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EXPLORING BARRIERS AND CHALLENGES IN PLANNING AND ASSESSING  
COLLABORATIVE LEARNING TASKS SUPPORTED BY TECHNOLOGY: A TEACHER'S  
PERSPECTIVE

MA thesis

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### **Abstract**

#### Exploring Barriers and Challenges in Planning and Assessing Collaborative Learning Tasks Supported by Technology: A Teacher's Perspective

The study took place in Georgia and aimed to examine the obstacles and difficulties teachers face when implementing collaborative learning tasks with technology. To gain insights from the teachers' perspective, eight in-depth interviews were conducted. Thematic analysis was applied to analyze the gathered data, leading to the identification of six main themes. The research findings reveal that teachers are strongly interested in collaborative learning supported by technology, citing its positive impact on student motivation. However, limited personal experience during their own education and the demanding nature of planning and assessing hinder their frequent engagement. Time constraints and heavy workloads further add to the challenges. Teachers express the need for support and guidance in integrating technology and accessing training programs.

Keywords: collaborative learning, technology, digital skills, students engagement

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## Acronyms

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CL	Collaborative Learning
RQ	Research Question
ICT	Information and Communications Technology
NTDC	National Teachers Development Centre

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## Chapter 1 - Introduction

In the thesis structure, the introductory chapter serves as the starting point, setting the stage by introducing the chosen topic and providing the underlying rationale for the research.

### 1.1 Brief introduction to the chosen topic

The education system has historically been slow to respond to social changes. During the 19th and 20th centuries education systems often underwent rapid expansion and restructuring. However, the curriculum and its delivery often remained static, linear, and rigid between these moments (OECD, 2019). On the other hand, with the advent of the information age, work has become more knowledge-based, interdisciplinary, and complex. When it comes to sophisticated tasks, individuals are unlikely to complete them without the help of others (WAnG, 2009). It points out the importance of collaborative skills. However, unfortunately, when the majority of education systems are still built on knowledge-based exams, the skills needed for the future work market sometimes are not aligned with the knowledge students get in today's classrooms.

In the past few decades, society has embraced computer technology and allowed it to redefine the way we create information, find it, exchange it, and even think about it. Because technology is deeply rooted in society, school districts are often compelled to fund it without considering its implications (Pierson, 2001). The rapid development of technology has made it possible for education to utilise online tools. In today's educational environment, discerning the characteristics and using these tools appropriately has become increasingly important (Wang & Woo, 2008). Understanding the learning process is crucial to pursuing and sustaining high-quality educational experiences. However, understanding social and cognitive processes requires tutors and designers to go beyond the surface level of instructions (Pozzi *et al.*, 2007), which is sometimes challenging. Many teachers possess extensive expertise in identifying conventional work products in the classroom. However, they may need more confidence in identifying improvements in students' skills while working with technology since they have limited exposure to such instances (Scalise, 2016). To bridge this gap, educators must not only familiarize themselves with the technological tools available but also develop a deeper understanding of how these tools can enhance the learning process. This entails going beyond the surface level of instructions and exploring the ways in which technology can facilitate collaboration, critical thinking, problem-solving, and creativity among students. As the education landscape continues to evolve, it is crucial for education systems to adapt and embrace the transformative potential of technology. This requires a shift in focus from solely assessing knowledge acquisition to cultivating the skills and competencies necessary for success in

the modern world. By embracing collaborative approaches, leveraging appropriate technology, and supporting educators in their professional development, education systems can better equip students with the skills they need to thrive in an interconnected, knowledge-driven society. As the education landscape continues to evolve, it is crucial for education systems to adapt and embrace the transformative potential of technology. This requires a shift in focus from solely assessing knowledge acquisition to cultivating the skills and competencies necessary for success in the modern world. By embracing collaborative approaches, leveraging appropriate technology, and supporting educators in their professional development, education systems can better equip students with the skills they need to thrive in an interconnected, knowledge-driven society.

## **1.2 The overview of the paper**

This paper consists of five chapters:

- Chapter 1 serves as an introductory section of the paper, setting the stage for the research topic. It provides a concise overview of the chosen topic, highlighting its significance and relevance.
- Chapter 2 delves into the literature review, presenting a comprehensive analysis of existing scholarly works and research findings related to the chosen topic. Additionally, it presents the rationale behind selecting this particular topic and formulates the research question (RQ) the study seeks to address.
- Chapter 3 focuses on the methodology employed in the study. It describes the chosen research approaches and methodology used to gather and analyse data. This chapter outlines the research design, data collection methods, and data analysis techniques. It provides insights into how the study was conducted.
- Chapter 4 explores the research findings obtained through the study. It presents and interprets the collected data, discussing the results in relation to the RQ.
- Chapter 5 serves as the paper's conclusion, summarising the main findings, implications, and recommendations derived from the study. It highlights the significance of the research and its contributions to the field. Additionally, this chapter discusses the study's limitations, acknowledging any constraints or shortcomings that may have impacted the research outcomes. It also suggests directions for future research, identifying areas that require further investigation or refinement. Overall, chapter five provides closure to the study while paving the way for future scholarly endeavours.

## **Chapter 2 - Theoretical overview**

In this chapter, CL is defined, and its importance in the learning process is discussed. The chapter also provides insights into how teachers can create a conducive environment for CL to thrive. Additionally, the chapter explores the use of technology in CL and the opportunities it presents. Specifically, the technology affordances are examined, and various technological tools that can be used to support CL are discussed. By understanding the concept of CL, its significance, and how technology can be leveraged to enhance it, teachers can create a more effective and engaging learning experience for their students. Within this chapter, the research aims are articulated, outlining the specific objectives and goals of the study. Additionally, the chapter defines the research question (RQ), which serves as a guiding principle for the entire investigation. This initial chapter lays the foundation for the subsequent sections, offering a comprehensive overview of the research context and establishing a clear framework for the rest of the thesis.

