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Research Article

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Cooperative Learning as a Pathway to Competency-Based Education

Amparo de Dios Tronch

Universidad de Valencia, Spain

Corresponding author
Amparo de Dios Tronch, Universidad de Valencia, Spain.

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ABSTRACT

This study explores the development of key competencies through the active learning methodology of cooperative learning in formal educational settings. In response to the increasing global demand for competency-based education, this research investigates how structured peer collaboration fosters cognitive, social, and emotional competencies among students. Drawing on a constructivist pedagogical framework, the study examines the effects of cooperative learning strategies—such as Jigsaw, Think-Pair-Share, and Numbered Heads Together—on students' abilities to communicate effectively, think critically, solve problems, and work collaboratively.

Using a mixed-methods design, the research combines quantitative data from pre- and post-intervention assessments with qualitative observations and student interviews. Results indicate significant improvements in students' teamwork skills, responsibility, and metacognitive awareness. Furthermore, cooperative learning promotes a supportive classroom climate that enhances motivation and engagement.

The findings highlight the importance of intentional task design, group heterogeneity, and reflective practices in maximizing the impact of cooperative learning on competency development. The study concludes that cooperative learning is not only an effective instructional method but also a transformative educational approach that aligns with the goals of 21st-century education.

Keywords: Cooperative Learning, Competency-Based Education, Key Competencies, Collaborative Learning.

Introduction

In the current educational landscape, the development of competencies has emerged as a pivotal goal of contemporary curricula at all levels of formal education. Competency-based education emphasizes not only the acquisition of knowledge but also the ability to apply that knowledge effectively in a variety of real-world contexts. Competencies typically include a combination of skills, attitudes, values, and knowledge, which together enable individuals to act effectively in complex situations. In light of this shift, pedagogical strategies that can promote meaningful, active, and socially engaged learning have gained significant importance. Among such strategies, cooperative learning stands out as one of the most effective approaches for fostering the comprehensive development of competencies.

Cooperative learning, broadly defined, refers to instructional methods in which students work together in small, structured groups to achieve shared learning goals. Unlike traditional learning environments that often emphasize individual performance and competition, cooperative learning cultivates interdependence, accountability, and mutual support among learners. It aligns well with the social constructivist theories of education, particularly those influenced by Vygotsky, who emphasized the importance of social interaction and collaborative processes in the construction of knowledge. In this context, learning is not a solitary endeavor but a collective process where individuals co-construct meaning and develop both cognitive and social skills.

Over the past few decades, a substantial body of empirical research has confirmed the pedagogical benefits of cooperative learning. Numerous studies have demonstrated that cooperative learning can enhance academic achievement, promote higher-

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order thinking skills, foster student motivation, and improve interpersonal relationships. More recently, scholars have turned their attention to the role of cooperative learning in supporting the development of key competencies, such as communication, critical thinking, creativity, teamwork, and problem-solving. This research underscores the idea that cooperative learning does not merely help students perform better on standardized assessments; rather, it equips them with the multifaceted skills necessary to navigate the complexities of the 21st century.

However, despite the growing recognition of its benefits, the implementation of cooperative learning in classrooms often faces significant challenges. Teachers may lack adequate training in cooperative learning methods, or they may encounter institutional barriers such as rigid curricula, large class sizes, and standardized testing pressures. Moreover, the effectiveness of cooperative learning in developing competencies is not automatic; it depends on a variety of factors, including group composition, task design, assessment practices, and classroom climate. As such, there is a critical need for deeper theoretical understanding and practical insights into how cooperative learning can be structured to maximize its impact on competency development.

The present study aims to contribute to this discourse by examining how cooperative learning can serve as an effective framework for the development of key educational competencies. Specifically, the research seeks to explore the mechanisms through which cooperative learning facilitates the acquisition and refinement of both cognitive and socio-emotional competencies among students. In doing so, it draws on interdisciplinary literature from education, psychology, and sociology to provide a comprehensive perspective on the subject.

To frame this inquiry, the study adopts a multidimensional model of competency that encompasses three core domains: cognitive competencies (e.g., analytical thinking, problem-solving, decision-making), interpersonal competencies (e.g., communication, collaboration, empathy), and intrapersonal competencies (e.g., self-regulation, responsibility, motivation). This model recognizes that effective learners must not only possess knowledge and skills but must also be capable of managing themselves and relating effectively to others. Within this framework, cooperative learning is posited as a fertile ground for nurturing these interconnected competencies through sustained interaction, shared goals, and mutual accountability.

