Likert-type response options and three open response questions. In addition, use was made of observation checklists, based on individual and group self-assessment questionnaires completed at the end of each session to evaluate progress and the process of cooperative work throughout the duration of the subject.

5.3. Procedure

The study is supported by the cooperative learning methodology, implemented in the practical aspects of the subject. At the start of the year, students were informed of and instructed in the workings of teamwork as an educational tool for practical sessions of the subject and the evaluation criteria for group assignments. In order to create the groups, stable and heterogeneous teams were defined, consisting of four or five individuals, and different roles were assigned (coordinator, secretary, spokesperson and evaluator) which were to be rotated throughout the duration of the subject. Different cooperative learning strategies were applied during the different practical sessions, including group investigation, peer tutoring, discussion groups, group assignments, debates, spontaneous group discussions and cooperative revision, among others, most of which were proposed by Slavin (1999). Finally, in order to evaluate progress and the teamwork process, each team completed an evaluation questionnaire at the end of the practical activities for the purpose of self-assessing their learning process and establishing mechanisms for its regulation and improvement.

6. Findings

A quantitative analysis of the descriptive data drawn from the questionnaire according to the frequency and percentage of the responses obtained. The open responses provided by students were also analysed from a qualitative – categorical – perspective. Furthermore, the observation checklists were also analysed from a qualitative perspective in order to evaluate the degree to which the work process adjusted to the final result observed.

6.1. Quantitative results

Table 01 shows the results obtained from the responses to the 25 items in the questionnaire according to degree of agreement (agree and strongly agree). On the one hand, the skills developed as a result of the use of cooperative learning are analysed, and on the other, the methodology itself is assessed.

With regard to the systemic, instrumental and interpersonal transversal competences proposed by the Bologna Process, cooperative work is a powerful tool for the development of all of these. It was observed that the most highly developed interpersonal skills (ISs) were autonomy (IS1) (90.6%), initiative (IS2) (88.6%), self-assessment (IS3) (88.6%) and involvement with the work being performed (IS4)

(87.1%). Moreover, other skills perceived as highly developed can be highlighted, such as mutual learning (IS5) (85%), constructive criticism (IS6) (84.2%), synthesis (IS7) (84.1%), analysis and reflection (IS8) (84%) and verbal communication skills (IS9) (80%). There was also a positive overall rating for the use of this methodology (82.9%). More specifically, the most highly rated aspect of the use of the cooperative learning methodology (LM15) (LM) was meeting goals (LA1) (91.3%), group-class interaction (LM2) (89.7%), evaluation methods (LM3) (87.1%), interaction with teaching staff (LM4) (85.7%) and access to contents (LM5) (84.3%).

It should be pointed out that one of the negative or least positive aspects observed was development of creativity (IS13) (44.3%) and the perception of workload (LM10) and time management (LM13). Students generally rated group work more highly than individual work, but a higher percentage preferred individual work (LM11) (group work vs individual work: 60%–21.4%), and half of participants considered the pace of work to be high or very high (50%). Time management was only considered adequate by 46% of participants, also related to the perception of time optimisation, which only 68.6% considered adequate, as against 17.1% who strongly disagreed or disagreed.

Table 01. Interpersonal skills and learning methodology developed in cooperative learning

Aspect	Area or competence	Percentage
Interpersonal skills (ISs)	1. Autonomy	90.6
	2. Initiative	88.6
	3. Self-assessment	88.6
	4. Involvement	87.1
	5. Mutual learning	85
	6. Constructive criticism	84.2
	7. Synthesis	84.1
	8. Analysis and reflection	84
	9. Communications skills, verbal	80
	10. Time management.	68
	11. Self-planning	65.7
	12. Understanding of subject matter	65
	13. Creativity	44.3
Learning methodology (LM)	1. Goals	91.3
	2. Group-class interaction	89.7
	3. Evaluation methods (adequate–very adequate)	87.1
	4. Positive asymmetric interaction (teaching staff)	85.7
	5. Contents	84.3
	6. Assessment of methodology vs traditional	77.2
	7. Motivation and interest in subject matter	73.9
	8. Time optimisation	68.6–17.1
	9. Resources provided	65.7
	10. Workload (heavy–very heavy)	60.9
	11. Group work vs individual work	60–21.4
	12. Pace of work (high–very high)	50
	13. Time management.	46.3
	14. Understanding	42.8
	15. Overall assessment	82.9

6.2. Qualitative results

The data coincide with the quantitative part of the questionnaire. In this case, teamwork, exchange of ideas and points of view, and the possibility of reflecting on contents and sharing work on them were observed as potentialities. Excessive workload, little importance given to individual effort and the difficulty in coordinating group members stood out as negative aspects. Assessment of individual work, changing team members, reducing workload and the ability to work on difficulties of the group arising during the teamwork process were considered areas for improvement.

After analysing the content and grouping into two types of variables, interpersonal skills (ISs) and learning methodology (LM), it was seen that the most highly rated aspects were related to group-class interaction. These can be seen in item LM2, which best explains the improvement in cooperation, knowledge and communication with different fellow students, together with a high rating for access to contents (LM5), which provides different points of view through which to broaden knowledge on subject matter. Related to this is the high rating of another of the ISs, analysis and reflection (IS8), which can be broken down into ability to debate, think up, revise and think over an idea, and linked to this, the generation of constructive criticism (IS6).