### **2.1 What is CL?**

From the 1980s onward, CL has been at the forefront of education and an important part of the research of learning sciences (Jeong & Hmelo-Silver, 2016). 'Collaborative learning is often defined as two or more people working together toward a shared learning goal' (Jeong & Hmelo-Silver, 2016, p.247). According to Dillenbourg (1999), the process of CL is not a single mechanism and we should also discuss 'learning from being alone' if we want to talk about 'learning from collaboration'. As he thinks, as individuals, we do not learn because we are individuals, but rather because we perform activities such as for example reading, building, predicting and so on, that trigger learning mechanisms, for example, induction, deduction, compilation... In the same way, peers learn not because they are two but rather because they perform activities that trigger certain mechanisms (Dillenbourg 1999). To ensure successful CL, it is essential to consider various factors that influence the effectiveness of collaboration, such as group size, composition, and dynamics. The teacher or facilitator's role in promoting effective collaboration is also crucial, as they can provide guidance, feedback, and support to students during the CL process.

### **2.2 Why is CL important?**

Amidst the plethora of available knowledge on diverse learning approaches, CL remains relevant in today's education system. Despite technological advancements and the emergence of various pedagogical methodologies, CL offers unique advantages that cannot be easily replicated.

One crucial aspect highlighted by Lehtinen (2003) underscores the value of CL in promoting a refined and comprehensive understanding of the subject matter. Lehtinen emphasizes that when individuals actively participate in CL, they are compelled to articulate and communicate their thoughts, ideas, and perspectives with their peers. This constant exchange of information fosters a dynamic learning environment where ideas are challenged, refined, and expanded upon. Through this collaborative process, learners construct a more intricate and sophisticated mental model of the subject matter. The act of engaging with others, sharing insights, and receiving feedback play a pivotal role in deepening their understanding and knowledge acquisition.

Building upon this understanding, Laal and Ghodsi (2012) provide a comprehensive list of benefits that collaborative learning brings to the learning process. These advantages encompass various dimensions, including cognitive, social, and personal aspects:

'Social benefits;

- CL helps to develop a social support system for learners;
- CL leads to build diversity understanding among students and staff;
- CL establishes a positive atmosphere for modelling and practicing cooperation, and;
- CL develops learning communities.

Psychological benefits;

- Student-centered instruction increases students' self esteem;
- Cooperation reduces anxiety, and;
- CL develops positive attitudes towards teachers.

Academic benefits;

- CL Promotes critical thinking skills
- Involves students actively in the learning process
- Classroom results are improved
- Models appropriate student problem solving techniques
- Large lectures can be personalized
- CL is especially helpful in motivating students in specific curriculum
- Alternate student and teacher assessment techniques;

- Collaborative teaching techniques utilize a variety of assessments' (Laal & Ghodsi, 2012, p.487).

As we can conclude from Laal and Ghodsi's ideas, CL nurtures effective communication and teamwork skills on the social front, preparing learners for the collaborative nature of real-world environments. It enhances their ability to work harmoniously with others, respect differing opinions, and resolve conflicts constructively. Moreover, CL cultivates a supportive and inclusive learning community where individuals learn from one another, share their strengths, and provide mutual support. At a personal level, CL contributes to developing self-confidence and self-esteem. By actively participating in group discussions and collaborative tasks, learners gain a sense of accomplishment and recognition for their contributions. This positive reinforcement reinforces their belief in their abilities and fosters a growth mindset.

In addition to the points mentioned above, numerous studies have indicated that CL yields superior outcomes compared to individual or solo learning approaches. Notably, research conducted by Takači et al. (2015) provides evidence in support of this assertion. The study demonstrated that computer-supported CL groups, particularly those utilizing the software GeoGebra, exhibited higher levels of efficiency in learning functions and graphing compared to individuals learning without collaborative support. Therefore, those students were able to enhance their understanding and proficiency in complex mathematical concepts.

To summarise, CL is valuable in facilitating learning by offering various benefits to students. CL offers students a social support system and creates a positive atmosphere for cooperation, which leads to the development of learning communities. This approach to learning also has the potential to promote critical thinking skills and encourages active participation from students, resulting in improved classroom results. In essence, CL plays a critical role in enhancing the learning experience, creating a more engaging and effective educational environment for students to develop their skills and knowledge.

## **2.2 Approaches and challenges in conducting CL tasks**

There are different approaches to conducting CL tasks. In general, as the literature suggests, collaboration is based on the premise that group members work together to build consensus instead of competing to outperform their peers (Laal & Ghodsi, 2012). The success of complicated group work depends heavily on the individual contributions of its members, and each member is responsible for their share of the work. Ideally, each team member plays an equally central role in

the group work, rather than one person working for all (WAnG, 2009). However, as the practice shows, sometimes, absolute pressure comes on individual group members. Here the primary player is a teacher, who should guide students through the process because there are different types of collaboration and associated rules of engagement that students need to understand. For example, 'the ground rules are different in contexts of helping, collaborative work, consensus building, win-win negotiations, debates, and hidden-profile jigsaw configurations' (OECD, 2013 p.1). The role of the teacher is crucial, as in CL, participants are instructed to work collaboratively, physical settings are arranged, and institutional requirements are emphasised. For example, the teacher assigns students to groups; they are given the space to work together and mostly, students are told that the task mark will be an assessment of group members. A collaborative situation is, therefore, a kind of social contract, either between peers or between peers and the teacher (then it is a didactic contract). Certain types of interactions may occur under the terms of this contract, but there is no guarantee that they will happen (Dillenbourg, 1999). WAnG (2009) thinks that coordination is essential for individual accountability and positive interdependence, as in a CL environment, group members identify and build on each other's strengths so that everyone contributes their best. Additionally, their individual efforts must be coordinated to make coherent contributions and work towards the same goal. For this, external support is necessary. It is difficult for students to negotiate plans and share understandings in a CL task due to the complexity of authentic problems involved. Many of them have difficulty organising evidence and interpreting results, and they are overwhelmed by the volume of information and data available (WAnG, 2009).

