# Enhancing Collaborative Learning for Quality Education in the 21st Century Learning Space. A Case of a Selected University in Zimbabwe.

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## ABSTRACT

In the evolving of 21st century education collaborative learning has emerged as a pivotal strategy to enhance the quality of education. Through interpretivist paradigm and qualitative research approach, the study explores the implementation and effects of collaborative learning at a selected university in Zimbabwe through in-depth interviews which uncovers how collaborative learning influences critical thinking. The student's engagement in collaborative learning involves interpreting diverse experiences and perspectives. The study explores challenges and benefits of collaborative learning by providing valuable insights for creating more engaging and effective education environments. The findings aim to provide actionable insights for enhancing collaborative learning thereby fostering interactive and effective educational environments.

## INTRODUCTION

In the 21st century, the landscape of education is rapidly evolving, driven by technological advancements and the need for skills that align with the demands of a globalized world. One of the key strategies to enhance the quality of education in this dynamic environment is collaborative learning. According to Rajaram (2021), collaborative learning involves students working together to achieve common academic goals, fostering a sense of community and shared responsibility. Research indicates that collaborative learning boosts academic performance while also fostering critical thinking, communication, and interpersonal skills. Studies have also demonstrated that students participating in collaborative activities tend to develop higher order thinking skills and retain information more effectively.

Incorporating collaborative learning in the 21st century learning space requires innovative strategies and the integration of digital tools. The shift towards a more collaborative learning environment aligns with the broader educational goals of fostering creativity, problem-solving and adaptability (Papaioannou, Volakaki, Kokolakis, Vouyioukas, 2023). They further argue that by working together, students learn to navigate complex problems, think critically, and develop solutions collaboratively, skills that are essential in the modern workforce. Therefore, enhancing collaborative learning is pivotal for achieving quality education in the 21st century.

Collaborative learning has become an essential component of quality education in the 21st century both at schools and tertiary institutions. The various educational systems, through the new curricula and methods, emphasize the collaborative construction of knowledge and cross-curricular approach so that they link school with authentic real-life situations. Within an open student-centred environment, the emphasis is laid on the development of vital cognitive, social and technical skills, aiming at the preparation of future citizens for their creative and critical integration into the emerging knowledge society of 21st century (Anastasiades, 2009).

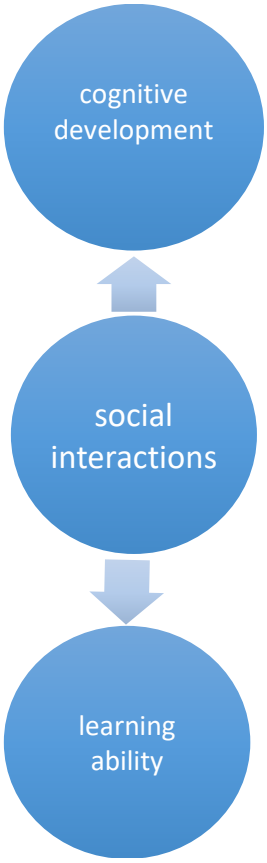
### Theoretical Overview

### Lev Vygotsky's Sociocultural Theory of Cognitive Development

The study was inspired by Vygotsky's (1934, 1978) social development theory, which suggests that a

child'scognitive development and learning ability can be influenced by their social interactions. The theory, also known as Vygotsky's Sociocultural theory, emphasizes that learning is primarily a social process, rather than an independent journey of discovery. Lev Vygotsky, a Russian psychologist, proposed that much of student's learning takes place through social interaction (Moore, 2011). The instructor could be a parent, teacher, or anyone else who is knowledgeable in a particular area. According to Vygotsky, the teacher may model behaviours or provide verbal instructions to the child, which the child tries to understand through cooperative or collaborative dialogue (Luong, 2022). In a classroom setting, students can assist each other in their learning. This can be facilitated by teachers through group activities or by assigning classmates to work together. According to Moore (2011), the interaction between the teacher and the student should be a two-way dialogue where both parties are actively involved in the learning process. During this dialogue, the teacher can ask questions to help the student better understand the material and provide feedback to guide their progress. The student, on the other hand, can ask questions to clarify any doubts and seek additional information. Vygotsky emphasized the importance of social interaction in learning, which he believed to be a cooperative dialogue. Through this cooperative dialogue, the student can internalize the task, leading to genuine learning. Once the task is internalized, the student can work independently and complete it without assistance.