Central to this investigation is the hypothesis that cooperative learning, when intentionally designed and implemented, provides authentic learning contexts in which students can practice and internalize competencies. For instance, engaging in group discussions and joint decision-making processes can help students develop both communication and critical thinking skills. Similarly, resolving interpersonal conflicts or negotiating roles within a group can promote emotional intelligence and self-awareness. Moreover, the reciprocal nature of cooperative learning—where each student's success is linked to the success of their peers—can foster a sense of social responsibility and ethical engagement, which are essential attributes in a competency-oriented education.

In addition to exploring theoretical constructs, the study also engages with practical implications. It investigates specific cooperative learning strategies such as Jigsaw, Think-Pair-Share, Learning Together, and Team-Based Learning, assessing how each strategy aligns with different aspects of competency development. Furthermore, the research considers the role of formative assessment in cooperative learning settings, emphasizing the importance of feedback, reflection, and metacognitive awareness in promoting deeper learning. By examining case studies and empirical evidence from diverse educational contexts, the study seeks to identify best practices and key success factors that can guide educators in implementing effective cooperative learning interventions.

It is also important to acknowledge the role of cultural and contextual variables in shaping the dynamics of cooperative learning. Different educational systems, classroom norms, and student backgrounds can influence how cooperative learning is perceived and practiced. Therefore, the study adopts a contextualized approach, recognizing that there is no one-size-fits-all model for cooperative learning. Instead, it advocates for adaptable and culturally responsive strategies that are sensitive to the specific needs and circumstances of learners.

The structure of the paper is as follows. Following this introduction, the literature review section will synthesize key findings from existing studies on cooperative learning and competency development. The methodology section will outline the research design, including the selection of participants, data collection methods, and analytical procedures. The results section will present the main findings of the study, followed by a discussion that interprets these findings in light of the theoretical framework and existing literature. Finally, the conclusion will summarize the key insights, highlight the limitations of the study, and propose directions for future research.

In conclusion, as education systems worldwide strive to prepare students for an increasingly complex and interconnected world, the emphasis on competency development has never been more critical. Cooperative learning offers a powerful pedagogical approach to meet this challenge, enabling students to learn not just from the curriculum but also from each other. By focusing on how competencies are learned through cooperative engagement, this research seeks to deepen our understanding of educational practices that not only improve learning outcomes but also cultivate the skills, attitudes, and values necessary for lifelong success.

Methodology

Cooperative learning is an active learning methodology that involves students working together in small, heterogeneous groups to achieve shared academic goals while developing interpersonal and cognitive skills [1]. This methodology is grounded in social constructivist theories, particularly those of Vygotsky, who emphasized the role of social interaction in cognitive development [2]. The cooperative learning process can be implemented through several structured phases to ensure effectiveness and intentionality in competency development.

Phase 1: Planning and Group Formation

In this initial phase, teachers define clear learning objectives aligned with key competencies such as critical thinking,

communication, and collaboration. Group composition is intentionally designed to be heterogeneous, including diverse academic levels, abilities, and social backgrounds [3]. The teacher also selects the cooperative structure (e.g., Jigsaw, STAD, Think-Pair-Share) appropriate for the task.

"Effective cooperative learning requires careful planning of the task and group configuration to foster positive interdependence and individual accountability" [4].

Phase 2: Task Assignment and Role Definition

Students are assigned a meaningful, challenging task that requires interdependence and joint effort to be completed successfully. Clear individual roles (e.g., coordinator, summarizer, recorder, checker) are distributed to promote responsibility and participation [5]. These roles rotate regularly to give all students opportunities to practice diverse competencies.

"Assigning and rotating roles within groups ensures that all members develop various skills and engage meaningfully in the learning process" [1].

Phase 3: Collaborative Work and Interaction

This is the core of the cooperative learning process. Students work together, discuss, debate, and co-construct knowledge. Teachers act as facilitators, offering support, scaffolding, and monitoring group dynamics. The use of promotive interaction is key—students support one another's learning through explanation, questioning, and feedback [6].

"Through promotive interaction, learners become resources for each other, which enhances their cognitive and social development" [3].