CL is a social act that occurs between a group of people. When there are multiple actors in the teaching and learning process, they may have different intentions and interpretations, influencing the other's knowledge, opinions, and values. In order to make this process successful, players must participate in the construction of joint cognitive products, which requires that they have a shared understanding of the process (Lehtinen, 2003). Integrating the individuals into a common culture will result in mutual understanding between them at the beginning of the interaction. In order to facilitate communication, this common ground must be enhanced with new information about different aspects of the activity, such as individuals, tools, goals, and settings (Baker *et al.*, 1999).

In summary, the success of CL hinges upon several key factors, all of which contribute to the effective functioning of collaborative efforts. These factors encompass individual accountability, positive interdependence, and efficient participant coordination. However, it is the teachers who play a critical role in facilitating CL within the learning environment. Teachers are pivotal in guiding and supporting students throughout the collaborative process. They establish clear expectations and

ground rules, ensuring all participants understand their responsibilities and are held accountable for their contributions. By fostering a sense of individual accountability, teachers encourage students to engage in their learning actively, take ownership of their tasks, and contribute meaningfully to the collaborative endeavour. Moreover, teachers create an atmosphere of positive interdependence among the students, emphasizing the notion that their success is intertwined with the success of their peers. By structuring tasks that require mutual support, shared decision-making, and exchanging knowledge and skills, teachers cultivate an environment where students recognize the value of working together to achieve a common goal. This positive interdependence fuels motivation, cooperation, and a sense of collective responsibility. By understanding the different types of collaboration and the associated rules of engagement, students can optimize their contributions and work towards a shared objective. Teachers play a vital role in imparting this understanding and helping students develop the necessary skills for effective collaboration. Through their guidance, teachers empower students to navigate the complexities of collaborative work, fostering their abilities to cooperate, communicate, and problem-solve within a group setting.

In essence, successful collaboration in the classroom is a result of the interplay between teachers' facilitation and students' active participation. By establishing a supportive environment, promoting individual accountability, fostering positive interdependence, and enabling effective coordination, teachers pave the way for fruitful CL experiences. Together, teachers and students work towards a shared goal, leveraging their collective strengths and diverse perspectives to achieve meaningful learning outcomes.

### **2.3 Technology affordances**

While Information and Communications Technology (ICT) tools may appear similar on the surface, they vary significantly in their usage and purpose, which could result in different learning outcomes. For teachers, it becomes a challenge to identify the differences between these ICT tools and to use them effectively for teaching and learning (Wang & Woo, 2008). To do so, it is crucial to identify what a particular piece of technology affords for learning.

Psychologist Gibson first introduced the concept of affordances in 1977, defining it as 'the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill' (Gibson, 2015, p.119). As Davis and Chouinard (2016, p.241) say, 'Broadly, affordance refers to the range of functions and constraints that an object provides for, and places upon, structurally situated subjects'. When it comes to technology, sometimes it is hard to identify which affordances were inbuilt into it because 'the perception of its affordance should therefore not be

confused with the temporary special attraction it may have' (Gibson, 2015, p.130). This comes especially true when technology is not specifically designed for specific purposes, such as supporting CL, and lacks a foundation in research. In Lehtinen's (2003) paper, he highlights the potential outcomes of relying solely on technology for CL. While technology enables interaction, it may not necessarily support CL. According to him, the developers of learning environments very often assume that social interactions among learners are beneficial for learning. Technologically rich classrooms, however, do not seem to support this belief and problems with mutual understanding can arise in various network-based virtual environments (Lehtinen, 2003).

Ultimately, In the ever-evolving landscape of education, technology has become an integral component, offering a multitude of opportunities to enhance teaching and learning. To make the most of these possibilities, teachers need to develop a deep understanding of the affordances of technology and how they can be harnessed to foster effective collaborative learning experiences. By comprehending the unique features and limitations of different technology tools, teachers can make informed decisions regarding their integration into the learning process. Each technology tool brings its own capabilities, whether facilitating communication, enabling information sharing, supporting multimedia presentations, or promoting interactive collaboration. It is crucial for teachers to critically evaluate these affordances and align them with the intended learning objectives. This thoughtful consideration ensures that technology is used purposefully, supporting and enhancing the collaborative learning process.

Furthermore, teachers need to be mindful of the limitations that technology may impose. While technology can be a powerful ally in promoting collaborative learning, it is not a panacea. Understanding the constraints and challenges associated with specific tools allows teachers to plan and implement strategies that mitigate these limitations. Whether it is issues related to connectivity, access to devices, or the learning curve associated with new technologies, teachers can proactively address these obstacles to create a smooth and productive collaborative learning environment. By leveraging technology effectively, teachers can unlock a wide range of possibilities for collaborative learning. They can design activities that foster meaningful interactions, encourage active participation, and promote the exchange of ideas and perspectives among students. Technology can enable real-time collaboration, transcending physical boundaries and creating opportunities for students to collaborate with peers from diverse backgrounds and locations. Additionally, technology tools can provide platforms for sharing and co-creating digital content, allowing students to engage in collaborative knowledge construction.

## **2.4 Technology supported CL**

According to OECD (2018), the use of ICTs in classrooms is increasing across OECD countries. Schools are increasingly adopting bring-your-own-device policies, which results in a diverse range of devices being used in the classroom. On one hand, Scalise (2016) thinks that In order to achieve improved learning outcomes with technology integration in the classroom, it is essential to understand how, when, and why technology can be integrated into education. Both too much and too little technology can lead to a poor technology integration plan. In some schools, for instance, teachers may use technology unnecessarily rather than strategically to support learning outcomes. On the other hand, Kanuka & Anderson (1999, p.201) think that technology integration is not as hard, because 'while not all instructional methods translate well to technology-mediated learning, most do - and some work even better online than in face-to-face learning environments'. Likewise, Qing & Li (2011) think that multimedia technologies and network technology, especially their rapid development, provide better conditions for CL. For example, web-based tools such as Wikispaces can be used as a peer editing platform for students to correct their essay mistakes, enhancing their writing skills (Singh et al., 2013). Students can also communicate and coordinate with their peers via phone, email, or short messages. Web-based tools like bulletin boards and shared workspaces can enable students to share resources, negotiate meanings, and coordinate with others effectively (WAnG, 2009). Dillenbourg & Schneider (1995, p.1) were sceptical while assessing new technologies and say that 'they may reactivate the belief that technology per se enhances education. This belief has repeatedly shown to be wrong in the history of educational technology, but it still reappears every five years, like the Loch Ness monster'.

