

COOPERATIVE LEARNING STRATEGIES: IMPLEMENTATION CHALLENGES IN TEACHER EDUCATION

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Abstract

The research in cooperative learning (CL) is robust. Despite the empirical research benefits of CL, its implementation faces challenges in teacher education classrooms. Teacher educators resist using CL and stick to the frontal teaching method. All this may be due to the difficulties perceived by teacher educators in implementing CL. The researchers used a concurrent triangulation mixed method research design to explore the perceived challenges of cooperative learning implementation among teacher educators from India. The researchers administered a questionnaire and obtained 300 responses from teacher educators through a survey, followed by a semi-structured interview among eight survey participants. The research findings revealed that the average perceived challenges among teacher educators are 63% due to teacher challenges, learner challenges, curriculum syllabus, and administrative challenges. Female teacher educators perceived higher challenges than males. ANOVA results revealed a difference in challenges faced across the age group. These results demonstrate the need for future researchers to conduct a more in-depth examination of the challenges in implementing CL with more extensive samples in various educational settings in other world regions to develop effective solutions.

Keywords: active learning, collaborative learning, cooperative learning, mixed-method, student-centred learning

Introduction

The ability to work with others has been one of the most sought-after traits for persons in the professional and educational environments of the twenty-first century. Teacher training programmes are essential for preparing teachers for the classroom and providing them with the information and skills necessary to be effective educators. Teacher preparation programmes may influence innovative teaching strategies like Cooperative Learning (CL). Teachers in the twenty-first century may incorporate technology and creative techniques into their lessons. Consequently, teacher training can result in a more engaging and practical learning environment for pre-service teachers, enabling them to meet the changing needs of learners.

Review of Related Literature

Cooperative learning (CL) is a strategy involving small groups of students working together to achieve a common learning goal. CL improves academic performance, motivation, social skills, and collaboration among pre-service teachers (Gillies, 2016). Abramczyk and Jurkowski (2020) have stated that CL benefits academic and social learning and may provide individualised learning experiences. CL can enhance language proficiency among learners (Namaziandost et al., 2020). CL can allow meaningful disciplinary integration and ease of teaching (Li et al., 2022). Students' critical and creative thinking is significantly improved using CL (Silva et al., 2022). An adequately structured CL ensures fairness, social justice, and equal

learning opportunity. Thus CL practice may foster an inclusive and revolutionary educational environment (Muñoz-Martínez et al., 2020). CL contributes to developing a learning community, enhanced collegiality, a shared learning goal, open discussion, dedication, focused teaching preparation, and facilitated adaptability (Niemi, 2021). All these studies highlight the benefits of CL practice among learners and teachers.

Teachers are crucial in collaborative learning, and the teacher helps students solve problems. So, teacher Education Colleges bear a great deal of responsibility for preparing prospective teachers to use innovative group learning strategies such as CL. In line with the above, implementing CL in classrooms is helped by teacher educators who promote autonomy and structure in the teacher training programme (Cañabate et al., 2021). On the same path, monitoring, assisting and mentoring student interactions are crucial for effective CL implementation in teacher education (Kaendler et al., 2019). Moreover, to achieve this, teacher abilities are essential (van Leeuwen & Janssen, 2019).

Similarly, Farrell and Jacobs (2016) have shown that the effective use of CL practices suffers in the hands of inexperienced and untrained teacher educators. Poor reflection on professional experience is another reason for low desirability for strategies like CL. However, the training teachers receive during their courses can influence their use of innovative methods in the future (Kusumaningrum et al., 2019; Moges, 2019). Besides this, teaching theory in teacher education classrooms determines the nourishment of teaching skills, values, and dispositions among prospective teachers (Johnson & Johnson, 2017).

Furthermore, the experiential learning trainee teachers experience during the training positively impacts their attitudes (Saborit et al., 2016; Zheng & Zhou, 2023). Accordingly, lacking CL practice during teacher training leads to a lack of knowledge about different CL strategies among pre-service teachers. In reality, the implementation of CL is fraught with difficulties due to practical usability in teacher education (Liebech-Lien, 2020; Muñoz-Martínez et al., 2020). In line with this, few studies have highlighted that teacher educators prefer lecture teaching over active learning strategies. There is a gap between teacher educators' claims and the actual practice of CL (Baloche & Brody., 2017). Teacher education employs lecture teaching methods, and trainee teachers lack hands-on experience in CL strategies (Montanero & Tabares, 2020). Loh and Ang (2020) have stated that teaching and learning have varied over time, although the lecture method remains the primary teaching mode in teacher education. Teacher educators strongly believe that only a few methods, like frontal teaching, guarantee success. This belief prevents them from using CL often (Thorburn, 2020). Teachers are sceptical of the positive effects of CL and use only lecture methods of instruction. Furthermore, active learning strategies like CL are uncomfortable for teachers in pre-service training to practice (Baloche & Brody, 2017), and one of the reasons for this is the blind promotion of frontal teaching methods.

However, research confirms that students demand active learning methods, and lecture methods are inappropriate for contemporary learners. Teacher training colleges may prioritise learner-centred pedagogy; however, insufficient learner knowledge and abilities, understanding of its benefits and advantages, overcrowded classrooms, and classroom discipline issues hinder its implementation (du Plessis, 2020). Furthermore, deficient collaboration abilities, competence, and friendships among students contribute to CL implementation difficulties (Le et al., 2018). However, the teachers' concentration on cognitive components of CL caused student teachers to lack collaboration, consistency, support, and equitable participation. Besides, teacher educators do not stress interdependence and cooperation between student teachers (Dzemidzic Kristiansen, 2022). In line with this, the teacher educators must introduce promotive engagement, individual accountability, social skills, and group reflection into CL groups. If integrated properly, students will be inspired to work together to attain group learning goals (Gillies, 2016). However, Cooperative learning support determines whether students actively construct their knowledge during CL sessions (van Leeuwen & Janssen, 2019).

Teachers have a theoretical knowledge of the benefits and principles of CL. However, their professional abilities and teaching methods do not reflect this scientific proof of cooperative learning's success (Abramczyk & Jurkowski, 2020). Additionally, teachers have trouble developing group goals, CL groups, and choosing CL tactics for a particular topic due to their lack of CL strategy understanding. Hence, CL becomes a collaborative effort like any other.

Furthermore, it leads to poor development of classroom management skills (Ghaith, 2018; Kishore, 2016). These contribute to negative opinions among teachers and students about CL (Opdecam & Everaert, 2018). In this regard, Petre (2022) has stated that transferring CL methods to the classroom can be successful if the first training programme for teachers is adequate. Similarly, teachers who receive training in CL are more likely to incorporate them into their teaching, leading to a more engaging and practical learning experience for students. Pre-service teacher training is a fundamental aspect of higher education. Pre-service teacher training decides whether or not classes include professionals who prepare pupils for tomorrow's society. It is not an exaggeration to assert that how teachers educate today's students will significantly influence the future. (Cañabate et al., 2021; Ghaith, 2018; Ghuftron & Ermawati, 2018; Keramati & Gillies, 2021; Letina & Vasilj, 2021; Mukuka et al., 2019).