Another positive aspect that is highlighted in addition to group-class interaction and improvement of contents is that the workload (LM10) of the subject is more bearable when shared and creates more interest or appeal. As observed, students attributed to interaction with the group the advantages of the cooperative technique, without deeper analysis of other parameters of either interpersonal skills (ISs) such as ability for synthesis (IS7), involvement (IS4), autonomy (IS1), creativity (IS13), self-assessment (IS3) or self-planning (IS11), some of which were stressed as important in the quantitative responses of the questionnaire (autonomy, self-assessment and involvement). The advantages pointed out were all in reference to the interactive exterior, without assessing internal abilities, or at least without including them in the self-assessment, suggesting that only the interpersonal skill of communication (IS9) was considered to be shared.

The responses attributing why the cooperative method is considered negative are directed at the same place, the group, which can be understood when taking into account the age and context of the respondents, who were mostly women aged 19 who have yet to develop their self-knowledge. This is the case of group-class interaction (LM2), with its difficulties in self-expression, with imbalance in task performance and motivation, and more particularly, adjustments and agreements over coordination times among members of the group, which are included in self-planning (IS11), with special reference to the difficulty in finding shared times for managing themselves. This handicap may be related to another major negative aspect observed regarding evaluation of work (LM3), which is expressed as the imbalance that exists in obtaining a common group mark, considering that some members work more, less, little or not at all. Intrinsic or extrinsic motivation may explain the attitude of less involvement when working for the common benefit, but greater involvement when it comes to claiming the results.

Part of the response to the difficulty with fairness is given in the proposals for improvement that are given at the end of the self-assessment. On the one hand are those related to managing more class time for practical activities, while another suggestion is to have fewer practical sessions and to have them more widely spaced in order to allow better planning. Recommendations also include a system of rotation of

individuals into different groups in order to resolve the discrepancies arising among some of their members, the creation a suggestions and personal comments section in addition to the group and individual questionnaire in order to describe the development or difficulties in each group, in addition to a more equal distribution of work. Another option is to do individual assignments to supplement group assignments. In addition to these changes was the suggestion that marking should be fairer (25% of responses).

These external changes in order to obtain a result do not take into consideration the other forms of learning experiences or skills that can be acquired with this methodology, perhaps because of its novelty or ignorance of it, or because tools have not yet been implemented for teamwork, communication, creativity and autonomy in the field of knowledge and, more particularly, for managing time dedicated to activities.

With regard to the self-assessed checklists analysed throughout the duration of the subject, the students showed interest in the subject matter and their learning, and remarked on these aspects, in relation to their organisation and better time planning, and the available resources to be more effective at teamwork, better coordination and reaching agreements for more efficient distribution of tasks. With regard to their comments on the work process, these reflected the same results or similar results to those observed in the qualitative self-assessment at the end of the questionnaire.

7. Conclusion

The benefit to be gained from this study is that it shows cooperative learning to be an effective and satisfactory methodology for students, in addition to encouraging autonomous learning. It facilitates the skill of learning to learn as a basis for learning, as well as allowing the development of basic social and interpersonal skills, which in itself is an innovative and challenging method of teaching-learning for future teachers. As suggested in previously cited studies, results similar to those observed were obtained in which autonomy, ability to negotiate, personal reflection and commitment to work are fostered, favouring a positive atmosphere in the classroom and positive group-class interactions (Larraz et al., 2017; González & García, 2007; Garrote, Jiménez-Fernández, & Martínez-Heredia, 2019; Izquierdo et al., 2019), with special emphasis on the findings observed in improved social skills in students (Mendo et al., 2018) and learning (Saavedra, 2018).

Nonetheless, it is proposed that through the teaching staff, as players involved in the development and implementation of this methodology, there should be enhancement of the teaching-learning skills which are not habitual in students and expressed as a complaint by them, such as the difficulties in managing cooperative work, difficulties for meeting, difficulties in time management and in distributing workloads, among others. Meeting should be encouraged and students motivated to do so. In this sense, it is possible that the motivating and cohesive work of the teaching staff as guides consists in giving sense and structure to what needs to be learnt. For this reason, in this process of participation in teaching-learning, it is up to the teaching staff to concern themselves with motivating students in cooperative work, training students in basic and more complex skills for group work, assisting them to manage their time more adequately and create a dynamic to bring about change when the group is experienced as a sum of individuals. This matter would be in line with other previous studies indicating that, in order to implement cooperative learning in the classroom, it is necessary first, to systematically clarify and teach how to work as a team, and to develop and strengthen pre-existing social skills in students (Mendo et al., 2018; Sánchez, Parra and Pena, 2018).

Finally, debate is raised in relation to whether basic instrumental skills (capacity for analysis and synthesis, and of organisation and planning together with those of information management) should be developed more together with interpersonal skills, and motivation and ethics, without overlooking systemic competences such as the capacity for autonomous learning, adaptation to new situations and leadership, and motivation for quality, all of which are more complex and their modification will require more time.

The group, whether for cooperative learning or of any other type, provides an opportunity to resolve and to see ourselves in the mirror of others' actions. This type of learning implies a paradigm shift and, like all processes, management of that time, of the parties involved and motivation to bring it about are keys to its explanation.

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