Phase 4: Monitoring and Formative Assessment

During group work, the teacher assesses both group processes and individual contributions through observation, checklists, and formative tools such as peer-assessment or learning journals. This phase allows for real-time feedback and helps identify misconceptions or conflicts that may hinder learning.

"Formative assessment during cooperative learning is essential for guiding instruction and promoting student reflection on both academic and interpersonal goals" [4].

Phase 5: Reflection and Group Processing

After the task is completed, students reflect on their learning outcomes and group functioning. This group processing phase involves discussing what worked well, what challenges were faced, and how the group can improve future collaboration. Teachers may guide this reflection through structured questions or debriefing sessions.

"Group processing improves the effectiveness of future cooperative efforts by promoting metacognitive awareness and self-regulation" [1].

Phase 6: Evaluation and Feedback

Finally, student learning is evaluated based on both the quality of the group product and individual performance. Evaluation criteria should balance content mastery and cooperative behaviors. Providing feedback that highlights both academic achievement and growth in competencies reinforces the dual focus of cooperative learning.

"Balanced assessment that values both academic and social outcomes is crucial in competency-based cooperative learning environments" [3].

Below, we present some of the most important learning structures for working on competencies:

Table 1: Structures and competences developed

Structure Name	Description	Key Competencies Developed
Think-Pair-Share	Students think individually, then discuss with a partner, and finally share with the group.	Critical thinking, communication, listening, reflection
Jigsaw	Each student becomes an "expert" in one part of a topic and teaches it to their group.	Responsibility, comprehension, teaching others, collaboration
Round Robin	Students take turns sharing ideas in a small group, one at a time, without interruption.	Speaking, respect, idea fluency, participation
Numbered Heads Together	Group members are assigned numbers; they discuss a question and one number is called to answer.	Accountability, group discussion, decision-making
Team-Pair-Solo	Students work as a team, then in pairs, then individually on the same task.	Scaffolding, independence, confidence, metacognition
Three-Step Interview	Students interview each other in pairs, then share findings with a larger group.	Active listening, question formulation, interpersonal skills
Inside-Outside Circle	Two concentric circles of students rotate and share ideas with multiple partners.	Communication, cooperation, social interaction
Learning Together	Students work in permanent heterogeneous groups on assignments together.	Cooperation, shared goals, negotiation, leadership
Group Investigation	Groups plan, research, and present on a topic collaboratively.	Inquiry, research, organization, public speaking

Co-Op Co-Op	Students design a unit, divide the tasks, work independently, then present as a group.	Planning, autonomy, initiative, synthesis
Think-Write-Pair-Share	Adds writing to Think-Pair-Share to solidify individual processing.	Writing, personal expression, clarity, peer learning
Rally Robin	In pairs, students take turns quickly sharing answers or ideas.	Fluency, cooperation, fast thinking
Corners	Students choose a corner of the room based on their opinion or preference and discuss.	Decision-making, justification, value clarification
Pyramid Discussion	Students first discuss in pairs, then in groups of 4, then whole class.	Consensus-building, idea integration, synthesis
Gallery Walk	Groups create posters and walk around to view and discuss others' work.	Presentation, critique, movement-based engagement
Stad (Student Teams Achievement Divisions)	Students study in teams, then take individual quizzes.	Peer tutoring, accountability, academic achievement
TGT (Teams-Games-Tournaments)	Students work in teams and then compete in academic games based on team study.	Motivation, collaboration, healthy competition
peer teaching	Students teach concepts or skills to one another.	Explanation, leadership, mastery
Role Play / Simulation	Students act out scenarios to explore topics deeply.	Empathy, problem-solving, expression
Reciprocal Teaching	Students take turns being the "teacher" in small-group reading discussions.	Summarizing, questioning, predicting, clarifying

Observation and Formative Assessment

The assessment of cooperative learning should be continuous, formative, and process-oriented. Teachers should observe students during group work and take anecdotal records to monitor interactions, participation, and progress.

"Assessment in cooperative learning should focus not only on outcomes but also on the group process and individual contributions" [1].

Teachers can use observation checklists aligned with the rubric criteria to ensure consistency and fairness.

Self-Assessment and Peer Assessment

Involving students in evaluating their own and their peers' performance promotes

Metacognition and Accountability.

"Self and peer assessment in cooperative learning fosters reflection, responsibility, and a sense of ownership over the learning process" [4].