In addition to the above, the studies have shown that teaching practices employed throughout the course and the availability of teaching materials bolster the teacher's confidence in implementing active learning strategies (Haug & Mork, 2021). Besides, the absence of an ideal physical and pedagogical environment, such as furniture arrangement, hampers successful collaborative learning implementation (Asino & Pulay, 2019). Additionally, classroom design influences learning due to the changing pedagogical needs for social contact, cooperation, and student knowledge creation (D'Eon & Zhao, 2022). Furthermore, teachers and students find adjusting to a collaborative learning environment hard when their perspectives are ignored during school planning (Purba et al., 2022). Additionally, the instructors encounter hurdles during their CL Implementation as curriculum design, professional training, and material support do not support them.

Researchers often criticise teacher education for not providing students with the necessary professional skills for their chosen job (Weinberger & Shonfeld, 2020; Dzemedzic Kristiansen et al., 2019). Besides this, there is a shortage of professionally trained teacher educators, and this, combined with a lack of proper infrastructure, resulted in poor pre-service teacher training. The modelling of organisation and implementation of CL strategies has to start in teacher education classrooms (Kimmelman & Lang., 2019; Keramati & Gillies, 2021; Letina & Vasilj, 2021; Mukuka et al., 2019).

Both teachers and students believe that only teacher-centred methods provide the best learning opportunities for them (Buchs et al., 2017). Teachers and students have misconceptions about CL due to a lack of knowledge and non-exposure to student-centred learning (Ghaith, 2018). Teachers tempt to use excuses such as difficulty maintaining discipline during a CL class. They often opinion CL activity leads to noisy classrooms. More often, teachers blame about lack of student cooperation and curriculum overload. The teacher educators also feel an inadequacy of CL appropriate for teaching different subjects. Teacher educators use these excuses to justify their lack of motivation to use CL effectively (Buchs et al., 2017; Ghaith, 2018; Opdecam & Everaert, 2018). Successful CL requires a methodical approach from teachers and students (Keiler, 2018). Further research is necessary to comprehend instructors' and students' attitudes regarding the active application of CL based on their experiences (Haug & Mork, 2021).

The previously mentioned arguments emphasise the importance of understanding teachers' perceived challenges when integrating CL. From the above discussion, it is evident that the perceived challenges among teachers in implementing CL are due to a variety of factors, including a lack of knowledge and exposure to CL, misconceptions and negative attitudes towards CL, student attitudes and perceptions towards CL, administrative apathy, and lack

of resources. A study focused on the challenges above has the potential to reveal noteworthy discoveries concerning the obstacles hindering the extensive implementation of CL. Moreover, conducting comprehensive research into these factors can facilitate the identification of the most salient obstacles and provide insights for devising practical approaches to tackle them.

From the discussion, it is evident that few studies are available in the literature exploring the perceived challenges of teacher educators in implementing CL. Especially the teacher educators working in the teacher education colleges of middle-income countries lack training in implementing CL strategies; also, they come from various multicultural contexts. Thus, they face many challenges, so studying their perceived challenges in CL implementation becomes highly inevitable. This study's inquiry into the perceived challenges teacher educators face in implementing CL has the potential to make a valuable contribution to the existing body of research on CL and teacher education. The study has the potential to contribute novel perspectives on the challenges encountered by teacher educators, thereby enriching forthcoming research in this area.

Furthermore, perceived challenges towards implementing cooperative learning are global. Additionally, teacher education programmes are unique to every country and region, and different statutory bodies regulate these programmes worldwide. However, some common challenges in the global teacher education scenario require modelling. The actual implementation of innovative pedagogic methods like CL is lacking in teacher education programmes. There is a lack of research on whether teacher education programs adequately support CL implementation.

Theoretical Framework

Three distinct theoretical frameworks guided the research. The social cognitive theory proposed by Albert Bandura highlights the significance of social modelling, self-efficacy, and outcome expectations in shaping an individual's behaviour. The challenges associated with implementing cooperative learning may be associated with inadequate social modelling, diminished self-efficacy, and unfavourable outcome expectations. These factors can potentially impede the inclination of teacher educators and pre-service teachers to participate in cooperative learning activities.

The sociocultural theory proposed by Vygotsky elucidates the importance of social interaction in learning. As per this theoretical perspective, learners can derive advantages from engaging in cooperative endeavours that enable the generation of novel insights. Cooperative learning settings allow students to accomplish tasks within their Zone of Proximal Development (ZPD) while obtaining guidance and feedback from peers and educators.

Edward Deci and Richard Ryan's self-determination theory concentrates on autonomy, competence, and relatedness in motivating individuals to engage in cooperative learning. Lack of autonomy, feelings of ineptitude, or a lack of social support can undermine the motivation of pre-service teachers to participate in cooperative learning activities and contribute to the difficulties in implementing cooperative learning.

Research Problem

Teachers have a theoretical knowledge of the benefits and principles of CL. However, their professional abilities and teaching methods do not reflect this scientific proof of cooperative learning's success. Teacher educators talk about innovative pedagogic practices. However, teacher educators teach cooperative learning through frontal teaching methods like the lecture method. Furthermore, teacher educators usually provide theoretical knowledge of CL to pre-service teachers without practical knowledge. However, a handful of enthusiastic teacher educators are trying to implement cooperative learning but face several implementation

challenges. So the present study has undertaken to understand the implementation challenges faced by those who attempt to do it.

Research Focus

The present study explored the perceived challenges of CL implementation in teacher education classrooms.

Objectives of the Study

1. To measure the perceived challenges faced by teacher educators towards implementing CL strategies in their classrooms
2. To explore whether the perceived challenges of CL implementation differ among demographic characteristics like gender, age, and years of teaching experiences among teacher educators.
3. To find the correlation between the perceived challenges to cooperative learning implementation with age and years of teaching experience among teacher educators

Research Methodology

General Background

The present study employed a mixed-method research design. The researchers used a concurrent triangulation design (Creswell & Creswell., 2017). Quantitative and qualitative data were collected concurrently in one study under this design. This type of research design aims to validate the findings generated by each method using evidence from the other. The researchers collected quantitative data using a survey questionnaire and qualitative data through a semi-structured interview of the participants. As the study aims to explore the perceived challenges of teacher educators in implementing CL, in-depth information can be obtained only through interviews. However, conducting a quantitative survey with a large sample will produce more generalised results.