Lehtinen (2003) researched how the computer environment can support CL, as building shared understanding is an essential part of that type of learning. According to him, if we use written communication, the computer environment can be used in various ways to visualise thinking processes, as it can be visible on the learning platform. That can have a significant impact on the process of collaborative work (Lehtinen, 2003).

## **2.5 Rationale behind the research**

The basis for this research stems from my own experience as a teacher. In the current hybrid teaching environment, there is a risk that technology can dominate the learning process, resulting in a loss of focus on the core goal of equipping students with the necessary skills for their future. I have observed this happening among my colleagues, where despite their best intentions to involve all

participants in collaborative learning (CL) activities, they often faced challenges and eventually gave up. The introduction of different technologies only added to the confusion and complexity of the process. Therefore, this research seeks to identify effective strategies for integrating technology in CL activities by identifying the barriers while maintaining a focus on the learning objectives. So, The focus of this research is on teachers. By pinpointing the barriers teachers face and maintaining a steadfast focus on the intended learning objectives, this study seeks to provide valuable insights and practical guidance to empower teachers in their pedagogical endeavours.

## **2.6 The research aim and the RQ**

The study aims to identify the barriers teachers face in the context of Georgia while incorporating technology into CL tasks and think about possible strategies to help them. Teachers can acquire the necessary skills and strategies to overcome various barriers by identifying and recognizing their obstacles. According to it, the RQ was defined as followed:

- What are the barriers and challenges faced by teachers in effectively planning and assessing collaborative learning tasks supported by technology?

The findings of this research can potentially inform instructional practices and support teachers in designing effective technology-enhanced learning environments that prioritise student learning outcomes. To answer the question, teachers of the chosen school were interviewed.

## **Chapter 3 - Methodology**

The upcoming section of this study will detail the methodology used to conduct the research. Firstly, the research design will be outlined, followed by a description of the sample techniques and criteria. The chapter will then delve into the data collection and analysis methods used to obtain and process information for this study.

### **3.1 Research Design**

As per Creswell (2013), qualitative research uses interpretive or theoretical frameworks to delve into social or human issues from the viewpoint of individuals or groups. In this study, the research focused on teachers and aimed to understand their perspectives on developing their digital pedagogy skills to integrate technology efficiently in CL tasks. The study aimed to perceive teachers as participants and not merely as objects of the study (Matthews & Ross, 2010). Therefore, considering Creswell's definition and the study participants, a qualitative approach was deemed the most suitable methodology. By adopting a qualitative approach, the study aimed to achieve a deeper

understanding of how teachers perceive the integration of technology in CL tasks and the specific challenges they encounter in doing so. The qualitative nature of the study facilitated a comprehensive exploration of the teachers' viewpoints and provided valuable insights into the complexities of technology integration in the context of collaborative learning.

### **3.2 Sample Selection**

Research relies heavily on collected data, as it helps us better understand theoretical frameworks (Etikan et al., 2016). In order to have quality data it is important to correctly choose the sample. The chosen sampling technique was purposive sampling. Rationale for choosing the techniques was the fact that 'The purposive sampling technique, also called judgement sampling, is the deliberate choice of a participant due to the qualities the participant possesses. It is a nonrandom technique that does not need underlying theories or a set number of participants. Simply put, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience' (Etikan et al., 2016, p.2). The research aimed to understand how teachers could be supported to better utilise technology while conducting CL activities. Based on that, the criteria of the sample was determined as followed:

- The participants should have been teachers
- Teachers should have had an experience in conducting collaborative learning tasks that incorporate technology.

Once the sample criteria were established, the question of determining the appropriate number of participants arose. For this particular research study, a sample size of eight participants was deemed suitable. The selection of this specific number was based on considerations related to the chosen data collection method, which will be discussed in the upcoming section. Given the ease of accessibility and professional contacts available, the participants for the study were recruited from schools chosen by the researcher. This approach facilitated convenient access to potential participants who met the defined sample criteria.

### **3.3 Data Collection Methods**

The data collection strategy in qualitative research usually involves conducting in-depth interviews, participant observation, and focus groups on a relatively small sample size to gather large amounts of data (Hox & Boeije, 2005). According to (Boyce & Neale (2006, p.3). 'In-depth interviews are useful when you want detailed information about a person's thoughts and behaviours or want to explore new issues in depth'. Considering this perspective, in-depth interviews were

chosen as the data collection method for this research. Additionally, the aim of in-depth interviews is to gain a deeper understanding of a given RQ through intensive individual interviews with a small group of respondents (Boyce & Neale, 2006). Generally, a sufficient sample size is reached when the same stories, themes, issues, and topics emerge from the interviewees (Boyce & Neale, 2006). For the research, eight in-depth interviews were conducted. Data collected with procedures tailored to solve the particular research problem at hand are known as primary data (Hox & Boeije, 2005). In order to answer the RQ, primary data was collected from the research participants. The interviews were conducted both in-person and online, accommodating the preferences and comfort of the recruited teachers. With the consent of the participants (Appendix 1), the researcher took voice recordings and written notes during the interviews to ensure accurate and comprehensive data collection.

Overall, the chosen data collection method of in-depth interviews allowed for a nuanced exploration of the research question, providing rich insights into the experiences and perspectives of the teachers involved in the study.

### 3.4 Data Analysis Methods

For the data analysis methods, thematic analysis was chosen. Its theoretical freedom makes it a valuable and flexible research tool that can provide a detailed yet complex account of data through its flexibility (Braun & Clarke, 2006). As Rubin & Rubin (1995) say, an interesting part of that process is that themes and concepts emerge from the interviews you conduct. So using this method meant that themes would have been derived from the data. Here it is essential to clarify what themes are. According to Braun & Clarke (2006), a theme refers to some recurring response or meaning within the data set that represents something important about the RQ. I followed the six steps suggested by Braun & Clarke (2006) for thematic data analysis.