Students can complete simplified versions of the rubric to reflect on their participation and teamwork.

Use of Portfolios or Group Journals

Students can keep a learning portfolio or cooperative journal documenting group progress, decisions made, roles assumed, and reflections. This serves as a record of their development and engagement.

"Documenting collaborative learning processes enables students to become more aware of their contributions and areas for improvement" [3].

Balanced Assessment: Individual + Group

It's essential to balance individual accountability with group performance. While the group may receive a collective grade, students should also be assessed individually to ensure equity and avoid "free riding."

"Equity in cooperative learning is maintained through a combination of group and individual assessments" [7]

Assesment

The evaluation rubric used to evaluate the students is the following:

Table 2: Evaluation rubric

Criteria	Excellent (4)	Good (3)	Needs Improvement (2)	Limited (1)
Participation	Always actively participates and encourages others to participate.	Usually participates and supports group activities.	Participates occasionally but needs reminders.	Rarely participates or disengaged from group work.
Collaboration	Works extremely well with others; listens, respects, and builds on others' ideas.	Cooperates well and contributes to group harmony.	Sometimes works well, but occasionally struggles with teamwork.	Rarely collaborates; struggles to work with others.

Responsibility	Takes full responsibility for own tasks and helps the group meet goals.	Usually responsible; completes tasks on time.	Sometimes responsible; may need reminders.	Rarely takes responsibility or completes tasks.
Communication	Expresses ideas clearly and listens actively to peers.	Communicates effectively with minor issues.	Has difficulty expressing ideas clearly or listening.	Communication is unclear or lacks engagement.
Problem-Solving & Decision-Making	Proactively helps solve problems and supports group decisions.	Engages in decision-making and contributes solutions.	Occasionally helps with decisions; needs guidance.	Avoids responsibility in problem-solving.
Reflection & Evaluation	Thoughtfully reflects on group process and own contribution.	Reflects on performance with some depth.	Offers limited reflection; lacks insight.	Little or no reflection; does not recognize areas for growth.

Results and conclusions

Research consistently highlights that cooperative learning positively impacts various aspects of students' academic and social development in primary education.

Improved Academic Achievement

Cooperative learning has been shown to enhance students' understanding and retention of academic content. When students work collaboratively, they engage more deeply with the material, clarify misunderstandings, and build knowledge through discussion.

"Students in cooperative learning settings tend to achieve higher academic results than those in competitive or individualistic settings due to increased interaction and shared responsibility" [7].

Development of Social Skills

Primary students develop critical social competencies such as communication, conflict resolution, and empathy through structured cooperative tasks. These social skills contribute to better classroom climate and peer relationships.

"Cooperative learning environments foster positive interdependence and interpersonal skills, which are essential for effective teamwork and social development" [4].

Increased Motivation and Engagement

The collaborative nature of cooperative learning often increases motivation by making learning more meaningful and enjoyable. Students feel more responsible for their learning and that of their peers.

"When students perceive their role as vital to the group's success, motivation and engagement levels significantly increase" [3].

Enhanced Self-Esteem and Confidence

By contributing to group tasks and receiving peer support, students gain confidence in their abilities. The positive feedback loop created in cooperative settings promotes higher self-esteem.

"Participating in cooperative learning activities supports students' self-esteem as they experience success and social acceptance" [8].

Development of Critical Thinking and Problem-Solving Skills

Cooperative learning requires students to discuss, negotiate, and evaluate different perspectives, which cultivates critical thinking and problem-solving abilities.

"Collaborative learning experiences are powerful contexts for the development of higher-order thinking skills" [9].

Conclusions on Cooperative Learning in Primary

Based on the extensive body of research, the following conclusions can be drawn:

1. Cooperative learning is a highly effective instructional strategy in primary education that supports not only academic growth but also socio-emotional development.
2. It fosters an inclusive and supportive classroom environment, where diverse learners feel valued and motivated to participate actively.
3. Implementation requires deliberate teacher facilitation, including structuring tasks, teaching cooperative skills, and balancing group and individual accountability to maximize benefits.
4. Long-term integration of cooperative learning can lead to sustained improvements in students' interpersonal skills, academic achievement, and attitudes toward learning.
5. Future research and practice should continue exploring best practices for adapting cooperative learning to different contexts, including diverse student populations and subject areas.

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