In addition, researchers often criticise that teacher education outcomes in middle-income countries are poor and that most active learning strategies, such as CL, are taught theoretically and not demonstrated. Through interviews and a survey of teacher educators, the purpose of the study will be to help researchers comprehend the issue of not demonstrating CL but instead focusing on content instruction. Consequently, quantitative and qualitative data are collected simultaneously, and the quantitative survey and the semi-structured interview evidence validate the present study's findings.

The researchers constructed the Perceived Challenges to CL Implementation (PCCLI) questionnaire with a 5-point Likert scale to collect data quantitatively. The researchers constructed to measure the perceived challenges of teacher educators in implementing CL in line with the existing literature and the study's objectives. Five subject experts validated the scale. The researchers incorporated the recommendations from the experts and established the content validity of the final form of the scale. The final scale included 12 statements, and participants had to mark their responses against each statement based on their knowledge and experiences with CL (strongly disagree, disagree, neutral, agree, and strongly agree). The researchers tested the final scale by administering it to 40 teacher educators and recorded their responses. The internal consistency of the items was determined using Cronbach's alpha. The scale's reliability is determined to be 0.63. The researchers used a semi-structured interview to collect data qualitatively. The semi-structured interview is the most commonly used data

collection method, and it is best suited when deep exploration of issues is required (Kallio et al., 2016; Louise Barriball & While, 1994). The researchers created the interview guide and validated it with a panel of subject experts.

The researchers incorporated informed consent in the survey questionnaire and obtained permission from the interview participants. Participation in the survey and interview was entirely voluntary. The researchers have obtained ethical approval for the study from the Institution Review Board of the University. The researchers carried out data collection in August-September month of 2022.

Sample

For the quantitative survey, the researchers employed a convenient sampling technique. According to the National Council of Teacher Education (NCTE) India, there are approximately 17,000 teacher education colleges in India, a country with an extensive geographical area. So surveying such a large sample of teacher educators is not possible, and therefore as a representative sample, the study sent out a survey questionnaire of around 550 teacher educators, out of which obtained 300 successful responses. The researchers took four quartile deviations among the sample based on high, average, and low scores obtained in the survey questionnaire. Two of the four quartiles were randomly picked for the semi-structured interview so that the researchers get various responses. However, the researchers reached saturation during the interview despite the distribution of participants over the quartiles. So the final sample for the semi-structured interview included eight teacher educators. The demographic variables and their classifications based on gender, age, and years of teaching experience are given in Table 1 and Table 2, respectively.

Table 1
Characteristics of the Sample

Male	120
Female	180
Age	33-60 years
Year of teaching experience	2- 34 years

Table 2
Classification of Teacher Educators Based on Gender, Age, and Years of Teaching Experiences

	Classification	Criteria
Age	Beginner	43 years and below
	Mid-career	44 to 51 years
	Senior	52 years and older
Years of teaching experience	Beginner	8 -years and under
	Mid-career	9 to 13 years
	Senior	14 years and above

Table 3
Demographic Details of Interview Participants

Participant	Gender	Age	Years of teaching experience
T1	Female	39	Below 8-years
T3	Female	40	Below 8-years
T4	Female	45	12 years
T5	Female	50	13 years
T6	Female	57	28 years
T2	Male	38	Below 8-years
T7	Male	46	12 years
T8	Male	54	25 years

Instrument and Procedures

The researchers employed two instruments for the present study. They are the Perceived Challenges to Cooperative Learning Implementation (PCCLI) questionnaire with a 5-point Likert scale to collect data quantitatively and an interview guide for the semi-structured interview. The PCCLI was created electronically in Google form. In the Google form, the researchers incorporated sections for collecting informed consent and demographic details of the respondents. For the field study, the researchers distributed the electronic PCCLI questionnaire online. Appendix A contains The PCCLI questionnaire items.

For the interview, the researchers invited the teacher educators via e-mail. The researchers obtained the participants' permission to conduct the interview. Participants could contact the researchers if they could not attend the scheduled interview. To identify the interviewees and maintain confidentiality, the researcher assigned pseudonyms T1, T2, T3...T8. The researchers removed participants' identities from the data, securely stored in a drive only the researchers could access. Table 3 shows the demographic characteristics of the interview participants.

The researchers interviewed the participants through the Google Meet video conferencing platform. Both researchers conducted the interview, recorded it and transcribed it verbatim. After establishing rapport, the interviewer explained the purpose of the study and cleared the interviewee's doubts at the start of the session. During the interview, prompts were given to participants to elicit more information, and the researcher redefined subsequent interview questions based on the responses to each question. Appendix B contains the interview guide.

Data Analysis

The researchers employed independent sample t-tests and ANOVA to explore the relationship between gender, age, and teaching experiences with PCCLI. The researchers used descriptive statistics such as mean, standard deviation and percentages to analyse survey responses to the PCCLI questionnaire. The survey data were statistically analysed using JAMOVI (version 2.3.16) software. The researchers used Tukey-Kramer Post hoc test to confirm the results, where the difference was significant after the ANOVA test.

Thematic analysis is a data analysis method when the researcher wants to learn more about people's views, opinions, knowledge, experiences, or values by analysing qualitative data (Maguire Moira, 2014). For the qualitative approach using semi-structured interviews,

the researchers utilised thematic analysis. During the interview, the researcher noted the participants' comments and thoughts. The researcher immediately organised the critical themes that emerged from the interview.

Following the interview, the researcher completed the following steps for the analysis. Following the stages of coding, the researchers did a thorough reading of the transcripts several times.

- The significant themes arrived after reviewing of initial codes several times.
- Reading and rereading to arrive at a major title for the emerging theme and sub-themes, as well as eliminating subjectivity and bias
- Subthemes are condensed further to obtain the true meaning of participants' experiences.
- To maintain validity, the researchers grouped related themes across transcripts. Before defining and naming them, the researcher combined the central theme and subthemes and reviewed them again.

Research Results

In order to test objective 2 of the study, the researchers conducted an independent sample *t*-test between teacher educators' PCCLI under gender. Table 4 shows the results.

Table 4
Independent Samples T-Test between Male and Female Teacher Educators

		Statistic	df	p
PCCLI	Student's <i>t</i>	3.44*	298	<.001
	Welch's <i>t</i>	3.57	283	<.001

*Levene's test is significant ($p < 0.05$), suggesting a violation of the assumption of equal variances

From Table 4, it is clear that $t(293) = 3.57, p < 0.05$, indicating there is a statistically significant difference exists between male ($M = 36.5, SD = 3.67$) and female teacher educators ($M = 38.2, SD = 4.39$) in PCCLI

The researchers conducted one-way ANOVA between teacher educators' PCCLI under different categories of their years of teaching experiences. Table 5 shows the results.

Table 5
One-Way ANOVA (Fisher's) PCCLI among Different Teaching Experience Groups of Teacher Educators

	F	df1	df2	p
PCCLI	1.39	2	297	.25

From Table 5, it is clear that $F(2, 297) = 1.39, p = 0.25; p > 0.05$, indicated there is no statistically significant difference in PCCLI between the groups of teacher educators based on their years of teaching experience (Beginner $M = 37.6, SD = 3.92$, Mid-career $M = 36.9, SD = 3.89$, and Senior $M = 37.8, SD = 4.47$).