- *Get to know your data: This involves transcribing data (if necessary), reading and re-reading the data, and taking note of initial ideas.*

Because I conducted in-depth interviews that, on average, lasted an hour, the best way for me not to lose the data was by transcribing it. After that, I listened to the recording and read the transcript simultaneously to ensure that the transcript was accurate.

- *Create initial codes: Systematically code interesting features of the data across the entire data set and gather data relevant to each code.*

While checking the transcript, I highlighted interesting parts of the text. Also, after checking the transcript, I re-read the text several times and continued highlighting patterns.

- *Identify potential themes: Group codes into possible themes and gather all data relevant to each potential theme.*
- *Evaluate themes: Assess if the themes work in relation to the coded extracts and the entire data set, and create a thematic 'map' of the analysis.*
- *Define and name themes: Continue refining the specifics of each theme and the overall story the analysis tells, and create clear definitions and names for each theme.*

After I highlighted all the sufficient parts of the transcripts, I revealed several themes and started colour-coding the text according to themes. While doing so, I was cautious to keep the theme that I could not reveal. By the end of the process, I had six themes and the associated data.

- *Produce the report: This is the last opportunity for analysis. Select vibrant and compelling examples, conduct a final analysis on the chosen extracts, connect the analysis to the research question and existing literature, and create an academic report summarising the analysis.*

As a final step, I consolidated the results and established connections with the existing literature, enabling me to provide insightful recommendations. Additionally, it was crucial to reflect on the study as a whole and contemplate potential areas for enhancement in future research endeavours. This reflective process contributes to the continuous improvement and development of scholarly investigations.

By following these steps of thematic analysis, the research study was able to derive six themes and their associated data, providing a comprehensive understanding of the participants' perspectives and experiences related to the research question. The results were synthesized and presented in a coherent and informative academic report, aligning with the goals of the study.

### **3.5 Research methodology**

As it was mentioned above, qualitative research was conducted. Qualitative research itself can be inductive or deductive. In the paper, Newman (2000) discusses both and says that The inductive approach involves a step-by-step process starting with data collection, followed by data analysis, drawing conclusions, developing hypotheses, and ultimately leading to theory development. At the same time, the deductive approach involves a step-by-step process that starts with a theory, followed by developing general and specific hypotheses, collecting data, analysing the data, drawing results, forming conclusions, and finally confirming or revising the theory. To conclude, the inductive approach begins with collecting data, which is then analysed to draw conclusions. So it involves moving from specific observations to more general conclusions and theories. On the other hand, the deductive approach involves moving from general theories to specific hypotheses and then testing

these hypotheses through data collection and analysis. The study used an inductive method, as the identified themes were linked to the collected data.

Prior to conducting the in-depth interviews, a pilot study was undertaken to ensure the smooth implementation of the research methodology. The pilot study involved two participants and served as a feasibility study, allowing for a small-scale trial before the main study. Alternatively, a pilot study can also be considered a pre-testing or 'trying-out' of a particular research method (Teijlingen & Hundley, 2001). In this case, the pilot study aimed to assess the clarity and appropriateness of the interview questions in addressing the research question.

During the pilot study, the interview questions were tested to determine their understandability and relevance for the participants in relation to the research question. The primary objective was to gauge whether the prepared questions effectively elicited the desired information. Based on the feedback and insights gained from the pilot study, certain questions were eliminated, and the wording of the three questions was modified. This process ensured that the final set of interview questions was refined and optimized for the subsequent in-depth interviews. By conducting the pilot study, I was able to refine and improve the interview protocol, ensuring that the questions were clear, relevant, and aligned with the research objectives. This iterative process helped enhance the validity and reliability of the data collected during the main study, allowing for more accurate and meaningful findings.

## **Chapter 4 - Results**

This chapter presents the key findings of the study. As discussed in the previous chapter, the data analysis process involved the use of thematic analysis, which revealed a total of six main themes. In this chapter, each theme will be discussed and illustrated with direct quotations from the study participants to provide a rich and nuanced understanding of the findings. Additionally, an overarching discussion of the findings will be presented, highlighting this study's key implications and contributions to the field.

### **4.1 Background information**

The National Teachers Development Centre (NTDC) in Georgia plays a vital role in ensuring that the country's education quality is on a certain level. The centre provides a wide range of training programs that cover various aspects of teaching, including classroom management, curriculum development, assessment techniques, and the use of technology in education. These programs are designed to help teachers improve their skills and stay up-to-date with the latest teaching

methodologies. In addition to NTDC, other organisations ranging from private companies to non-governmental organisations offer a variety of training programs that cater to different needs and interests. One key difference between these organisations and NTDC is that the training programs offered by these organisations are often paid. Another difference is that, though they provided free training, these organisations often target specific groups of teachers with their training programs. For example, some NGOs may focus on providing training for teachers in rural areas, or, for teachers in specific schools or districts. The fact that teachers in Georgia are given the choice to choose the training they want to attend is a testament to the importance of professional development in the country. This allows teachers to tailor their training to their specific needs and interests, ensuring that they get the most out of their training.

In Georgia, teachers are also classified into three classes based on their exam results. This system ensures that teachers are appropriately trained and qualified to teach their respective subjects. Teachers who score higher on their exams are placed in higher classes, which often comes with additional benefits such as higher salaries and greater opportunities for career advancement.

Once teachers are classified into a particular class, they are required to take a predetermined number of hours of training each year. This requirement helps to ensure that teachers are continuously learning and developing their skills, which ultimately benefits their students. It is up to the teachers themselves to assess their needs and choose the training that is most relevant to them.

#### ***4.2 Strong interest in CL but lack of motivation***

Overall, teachers express interest in CL and highlight the impact of technology-supported CL tasks on students' motivation: *'Students like activities incorporating technology, so if the topic allows me, I plan a CL task using digital technology'*.