Figure 1.0 Illustration of Vygotsky Social Development theory



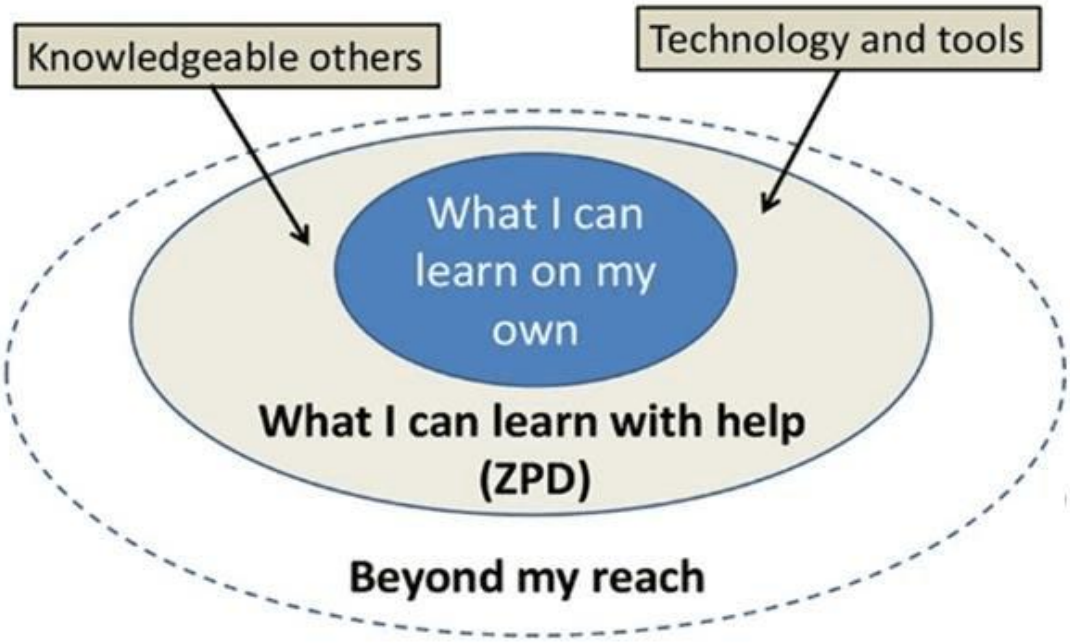

**Zone of Proximal Development (ZPD)**

The Zone of Proximal Development, also known as ZPD, is a fundamental concept in psychology developed by the esteemed Russian psychologist Lev Vygotsky. Its purpose is to determine an individual's learning potential by establishing the limits of their capability. ZPD underscores the disparity between what a person can achieve independently, referred to as their "actual developmental level," and what they can accomplish with the guidance of a more knowledgeable individual, such as a mentor, teacher, or peer (Wang, 2022).

Vygotsky postulated that social interaction is fundamental to a student's learning and development. In that vein, Vygotsky's theory emphasizes the critical role of a skilled instructor in facilitating a student's learning and development and stresses the importance of social interaction in the learning process (Specht, 2019). This implies that a teacher should play the role of a knowledgeable other, imparting introductions to specific tasks and allowing students to learn from each other through collaborative learning. However, in this 21st century, we

cannot overlook the use of different technological tools.

Figure 1.1 Schematic view




Adapted from (Psychology, 2023)

**Collaborative learning in the mathematics classroom**

Mathematics is a subject that requires a lot of effort and dedication to master. Unfortunately, many students who prefer to study alone often encounter difficulties and become frustrated. This frustration can lead to a dislike for the subject, even if it could have been their favourite if they had collaborated with their peers. By working together, students can combine their strengths and overcome their weaknesses, making learning of mathematics more enjoyable. Collaborative learning helps students enhance their thinking skills by using methods of gathering information from multiple sources which yields presentation of arguments, and appreciation of one another (Harianto, Rusijono, Masitoh & Setyawan., 2020). It also helps to improve students' personalities. Furthermore, cooperation assists students in developing process skills such as collaborating with others, respecting others' opinions, and problem solving (Yadav, Mayfield, Moudgalya, Kussmaul, & Hu, 2021). Teachers can actively involve all students in the learning process by acting as a facilitator rather of a "sage on the stage" and allowing students to take more ownership of their learning while using collaborative learning. According to Kirschner (2011), collaborative learning enables students to engage in small group activities in which they can explore and explain ideas while simultaneously building social and team skills. Furthermore, social engagement associated with collaborative learning "is a necessary condition for the development of logic" (Piaget, 1976).

According to a study by Yadav, Mayfield, Moudgalya, Kussmaul, & Hu (2021), students can greatly benefit from a culture of collaborative learning. By fostering an environment of mutual support and learning, unhealthy competition can be eliminated, allowing for constructive and informative interactions among peers. Collaborative learning enables students to refine, explain, and elaborate on their ideas more effectively, ultimately leading to a more collaborative and healthy learning environment.