The researchers conducted one-way ANOVA between teacher educators' PCCLI under different age groups. Table 6 shows the results.

Table 6
One-Way ANOVA (Fisher's) between Different Age Groups

	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>
PCCLI	3.54	2	297	.030

From Table 6, it is clear that $F(2, 297)=3.54$, $p=0.03$; $p<0.05$, indicated there is a statistically significant difference between the PCCLI between different age groups of teacher educators (Beginner $M=38.2$, $SD=3.92$, (Mid-career $M=36.4$, $SD=3.79$, and (Senior $M=37.8$, $SD=4.29$).

In order to test the interaction effect between Mid-career, Senior, and Beginner teachers, the researcher conducted Tukey Kramer post-hoc test. Table 7 shows the results

Table 7
Tukey Post-Hoc Test – PCCLI

		Mid-career	Senior	Beginner
Mid-career (44 years to 51 years)	<i>t</i> -value	—	-2.55	-1.787
	<i>df</i>	—	297	297
	<i>p</i> -value	—	.030	.176
Senior (52 years and above)	<i>t</i> -value	—	—	-0.375
	<i>df</i>	—	—	297
	<i>p</i> -value	—	—	0.926
Beginner (43 years and below)	<i>t</i> -value	—	—	—
	<i>df</i>	—	—	—
	<i>p</i> -value	—	—	—

From Table 7, the Tukey Kramer Post-hoc test shows an interaction effect between Mid-career and Senior teachers. There is no interaction effect between the Senior teachers and Beginner teachers, and also between Mid-career teachers and Beginner teachers.

To test objective 3, the researchers conducted a correlational analysis of PCCLI between age and years of teaching experience of teacher educators.

The obtained Pierson correlation coefficient ($r=.09$) between PCCLI and teacher educators' age indicated that no correlation exists between PCCLI and the age of teacher educators. The obtained Pierson correlation coefficient ($r=.178$) between PCCLI and teacher educators' years of teaching experience indicated that no correlation exists between PCCLI and teaching experience. However, the findings suggest a positive direction in the correlation.

Interview

Table 8
Themes and Sub-themes

Themes	Sub-themes
1 Teacher Challenges	Practical knowledge and belief
	Managing classroom
	Implementation confusion
2 Learner Challenges	.Attitude
	Prior exposure to active learning
3 Curriculum	Burden of syllabus
	Too much focus on marks
4 Administrative Challenges	Rigid classroom furniture and inadequate learning materials
	Indifference towards active learning
	Lack of professional development programmes

Teacher Challenges

The analysis provided themes concerning the teacher's challenges with CL implementation. Effective implementation of CL is contingent on various subthemes, including teachers' practical knowledge, beliefs, classroom management skills, and cooperation with colleagues.

Practical Knowledge and Belief

Most teacher educators stated that they are aware of the positive effects of CL on students. However, they believe it is not their preferred strategy for practical application. Teachers also expressed a lack of knowledge about various CL strategies as well as a lack of training for their practical application.

T1: I like CL but usually do not use it in class [...] I have used it once or twice [...], teaching using CL is an additional burden, and I think the lecture method is more effective [.....]

T2: Whenever I used CL strategies, I found that it encouraged social interaction and discussion and developed communication skills [...], but in the typical classroom, it is not practicable owing to many students [...]

T5: I have no practical experience teaching with CL strategies [...] it is difficult to prepare lessons using CL [...] I am not familiar with CL strategies [...]

Managing Classroom

The teacher's classroom management skills are related to the previous theme. Most teachers struggled to form CL groups and manage groups during the session.

T6: I have used only peer tutoring as a CL strategy [.....] It is not easy to group the students [.....]

T8: it is challenging to manage the students in groups [.....]

T4: I allow students to select their group members [.....] I do a group discussion after the end of each session of my lecture [.....]

Implementation Confusion

This sub-theme relates to the previous ones. Many teachers stated that unhealthy competition from colleagues causes them to lose interest in using CL. Many teachers reported that other teachers had a negative attitude and refused to cooperate with CL implementation.

T3: I do not see my co-teachers using CL strategies in their classes [...]

T4: Whenever I have used any group activity, other teachers will be observing as if I am not teaching at all [.....] and they keep enquiring to students about what I was doing in the class [.....] whether I have completed my portion or not [.....] they feel I am giving burden to students and not teaching them [.....] and I have stopped teaching using any innovative strategies in the class [.]

T7: I have tried initially using CL strategies in the class and the responses from students were good [.....] but other teachers felt I was collecting lecture notes from students instead of preparing them myself...it hurt me a lot [.....]

Learner Challenges

This theme outlines the learner challenges to the effective implementation of CL. The analysis provided sub-themes such as the learners' Attitude; the prior exposure of the learners to CL influences the successful implementation of CL.

Attitude

The teachers discussed how learners' behaviour and attitudes toward CL sessions affect the session's success. Many teachers stated that while most students enjoy CL sessions, they are not interested in group learning activities and are hesitant to share learning responsibilities.

T8: learners enjoy CL classes [.....], and it is not difficult for them to initiate classroom discussion [.....], but all the learners are not responsible for their work [.....] it burdens the other group members and they lose their motivation to continue [...] it also affects the group performance

T3 learners are not serious about the tasks given [.....] They are reluctant to cooperate and often are absent during the session is a tremendous setback [.....] because I could not finish sessions as planned.

T8: The learners speak different languages, and some of them are not fluent in the English language, so they shy away from active participation [.....]

Prior Exposure to Active Learning

This sub-theme relates to the one before it. Most teacher educators stated that the learners' expectations, sociocultural background, home language, and prior exposure only to the lecture teaching method make effective implementation of CL difficult. Prior exposure to CL in previous courses impacts the learners' learning styles and learning experience expectations.

T4: students are used only to the lecture method of teaching, and they expect the teachers to re-teach the lesson even after the same topic is learned through CL sessions [....] Some students complain the teacher is overburdening them with additional assignments [....]

T3: students are not submitting their learning sheets and peer assessment forms as they feel they did not fetch any additional marks for them [.....]

T3: CL leads to group conflicts as some students are dominant, and others keep quiet during the interactions and discussions [.....]; students who are not fluent in English are mocked by other students when they take more time to express their ideas [.....]

T1: some students prefer individual work, feel CL sessions are a waste of time, and demand a lecture teaching method [.....]

Curriculum

The analysis yielded themes about the challenges of implementing CL in teacher education curricula. The semester system's emphasis on syllabi and examinations poses difficulty in successfully implementing CL.