One of the participants shared their journey of acquiring knowledge about CL and its techniques during their preparation for the professional skills test, stating:

*When I was preparing for the professional skills test, one of the areas was about CL and its techniques, and that's why I knew about CL. Then, when I started teaching the subject, I began developing strategies myself.*

However, the participant admitted that they don't frequently engage in CL tasks due to the significant planning and forethought required, stating, *'But I do not often engage in CL tasks because it requires a lot of planning and forethought'*.

While acknowledging the importance of CL tasks, the participants highlighted their lack of personal experience with CL during their own studies at school and university. They expressed that CL tasks feel somewhat unfamiliar to them, saying:

*Generally speaking, I think that CL tasks are important. But I never had an experience of being engaged in CL tasks during my studies at school or university; therefore, it is not how I see the teaching-learning process.*

Nevertheless, the participant has observed the positive impact of CL tasks on the development of collaborative skills among students, recognizing their significance by stating: *'However, as I observe, it develops collaborative skills, which is why it is so important'*.

#### **4.3 Lack of understanding of planning and assessing the CL tasks**

The research findings highlighted the challenges and approaches related to planning and assessing CL tasks within the teaching practice. The participant shared an example of CL tasks saying they are utilised during class time, allowing students to work together as a group in finding and sorting information: *'We do not give students homework at home, so we use CL tasks during class. These tasks generally involve finding and sorting information together as a group'*.

Participants expressed difficulties in observing the individual progress of students engaged in CL tasks, leading them to focus on measuring the group's overall progress. One participant shared their perspective, stating:

*I am not able to plant CL tasks in a way that will allow me to observe the individual progress of CL task participants. Therefore, I set tasks, allowing me to measure the group's progress.*

Another participant revealed their recent experience in planning a group assignment using technology. While their main focus was to enhance collaborative skills, they acknowledged not giving sufficient thought to assessing the individual contributions of each group member. This lack of attention to individual assessment poses a challenge for them as they strive to effectively evaluate students' performance in collaborative tasks:

*I recently planned a group assignment using technology. To be honest, I didn't think about the assessment of the contribution of each group member. It is challenging for me. Therefore the main point for me was to enhance their collaborative skills.*

On the other hand, to address the issue of evaluation in group assignments, one of the participants mentioned having pre-defined criteria for assessing individual participants: *'When I plan a group assignment, I have pre-defined criteria to evaluate each participant - for example, 'sorting and understanding the material'*.

They observed that students often struggle in the understanding aspect, particularly those who have only learned a specific part. By incorporating such evaluation criteria, the participant aims to ensure that not all students receive the maximum score, encouraging a more balanced assessment that considers each individual's understanding and contribution:

*'Students lose points Mainly in the part of understanding, and those are students who learned only a specific part. With this, I manage not to write the maximum score for everyone'*

#### ***4.4 Lack of time and high workload***

Participants expressed the challenge of time constraints, with an overwhelming workload and limited opportunities for personal initiatives. They voiced their need for support and guidance in navigating the ever-evolving educational landscape, including accessing relevant training programs and resources. One of the participants said: *I have so much to do; I don't have time for personal initiatives.*

Teachers expressed a sense of needing more comprehensive support in their roles as educators. They perceived that it was not their direct responsibility to search for and explore different technologies and methodologies. With numerous responsibilities to fulfil, they often find themselves stretched thin, lacking the time needed to invest in exploring new educational technologies and innovative teaching approaches:

*I feel that, as a teacher, I do not have full support. It is not my direct duty to look for different technologies, and I have so much to do that I don't have time for it.*

While the latter comment expresses concerns about the lack of time, more it indicates desire for support from a professional person skilled in digital pedagogy and CL.

#### ***4.5 Need for educational technologist***

While none of the participants said the words 'Educational technologist', all of them pointed out the importance of such a person to support their teaching practices:

*What I have seen from my practice is that a teacher doesn't need to know how to use a specific technology fully. Even informing a teacher is valuable and enough. Perhaps there are super helpful technologies, and I don't know about them. If someone gives me the information, I will plan the activity and adjust the learning process. It is easy for students to work on the practical side of the process.*

Participants expressed a need for support and guidance in integrating various technologies into their curriculum. One participant emphasised: *'I need someone who knows about the various digital programs and will introduce them to me. I will then integrate this technology into my curriculum'*.

They also recognized the value of accumulated knowledge, stating their intention to utilise the same technology for future activities in the next academic year and see the educational technologies as the person who can help them to accelerate their teaching practices:

*This will be accumulated knowledge, I will use the same technology for other activities in the next academic year. But, at some point, I need someone who will help me, who understands technology and the specifics of school work and will provide me with information about technology*

#### **4.6 Need for change of training style**

Participants revealed several key insights regarding their perspectives on training and its impact on the implementation of CL tasks in their teaching process.

Firstly, participants expressed indifference towards the level at which the training is provided, stating: *'It doesn't matter to me whether it's at the school or state level'*. This suggests that they are open to receiving training opportunities at various levels, as long as it effectively supports their professional development in implementing CL tasks.

Secondly, participants emphasised the importance of training that combines practical planning of CL tasks with theoretical knowledge. One of the participants said:

*It would be good to have such a training where we will plan CL tasks and use theoretical knowledge in practice. This will help me to increase the share of CL tasks in the teaching process.*

The same concept is true for another teacher: *'The school provides additional training but only gives us reading material, which I find uninteresting. I prefer an active style of training'*.

#### **4.7 Lack of collaboration between colleagues**

Another significant finding from the research is the lack of collaboration and knowledge-sharing among teachers within the department and school. Only one participant said that knowledge sharing between colleagues was the culture of the school:

*The school administration itself does not interfere in the educational process. No person in the school is accountable for enhancing our digital pedagogy skills. Basically, we share experiences with each other.*

One of the participants expressed their observations that teachers in their department prioritise going to class and demonstrating subject knowledge over the planning process: *'As I see it, teachers*

*in my department give less priority to planning, and the main thing for them is to go to class and demonstrate subject knowledge'. This indicates a limited emphasis on collaborative efforts and a potential missed opportunity for teachers to learn from each other's experiences and expertise. According to participants, the absence of a culture of knowledge-sharing within the school further compounds existing challenges, limiting the exchange of ideas and hindering professional growth among teachers: 'Furthermore, unfortunately, there is no knowledge-sharing between teachers within the school'.*

Participants also highlighted the absence of information about valuable training opportunities. They mentioned that they are not adequately informed about these training programs, leaving them with limited access to professional development resources, saying: *'No one gives us information about different pieces of training'.*

## **Chapter 5 - Discussion**

The final chapter presented in this dissertation serves as a concluding section where an overview of the research findings is provided. Additionally, it establishes a connection between these findings and existing literature, while also delving into potential recommendations for initiating change. Moreover, the chapter discusses the limitations encountered during the study and suggests avenues for future research.