Burden of Syllabus

Almost all teachers stated that the curriculum of teacher preparation programs is overburdened, and it has exhausted teachers and students equally. Many teachers said students dislike additional work due to assignments and other responsibilities. There is not enough time to prepare for CL sessions, so they use the frontal method of instruction.

T1: pre-service teacher education in India is overloaded [.....] students are burdened with theory and other activities in the semester system [....]

T5: I am not getting enough time to prepare for CL classes, so I use only the lecture teaching method [.....]

T6: there is no time to practice CL strategies in the classroom [....]

Too much Focus on Marks

This sub-theme relates to the previous one. Most teachers explained that the examination-oriented semester system in teacher preparation focuses solely on grades, and students work solely for grades.

T4: The entire programme is credit-based and exam-oriented [....] so much importance is given to final grades or marks [.....] students are reluctant to take up activities that have no provision for getting marks [.....]

T8: students expect a teacher to complete the syllabus and give them notes and materials for learning [...] They do not value or respect the notes prepared by their peers because they fear the CL classes are inadequate to master the concepts[.....]

Administrative Challenges

This theme describes the challenges teachers face from college administration when implementing CL. Subthemes that emerged from the analysis were the lacking of learning materials in CL, the absence of professional development programmes, the use of wooden classroom furniture, and the management's indifference to active learning strategies.

Rigid Classroom Furniture and Inadequate Learning Materials

Most teachers explained that there are many applicants yearly for teacher education programs, resulting in overcrowded classrooms. The majority of teachers stated that the furniture in the classroom is not flexible enough to conduct CL. Most teacher educators desired proper lesson plans and professional training to implement CL.

T5: The classroom furniture does not support CL strategies [...] In our college, there are 100 students, and there is no space in the classroom for group discussion or easy movements [...] grouping of students will take more than 15 minutes [...]

T3: there are no materials or proper lesson plans to refer to the practical implementation of CL strategies [.....]

Indifference towards Active Learning

This sub-theme relates to the previous one because most teachers stated that management is unconcerned about teachers' needs and is only concerned with student admission and grades.

T6: our management focuses on completing the syllabus, and they are not bothered to assist teachers in implementing strategies like CL [...] Management only emphasises the number of admissions and final grades of the students [.....]

T7: for administrators, the lecture method is the only effective method of teaching [...] my principal insists that I teach them all the concepts and give them lesson notes too [...] There are many pre-service teacher education colleges and competition for admission is high so I do not want to take risks [...]

Lack of Professional Development Programmes

This sub-theme relates to the previous one because most teacher educators stated that they do not receive professional development programs from their colleges. Most of these teachers are graduates of private teacher education colleges, and the quality of their education and exposure differs from that of teacher educators trained in aided and autonomous training colleges.

T5: I feel there is a need for workshops and demo lessons in the teacher education colleges as a professional development activity for teacher educators [...] I want to master CL strategies and need support from the administration [...]

T1: our college is a private college and never conducts a professional development programme for the teacher educators [...], and there is no unity between private, aided, and government colleges [.....] Managements of private/management/un-aided colleges neglect professional development of teacher educators.

T3: the management never takes up follow-up of the programme implementation, and I am not motivated to do CL sessions [...]

Discussion

Based on the data reported in the preceding section, teacher educators generally accept using CL, but they employ the lecture method to educate pre-service teachers due to their perceived implementation issues (Baloche & Brody., 2017; Han et al., 2015; Khalaily, 2019). However, teacher educators' PCCLI in their classrooms are impediments they expect to face. Real or imagined, these barriers vary by circumstance and individual.

The present research revealed that the PCCLI is high among teacher educators, and gender affects PCCLI. Previous studies showed that teacher gender might affect the learning environment and how pre-service teachers practice CL. Female teachers are more likely to use CL and create a welcoming classroom, which benefits female students. In CL, the teacher's gender may alter students' responses to feedback and evaluation. These differences might be due to the existing gender difference in the higher education system favouring male dominance and students' slight preference for male professors (Arrona-Palacios et al., 2020). However, the interpretation of gender differences is not universal. Furthermore, cultural, societal, and situational influences might influence its interpretation (Aslan et al., 2018).

In addition, the current study revealed that CL implementation issues depend on teacher educators' age. A teacher educator's age can influence their views on CL, teaching and learning. For instance, older teacher educators are hostile to CL as they do not have training or experience in CL as their training was in lecture teaching methods. Young teachers can learn much from seniors, but senior teachers may discourage junior teachers from utilising CL. Influential senior teachers can shape pre-service training or the teaching culture that exists in the college. Senior teachers' dislike of CL may inhibit its college-wide use. Senior teachers' expectations may discourage younger instructors from trying new methods like CL (Saborit et al., 2016).

Moreover, the study's findings demonstrated that teacher educators' teaching experiences do not impact CL implementation. CL can provide challenges for teachers of different experience levels. Experienced educators may have hard-to-change routines, and they may also choose lecture-based teaching over CL. Skilled teachers may examine students individually rather than in groups. However, untrained teachers may be more open to new methods like CL but lack the skills and knowledge to implement them. They may struggle with classroom management, classroom settings, student behaviour and participation goals (Beiki et al., 2020; Hung., 2019; Saborit et al., 2016).

Not many studies explore the relationship between Perceived challenges in implementing cooperative learning with demographic variables like age and years of teaching experiences among teacher educators. However, the correlational analysis of PCCLI with teacher educators' age and teaching experiences showed no correlation between the variables. The age and years of teaching experience are not enough to instil attitudes among teachers to apply cooperative learning in their classrooms, nor is professional training in innovative methods. Instead, it is an awareness of the methodology's purpose (Saborit et al., 2016). However, the findings suggest a positive direction in the correlation, so more profound studies are needed to explore the present study's findings.

Factors Contributing to Teacher Educators Perceived Challenges Towards Cooperative Learning Implementation

Teacher challenges stem from the lack of hands-on experience in CL during teacher education programmes. Lack of practical training affects their beliefs, ability to lead classes, and the confusion over using CL in the classroom. The untrained teachers may not comprehend CL concepts or have the skills and confidence to operate in a CL environment. They might also misunderstand or dislike CL, making implementing these strategies harder (Beiki et al., 2020). A theoretical understanding of CL and its benefits may not prepare teacher educators for CL implementation challenges. A theoretically sound teacher educator might struggle to control group dynamics and student behaviour during CL exercises (Moges, 2019). They might struggle to evaluate group work and provide honest and accurate feedback or adapt CL techniques to diverse learners (Beiki et al., 2020; Duran et al., 2019; Ghaith, 2018; Mukuka et al., 2019; Saborit et al., 2016).

CL is a novel teaching strategy for many pre-service teachers. Pre-service teachers' CL opposition affects teacher educators' CL implementation in various ways. CL-resistant students may hinder teamwork, communication, and problem-solving among pre-service teachers (Asino & Pulay, 2019; du Plessis, 2020; Ghaith, 2018; Khalaily, 2019). Furthermore, Learner challenges mainly arise due to prior experience with active learning. The non-exposure to active learning develops a negative attitude towards CL. Inexperience may make CL's benefits and application harder for prospective teachers (Ghaith, 2018; Weinberger & Shonfeld., 2020). Curriculum pressure may make prioritising CL harder, limiting content coverage time. Eventually, they may not appreciate the benefits of CL and see it as a burden rather than a learning strategy (Kimmelman & Lang., 2019). Students may expect teachers to provide all the answers rather than self-learning and group construction of knowledge. CL encourages pre-service teachers to work in groups and cooperate, which may be challenging for students who prefer to work alone (D'Eon & Zhao, 2022; Hung, 2019; Letina & Vasilj, 2021; Saborit et al., 2016). Further, the communication styles of learners might hamper CL. Learning a second language or having inadequate language skills might make CL challenging. Pre-service teachers may fail to follow instructions or communicate with classmates, which can annoy them and limit enjoying the benefits of CL. Grouping students who speak various languages might be challenging, which hinders student dialogue and collaboration, lowering CL's effectiveness (Muñoz-Martínez et al., 2020; Namaziandost et al., 2020)). Some cultures prefer working alone, making CL implementation difficult for the teacher. In some cultures, voicing opinions or disagreeing may hinder group debate and collaboration (Nguyen-Phuong-Mai, 2019).

Furthermore, the present study's findings revealed that an overloaded curriculum and too much focus on students' test scores contribute to the high PCCLI among teacher educators. It is related to the practical experience of a teacher educator in CL. A theoretically sound teacher educator may not know how to add CL exercises to the course syllabus, making it hard to finish course subjects on time (Beiki et al., 2020). Without practical experience in CL, the teacher may be unable to adjust CL exercises to fit the time limits to complete the syllabus (Mukuka et al., 2019; Saborit et al., 2016). A teacher educator without experience may struggle to manage the time, and they may not know how to adjust learning activities if they take longer or ensure that all groups finish on time (Ghaith, 2018; Yang et al., 2021).

Overcrowding and wooden furniture might hinder the implementation of CL (Ghaith, 2018; Yang et al., 2021). Overcrowded classrooms make CL exercises in small groups extremely impractical. Too many students may make it difficult for the teacher to move about, assess student progress, and work in small groups (Beiki et al., 2020). The teacher educator faces distractions, lack of focus and inability for learner engagement in large classrooms, which affects the success of CL (Ghaith, 2018; Yang et al., 2021).

According to (Moges, 2019; Li et al., 2022), teacher educators may struggle to implement CL if the administration restricts how and what to teach. Moreover, the management does not support professional development programmes for their teachers. Teacher educators need autonomy to meet student teachers' needs and create successful learning environments. Lack of administrative support and an exam-focused semester system might make adopting CL challenging in teacher education courses, and teacher educators may prioritise content coverage and test preparation over CL implementation (Moges, 2019). It may make people question their ability to do CL classes. Negative opinions regarding CL may also create a culture that perceives CL as an unnecessary or ineffective teaching method.

Keramati and Gillies (2021) have discussed CL constraints as playing a significant role in improving the status of CL implementation. Lack of knowledge and practice in CL is a fear transmitted by co-teachers when they discuss negative experiences with active learning strategies such as CL. It is a reluctance to take risks and venture outside the comfort zone of frontal teaching (Niemi, 2021). A willingness to implement CL sessions may help to address opposing forces (Baloche & Brody, 2017; Ferguson-Patrick, 2020; Gillies, 2016; Khalaily, 2019). According to Baloche and Brody (2017), implementing cooperating lessons can be a fundamental change in teacher education because it improves real learning and improves and empowers trainee teachers for effective teaching and learning. The non-exposure to CL during training may develop negative attitudes toward it or be persuaded not to use it in the classroom (Beiki et al., 2020; Matee et al., 2023; Purba et al., 2022)

Conclusions and Implications

Teacher educators boast about CL, but teacher education programs rarely implement it. The current study explored the teacher educators' perceived challenges in implementing CL in teacher education classrooms. The survey results revealed that the average percentage of perceived challenges towards implementing CL is 63%. Female teacher educators perceived more significant challenges than males. There is a difference in perceived challenges among teacher educators of different ages, whereas teaching experience did not reveal any difference in perceived challenges. The correlational analysis of PCCLI with teacher educators' age and years of teaching experiences showed that no correlation exists between the variables. However, the findings suggest a positive direction in the correlation and suggest the need for more profound studies in the future involving the age and years of teaching experience of teachers and educators with PCCLI. Through thematic analysis of the semi-structured interview, the research revealed significant challenges in the implementation of CL among the teacher educators, such as Teacher challenges, teacher's practical knowledge and belief, learner challenges, learners' prior exposure to active learning, curriculum, administrative challenges, administration's indifference towards active learning, and lack of professional development programmes. These results show that the perceived challenges towards CL implementation hinder its use in the pre-service teacher classroom. However, implementing cooperative learning instils accountability and autonomy in pre-service teachers' learning. It is the teacher educator's responsibility to implement CL for the benefit of their students rather than staying in their comfort zone of frontal teaching.

The researchers conclude by recommending that future researchers conduct more in-depth studies of the issue with larger samples in diverse educational settings and regions of the world and develop more effective approaches to motivate and encourage policymakers, government, administrators, and teacher educators to implement CL strategies as a mainstream of teaching as part of the teacher training programme.

Ethical Approval

The researchers obtained an institutional review board (IRB) certificate of ethical approval for the current study. The application included Participant descriptions, consent forms, and assent forms. The researchers guaranteed that the participants could leave the study at any time if they did not feel comfortable. Only the researchers have access to the encrypted and password-protected collected data.

Conflict of Interest

The authors declare no competing interest.