### **5.1 Summary and suggestions**

The study findings highlighted the complexities involved in planning and assessing CL tasks, especially in terms of individual progress monitoring and fair evaluation of students' contributions. The findings underscored the importance of further exploration and development of effective strategies for planning and assessing CL in order to meet the needs of both students and teachers. As Scalise (2016) states, this problem is common, as most teachers consider themselves good at evaluating their student's work in their subject areas. For example, they can grade and provide feedback on language, maths, or science assignments. However, they do not feel confident when it comes to assessing collaboration. In order to measure student proficiency in collaborative skills, they need to pinpoint factors that are indicative of this (Scalise, 2016). Here the correct coordination of group work is crucial, where success is associated with the equal contribution of all group members. Otherwise, they may work on different versions, making synchronisation difficult. Alternatively, there is also a possibility that they will work in different directions. CL environments should

facilitate the coordination of group members so they can complete the task successfully (WAnG, 2009).

Furthermore, it is important for teachers to have a thorough understanding of CL and its underlying principles. It is essential to grasp this understanding to avoid overlooking the significant aspect of CL, which is the distribution of cognition, which refers to the sharing of cognitive resources socially in order to extend individual cognitive resources or to achieve something that would be impossible for an individual agent to accomplish individually (Lehtinen, 2003). By understanding CL teachers will take into account its nature that, when engaged in collaborative activities, individuals seek outcomes that are beneficial to themselves and to all other members. Specifically, collaboration results in participants striving for mutual benefits so that all members of the group benefit from each other's efforts ('Your success benefits me and my success benefits you'), their recognising that all group members share a common fate ('We sink or swim together here') and that one's performance depends mutually on oneself and one's colleagues ('We can't do it without you'), and their feelings proudly and jointly celebrating where a group member is recognised for achievement ('You got an A! That's terrific') (Johnson *et al.*, 1991, p.3).

Also, by understanding CL teachers are given knowledge to distinguish between tasks. Dillenbourg & Schneider (1995) give an overview of the different natures of the tasks. As they say, the impact of collaboration can vary depending on the nature of the task. There are specific tasks that are not appropriate for collaboration and cannot benefit from collaborative mechanisms. On the other hand, there are tasks, such as distributed tasks where individuals work independently and then bring together their partial results, that are well-suited for collaboration. However, there are also tasks that do not necessitate collaboration, such as straightforward tasks or those that don't involve extensive planning. It is increasingly important for teachers to provide an environment for students to succeed when they work together in digital environments. First of all, students should understand what successful collaboration is. As technology advances, teachers increasingly want their students to learn in rigorous learning contexts that utilise digital tools. The goal is to promote academic success, social/emotional learning, and 21st-century skills essential to college and career readiness. These new products should be evaluated and assessed in the classroom using rubrics. For new digital collaborative and socially shared learning activities, teachers need to understand what they should be searching for and what they should be instructing (Scalise, 2016).

To address the issue of time constraints, schools and educational institutions must provide adequate support systems and allocate dedicated time for professional development. Offering structured training programs, workshops, and mentoring opportunities can enable teachers to

enhance their skills and stay up to date with emerging educational technologies. Additionally, fostering a culture that values and supports teachers' professional growth by reducing administrative burdens and providing dedicated time for planning and collaboration can go a long way in alleviating the time constraints educators face. By addressing these challenges, teachers can feel more empowered and supported in their pursuit of innovative teaching practices, ultimately benefiting themselves and their students. Also, lack of collaboration and information-sharing between colleagues was mentioned, which highlights the need for improved communication and support systems within the school. Establishing platforms for knowledge exchange, promoting collaborative planning sessions, and providing comprehensive information about professional development opportunities can contribute to a more supportive and collaborative teaching environment. According to Scalise (2016), teachers can plan for technology integration more effectively when they scaffold experiences with technology and model the use of technology between them. By fostering a culture of collaboration, teachers can learn from each other's experiences, leverage collective expertise, and enhance their teaching practices, ultimately benefiting the students they serve.

Another finding highlights the participants' recognition of the need for comprehensive training that not only equips them with theoretical understanding but also offers practical guidance for successful implementation. These insights underscore the importance of tailored and engaging training programs that address the specific needs and preferences of teachers in implementing CL tasks in their teaching practice. As a recommendation, I can add that it is essential to devote sufficient time to training for technology affordances because, in my opinion, it is crucial for teachers to not only acquire knowledge but also develop a mindset that enables them to assess the capabilities and limitations of technology. Understanding the affordances of technology is vital because there are usually multiple affordances in a given object or technology, but only some of them can be perceived, used, and/or discovered. To maximise learning outcomes, learning technology needs to be examined and understood from the perspective of what it enables learners to do (Jeong & Hmelo-Silver, 2016). For instance, according to Dillenbourg & Schneider (1995) It is possible that software features can change the way learners interact with each other. A computer-based task that provides learners with immediate feedback may prevent them from discussing the consequences, and in such a way, it can limit collaboration. In light of this, it is recommended that training programs for teachers encompass both the theoretical and practical aspects of utilising technology in the classroom. This would involve equipping teachers with the

necessary skills to identify technology's possibilities and limitations. By doing so, teachers can make informed decisions about integrating technology effectively and fostering CL environments.