References

- Arrona-Palacios, A., Okoye, K., Camacho-Zuñiga, C., Hammout, N., Luttmann-Nakamura, E., Hosseini, S., & Escamilla, J. (2020). Does professors' gender impact how students evaluate their teaching and the recommendations for the best professor? *Heliyon*, 6(10). <https://doi.org/10.1016/j.heliyon.2020.e05313>
- Abramczyk, A., & Jurkowski, S. (2020). Cooperative learning as an evidence-based teaching strategy: what teachers know, believe, and how they use it. *Journal of Education for Teaching*, 46(3), 296–308. <https://doi.org/10.1080/02607476.2020.1733402>
- Asino, T. I., & Pulay, A. (2019). Student perceptions on the role of the classroom environment on computer supported collaborative learning. *Tech Trends*, 63(2), 179–187. <https://doi.org/10.1007/s11528-018-0353-y>
- Aslan, H., Kesik, F., & Elma, C. (2018). The opinions of teachers about the innovation level of their schools. *Journal of Education and Training Studies*, 6(6), 134. <https://doi.org/10.11114/jets.v6i6.3072>
- Baloche, L., & Brody, C. M. (2017). Cooperative learning: Exploring challenges, crafting innovations. *Journal of Education for Teaching*, 43(3), 274–283. <https://doi.org/10.1080/02607476.2017.1319513>
- Beiki, M., Raissi, R., & Gharagozloo, N. (2020). The differences between Iranian EFL teachers' perceptions and their instructional practices regarding the cooperative learning. *Cogent Arts and Humanities*, 7(1). <https://doi.org/10.1080/23311983.2020.1847420>
- Buchs, C., Filippou, D., Pulfrey, C., & Volpé, Y. (2017). Challenges for cooperative learning implementation: reports from elementary school teachers. *Journal of Education for Teaching*, 43(3), 296–306. <https://doi.org/10.1080/02607476.2017.1321673>
- Cañabate, D., Bubnys, R., Nogué, L., Martínez-Mínguez, L., Nieva, C., & Colomer, J. (2021). Cooperative learning to reduce inequalities: Instructional approaches and dimensions. *Sustainability (Switzerland)*, 13(18), 1–17. <https://doi.org/10.3390/su131810234>
- Cañabate, D., Gras, M. E., Serra, T., & Colomer, J. (2021). Cooperative approaches and academic motivation towards enhancing pre-service teachers' achievement. *Education Sciences*, 11(11). <https://doi.org/10.3390/educsci11110705>
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- D'Eon, M., & Zhao, R. (2022). Five ways for facilitators to get a grip on small group learning. *Canadian Medical Education Journal*, 13(2), 82–88. <https://doi.org/10.36834/CMEJ.72949>
- du Plessis, E. (2020). Student teachers' perceptions, experiences, and challenges regarding learner-centred teaching. *South African Journal of Education*, 40(1), 1–10. <https://doi.org/10.15700/saje.v40n1a1631>
- Duran, D., Corcelles, M., Flores, M., & Miquel, E. (2019). Changes in attitudes and willingness to use co-teaching through pre-service teacher training experiences. *Professional Development in Education*. <https://doi.org/10.1080/19415257.2019.1634631>
- Dzemidzic Kristiansen, S. (2022). Exploring pupils' and teachers' perspectives on face-to-face promotive interaction in cooperative learning. *Education 3-13*, 50(1), 54–69. <https://doi.org/10.1080/03004279.2020.1833060>

- Dzemidzic Kristiansen, S., Burner, T., & Johnsen, B. H. (2019). Face-to-face promotive interaction leading to successful cooperative learning: A review study. *Cogent Education*, 6(1). <https://doi.org/10.1080/2331186X.2019.1674067>
- Farrell, T.S., & Jacobs, G.M. (2016). Practicing what we preach: Teacher reflection groups on cooperative learning. *Test-Ej*, 19(4), 1–9, n4
- Ferguson-Patrick, K. (2020). Cooperative learning in Swedish classrooms: Engagement and relationships as a focus for culturally diverse students. *Education Sciences*, 10(11). <https://doi.org/10.3390/educsci10110312>
- Ghaith, G. M. (2018). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues in Educational Research*, 28(2), 385–404.
- Ghufron, M. A., & Ermawati, S. (2018). The strengths and weaknesses of cooperative learning and problem-based learning in efl writing class: Teachers and students' perspectives. *International Journal of Instruction*, 11(4), 657–672. <https://doi.org/10.12973/iji.2018.11441a>
- Gillies, R. M. (2016). Cooperative learning: Review of research and practice. *Australian Journal of Teacher Education*, 41(3), 39–54. <https://doi.org/10.14221/ajte.2016v41n3.3>
- Haug, B. S., & Mork, S. M. (2021). Taking 21st century skills from vision to classroom: What teachers highlight as supportive professional development in the light of new demands from educational reforms. *Teaching and Teacher Education*, 100, 103286. <https://doi.org/10.1016/j.tate.2021.103286>
- Hung, B. P. (2019). Impacts of cooperative learning: A qualitative study with EFL students and teachers in Vietnamese colleges. *Issues in Educational Research*, 29(4), 1223–1240.
- Johnson, D. W., & Johnson, R. T. (2017). The use of cooperative procedures in teacher education and professional development. *Journal of Education for Teaching*, 43(3), 284–295. <https://doi.org/10.1080/02607476.2017.1328023>
- Kaendler, C., Wiedmann, M., Rummel, N., & Spada, H. (2019). Teacher competencies for the implementation of collaborative learning in the classroom : A framework and research review *Educational Psychology Review*, 27(3), 505–536. <https://doi.org/10.1007/s10648-014-9288-9>
- Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *Journal of advanced nursing*, 72(12), 2954–2965. <https://doi.org/10.1111/jan.13031>
- Keiler, L. S. (2018). Teachers' roles and identities in student-centered classrooms. *International Journal of STEM Education*, 5(1). <https://doi.org/10.1186/s40594-018-0131-6>
- Keramati, M. R., & Gillies, R. M. (2021). Constraints of cooperative learning in university classrooms: A qualitative study in Iran and Australia. *Iranian Journal of Comparative Education*, 4(1), 958–972. <https://doi.org/10.22034/ijce.2020.254377.1234>
- Khalaily, H. (2019). Implementation of alternative teaching methods by teachers: The role of practical experience and the importance of teacher training. Online Submission, 1–28. <https://eric.ed.gov/?id=ED600709>
- Kimmelman, N., & Lang, J. (2019). Linkage within teacher education: Cooperative learning of teachers and student teachers. *European Journal of Teacher Education*, 42(1), 52–64. <https://doi.org/10.1080/02619768.2018.1547376>
- Kishore, M. (2016). Challenges of implementing student-centered strategies in classrooms. *International Research Journal of Engineering and Technology*, 3(12), 1224–1227.
- Kusumaningrum, D. E., Gunawan, I., Ariyanti, N. S., Sumarsono, R. B., Alfarina, M., Romady, M., & Budiarti, E. M. (2019). Training on the implementation of cooperative learning models as an effort to improve teacher's performance. <https://doi.org/10.2991/coema-19.2019.53>
- Le, H., Janssen, J., & Wubbels, T. (2018). Collaborative learning practices: teacher and student perceived obstacles to effective student collaboration. *Cambridge Journal of Education*, 48(1), 103–122. <https://doi.org/10.1080/0305764X.2016.1259389>
- Letina, A., & Vasilj, M. (2021). Challenges of implementation of cooperative learning in initial teacher education. *Školski Vjesnik*, 70(1), 371–397. <https://doi.org/10.38003/sv.70.1.12>
- Li, J., Luo, H., Zhao, L., Zhu, M., Ma, L., & Liao, X. (2022). Promoting STEAM education in primary school through cooperative teaching: A design-based research study. *Sustainability* (Switzerland), 14(16). <https://doi.org/10.3390/su141610333>

- Liebeck-Lien, B. (2020). The bumpy road to implementing cooperative learning: Towards sustained practice through collaborative action. *Cogent Education*, 7. <https://doi.org/10.1080/2331186X.2020.1780056>
- Loh, R. C.-Y., & Ang, C.-S. (2020). Unravelling cooperative learning in higher education. *Research in Social Sciences and Technology*, 5(2), 22–39. <https://doi.org/10.46303/ressat.05.02.2>
- Louise Barriball, K., & While, A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing*, 19(2), 328–335. <https://doi.org/10.1111/j.1365-2648.1994.tb01088.x>
- Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education*, 9(3).
- Matee, G. L., Motlohi, N., & Nkiwane, P. (2023). Emerging perspectives and challenges for virtual collaborative learning in an institution of higher education: A case of Lesotho. *Interactive Technology and Smart Education*, 20(1), 73-88. <https://doi.org/10.1108/itse-06-2021-0110>
- Moges, B. (2019). Practices and challenges of cooperative learning in selected college of arsi university: As a motivational factor on enhancing students' learning. *Universal Journal of Psychology*, 7(1), 1–17. <https://doi.org/10.13189/ujp.2019.070101>
- Montanero, M., & Tabares, C. (2020). Cooperative learning in primary education: A study on teachers' thinking and teaching practice in extremadura. *Profesorado*, 24(3). <https://doi.org/10.30827/PROFESORADO.V24I3.8200>
- Mukuka, A., Mutarutinya, V., & Balimuttajjo, S. (2019). Exploring the barriers to effective cooperative learning implementation in school mathematics classrooms. *Problems of Education in the 21st century*, 77(6). <https://doi.org/10.33225/pec/19.77.745>
- Muñoz-Martínez, Y., Monge-López, C., & Torrego Seijo, J. C. (2020). Teacher education in cooperative learning and its influence on inclusive education. *Improving Schools*, 23(3), 277–290. <https://doi.org/10.1177/1365480220929440>
- Namaziandost, E., Homayouni, M., & Rahmani, P. (2020). The impact of cooperative learning approach on the development of efl learners' speaking fluency. *Cogent Arts and Humanities*, 7(1). <https://doi.org/10.1080/23311983.2020.1780811>
- Nguyen-Phuong-Mai, M. (2019). Culturally appropriate face strategies in cooperative learning with insight from cultural neuroscience. *Comparative Education*, 55(1), 66–96. <https://doi.org/10.1080/03050068.2018.1541664>
- Niemi, K. (2021). 'The best guess for the future?' Teachers' adaptation to open and flexible learning environments in Finland. *Education Inquiry*, 12(3), 282–300. <https://doi.org/10.1080/20004508.2020.1816371>
- Opdecam, E., & Everaert, P. (2018). Seven disagreements about cooperative learning. *Accounting Education*, 27(3), 223–233. <https://doi.org/10.1080/09639284.2018.1477056>
- Petre, G. E. (2022). Transferring Cooperative Learning Strategies from Initial Teacher Training to the Classroom. In INTED2022 Proceedings (pp. 4475-4484). IATED. <https://doi.org/10.21125/inted.2022.1193>
- Purba, R., Purba, A., & Hutauruk, A. F. (2022). Improving teacher's competence through the implementation of the 21st century competencies in a post-Covid-19 pandemic. *JMM (Jurnal Masyarakat Mandiri)*, 6(2), 1486–1497. <https://doi.org/10.31764/jmm.v6i2.73>
- Saborit, J. A. P., Fernández-Río, J., Cecchini Estrada, J. A., Méndez-Giménez, A., & Alonso, D. M. (2016). Teachers' Attitude and perception towards cooperative learning implementation: Influence of continuing training. *Teaching and Teacher Education*, 59(October), 438–445. <https://doi.org/10.1016/j.tate.2016.07.020>
- Silva, H., Lopes, J., Dominguez, C., & Morais, E. (2022). Lecture, cooperative learning and concept mapping: Any differences on critical and creative thinking development. *International Journal of Instruction*, 15(1), 765–780. <https://doi.org/10.29333/iji.2022.15144a>
- Thorburn, M. (2020). Committing to pragmatic informed pedagogical action: Theory and practice considered. *Teacher Educator*, 56(2), 194–204. <https://doi.org/10.1080/08878730.2020.1838018>
- Van Leeuwen, A., & Janssen, J. (2019). A systematic review of teacher guidance during collaborative learning in primary and secondary education. *Educational Research Review*, 27, 71-89. <https://doi.org/10.1016/j.edurev.2019.02.001>

- Weinberger, Y., & Shonfeld, M. (2020). Students' willingness to practice collaborative learning. *Teaching Education, 31*(2), 127–143. <https://doi.org/10.1080/10476210.2018.1508280>
- Yang, X., Zhou, X., & Hu, J. (2021). Students' preferences for seating arrangements and their engagement in cooperative learning activities in college English blended learning classrooms in higher education. *Higher Education Research and Development, 0*(0), 1–16. <https://doi.org/10.1080/07294360.2021.1901667>
- Zheng, S., & Zhou, X. (2023). Enhancing foreign language enjoyment through online cooperative learning: A longitudinal study of efl learners. *International Journal of Environmental Research and Public Health, 20*(1). <https://doi.org/10.3390/ijerph20010611>

Appendix A:

Perceived Challenges to the Cooperative Learning Implementation Scale (PCCLI)

Perceived Challenges to Cooperative Learning Implementation Scale (PCCLIS) items (Strongly Disagree- 1, Disagree-2, Neutral-3, Agree-3, Strongly Agree-5) *items 2, 3, 4, 5, and 7 indicates negative items

1.	It is difficult to complete the syllabus if I use cooperative learning
2.	I believe cooperative learning will not benefit all types of learners*
3.	Students find it difficult to initiate classroom discussion*
4.	Students like individual work more than group work*
5.	Students are not participating actively in cooperative learning*
6.	Classroom seating arrangement poses a challenge to cooperative learning implementation
7.	Usually, I prefer the lecture method over cooperative learning*
8.	It is tedious to prepare for a cooperative learning session
9.	I find cooperative learning classrooms noisy and disturbing
10.	I prefer cooperative learning only for conducting revision
11.	It is difficult to monitor the groups in cooperative learning
12.	Sometimes cooperative learning leads to conflicts

Appendix B:

Semi-structured Interview Items

1. What are your initial thoughts on implementing cooperative learning strategies?
2. What were some of the difficulties you encountered when implementing cooperative learning strategies? Elaborate
3. How did students react during cooperative learning classes? Elaborate
4. What steps did you take to gain control of cooperative learning classes?
5. How confident are you in implementing cooperative learning strategies in your classroom regularly?
6. What were your two most complex challenges while implementing cooperative learning strategies?

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