Finally, The participants in the study expressed a clear need for an educational technologist to support their teaching practices. To address this problem, it is recommended to establish a role for an educational technologist within the educational institution or provide access to external resources. The educational technologist would possess expertise in various digital programs and technologies, and their role would involve introducing teachers to new technologies, providing training and support, and sharing insights on how to integrate technology effectively into the curriculum. This would help accelerate the teaching practices of educators and ensure they are equipped with the necessary knowledge and resources to make informed decisions about educational technology integration.

Overall, the study findings highlighted the complexities involved in planning and assessing CL tasks, emphasising the importance of further exploration and developing effective strategies. Teachers must understand the nature of CL and its underlying principles, including group members' equal contribution and cognition distribution among participants. Different tasks require different levels of collaboration, and teachers should be able to distinguish between them. Adequate support systems, dedicated time for professional development, and improved communication between colleagues are needed to address the challenges teachers face. Additionally, comprehensive training programs that combine theoretical understanding with practical guidance for implementing CL tasks should be provided. Teachers should also be equipped with the necessary skills to assess the capabilities and limitations of technology in order to make informed decisions about its integration. Finally, the study highlighted the need for an educational technologist to support teachers in integrating technology effectively into their curriculum, providing training, support, and insights.

## **5.2 Limitations of the study and the future research**

The present study had several limitations that are important to acknowledge:

- The sample size was a major limitation. In-depth interviews are known for their use of small samples and non-random sampling methods, making it difficult to generalise the results to the broader population (Boyce & Neale, 2006).
- Because the researcher used personal contacts to recruit participants, only teachers from three private schools were interviewed. In Georgia, private schools often offer teacher development training, which may have included CL strategies not covered in this study.

- The study did not explore potential differences in digital pedagogical skills between public and private school teachers.

While all teachers are required to pass the same exams to become certified, private schools may provide additional support and resources to their teachers that were not accounted for in this study. A more comprehensive understanding of the topic could have been achieved if teachers from both public and private schools had been included in the study. However, accessing teachers proved challenging, and the study could only be conducted with personal contacts. Additionally, the pilot study had a small number of participants, which could be improved in future studies to develop more effective questions for the main study.

In light of the limitations identified within the scope of the present study, several valuable suggestions for future research can contribute to the advancement of knowledge in this area. Firstly, it is recommended that future studies endeavour to recruit a larger and more diverse sample of participants from both public and private schools. By broadening the participant pool, a more comprehensive understanding of the topic can be achieved, considering the potential variations in perspectives and experiences across different educational contexts. Future studies could explore alternative recruitment strategies to address the challenge of accessing teachers for research purposes. For instance, leveraging social media platforms or online communities dedicated to educators may offer opportunities to reach a wider range of participants. Such approaches could help overcome the limitations imposed by geographical boundaries and facilitate the inclusion of teachers who might not be easily accessible through traditional recruitment channels.

Furthermore, to deepen the understanding of the impact of CL training on teacher practices and student outcomes, future studies could incorporate a control group of teachers who have not received such training. By comparing the outcomes and practices between the trained and untrained groups, researchers can gain insights into the specific effects of CL training and its potential benefits. This would enable a more comprehensive evaluation of the impact of CL training on both teachers and students.

In addition to the suggestions above, several other avenues for future research can further enhance our understanding of CL and teacher development in the context of digital pedagogical skills. One potential direction is to investigate potential differences in digital pedagogical skills between public and private school teachers. Comparing the skills and competencies of teachers from different school sectors can shed light on the impact of varying resources and support systems available in public and private schools. This exploration can uncover any disparities and provide

insights into bridging the gap and ensuring equitable access to digital pedagogical skills development.

Another area of interest for future studies is examining the effectiveness of different teacher development training programs on CL practices. Researchers could explore the impact of various training modalities, such as online training, peer-to-peer training, or coaching, in fostering the adoption and implementation of CL in the classroom. By investigating the effectiveness of different training approaches, valuable insights can be gained to inform the design and delivery of teacher development programs that effectively enhance CL practices.

Additionally, future research could delve into the long-term impact of CL training on teacher practices and student outcomes. Understanding the sustained effects of training over an extended period can provide valuable insights into the durability of CL practices and their influence on student learning outcomes. Longitudinal studies can help identify any changes or challenges that may arise over time and inform strategies to support the ongoing implementation and development of CL practices. Furthermore, it would be beneficial for future studies to explore potential barriers and challenges teachers face in implementing CL in their classrooms. Examining the practical obstacles and identifying strategies to overcome them can support the effective integration of CL approaches. By addressing these challenges, future research can provide practical guidance and recommendations for teachers, administrators, and policymakers to foster the successful implementation of CL initiatives.

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### **Author's declaration**

I hereby declare that I have written this thesis independently and that all contributions of other authors and supporters have been referenced. The thesis has been written in accordance with the requirements for graduation theses of the Institute of Education of the University of Tartu and is in compliance with good academic practices.

Natia Akhvlediani

27/05/2023

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## Appendix 1

### CONSENT FORM

**Study Title:** Exploring Barriers and Challenges in Planning and Assessing Collaborative Learning Tasks Supported by Technology: A Teacher's Perspective

Please read the following information carefully and ask any questions you may have before agreeing to participate in this study.

**Introduction:** I have been provided with information regarding the research study mentioned above. I have had the opportunity to ask questions and discuss the study, and I have received satisfactory answers to all my questions. I understand that the purpose of this study is to explore the barriers and challenges faced by teachers in planning and assessing collaborative learning tasks that incorporate technology.

**Data Anonymity:** I understand that the data I provide will be anonymized to ensure confidentiality. This means that my name or any other identifying information will be removed, and my responses will be reported in a way that cannot be linked back to me.

**Voluntary Participation and Withdrawal:** My participation in this study is voluntary, and I have the right to withdraw at any time without providing a reason before 15/05/2023. I understand that my withdrawal will not have any negative consequences, and any data associated with my participation will be removed from the study.

By signing below, I confirm that I have read and understood the information provided in this consent form, and I voluntarily agree to participate in this study.

Also, I confirm that:

I am a teacher and I have experience in conducting collaborative learning tasks that incorporate technology.

I permit the researcher to do a voice recording of the interview and to take notes.

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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