Collaborative learning is an approach that values and celebrates the diverse abilities, perspectives, and contributions of fellow learners. Rather than competing, this method focuses on cooperation and mutual support. It involves actively responding to the actions of one's peers, engaging in meaningful dialogue and exchange of ideas. Research by Erkens and Bodemer (2019) and Laal and Ghodsi (2012) has highlighted the potential of this approach to promote deeper learning and enhance critical thinking skills. By working collaboratively, learners

can gain a broader understanding of the subject matter and valuable insights from others' experiences and perspectives.

According to Salmons & Wilson (2023), collaborative learning is an effective way to engage students in the classroom, allowing them to learn from each other and take responsibility for their own learning. To create collaborative learning activities that suit any task, there are options for both shorter and longer activities. Shorter activities typically involve a three-step process that can be completed within five minutes, which is useful in a classroom set up (White, Lai & Kenehan., 2007). The process starts with introducing the task, allowing time for student engagement, and debriefing by having a few students share their conclusions, clarifying points, and addressing any misunderstandings.

**Research Questions**

1. What are the most effective digital tools and platforms for facilitating collaborative learning in modern educational environments?
2. How does collaborative learning impact student engagement and academic achievement in various educational settings (e.g., traditional classrooms, on-line platforms, hybrid models)?
3. How does collaborative learning influence the development of 21st-century skills such as communication, teamwork, and digital literacy?
4. What are the perceptions and attitudes of students and teachers towards collaborative learning, and how do these perceptions affect its implementation and outcomes?
5. How can technology be leveraged to create inclusive and equitable collaborative learning environments for all students?

**Research Objectives**

1. To discuss effective digital tools and platforms for facilitating collaborative learning in modern educational environments.
2. To assess the impact of collaborative learning on student engagement and academic achievement in various educational settings contribution of collaborative learning in enhancing the 21st century skills among mathematics learners.
3. To examine how collaborative learning influence the development of 21st-century skills such as communication, teamwork, and digital literacy.
4. To determine the perceptions and attitudes of students and teachers towards collaborative learning, and how do these perceptions affect its implementation and outcomes.
5. To find out how technology can be leveraged to create inclusive and equitable collaborative learning environments for all students.

## METHODOLOGY

Methodology is the art of arranging research in a proper order. To make this arrangement, there are numerous approaches, auxiliaries, and methods from which the researcher can choose from to meet their particular need. According to Cresswell & Cresswell, (2018), research approaches are plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation. In order to understand how enhancing collaborative learning in the classroom would foster quality education in the 21st century space, a qualitative research approach within the interpretivist paradigm was used to solicit for information among undergraduates in Science Education at a selected University in Zimbabwe.

Creswell & Creswell (2018) add that a qualitative research approach is responsive to research questions of why, how and what and offers researchers a flexible yet integrated framework for holistic examination of phenomenon in its natural setting. Qualitative research enabled the researchers to obtain and assess opinions, attitudes and perceptions of participants in the survey. This is supported by Christopher (2015) who says that qualitative research approach can be used to assess personality variables such as attitudes and opinions about events, individuals or procedures. Cresswell & Creswell, (2018), also assert that a qualitative approach is one in which the inquirer often makes knowledge claims based on the constructivist perceptions. Maree, (2011), concurs that

qualitative researchers seek to understand the phenomenon through the meaning people give to them.

In this study, participants were asked to fill in a structured questionnaire where they were asked to air their views on what collaborative learning entails. The main thrust of the questionnaire was to gather information on the effects of collaborative learning on learners' classroom practices and which strategies would best promote collaborative learning in the 21st century class. Twenty participants who are teachers and also doing undergraduate degrees at a certain university filled in the questionnaires which were sent to their emails. The response rate was 90% as eighteen respondents out of twenty returned the questionnaires.

## DISCUSSION AND CONCLUSION

Responses were discussed according to themes generated from objectives. The responses highlighted that there are several digital tools and platforms that have proven effective in facilitating collaborative learning in modern education environments. Among them is google workspace for education-tools like google docs, sheets, and slides which allow students to work together in real-time on documents, spreadsheets, and presentations. There is also google classroom which helps to manage assignments and communication. Microsoft teams is also a platform which integrates with office 365 and offers features like video conferencing, file sharing, and collaborative document editing, making it a comprehensive tool for both synchronous and asynchronous learning. Zoom is widely used for virtual classrooms, as it supports breakout rooms, which are ideal for small group discussions and collaborations.

Collaborative learning has a significant impact on student engagement and academic achievement across various educational settings, including traditional classrooms, on-line platforms, and hybrid models.

Collaborative learning in traditional classrooms fosters a sense of community and belonging among students, which can lead to higher levels of engagements. Positive peer relationships can enhance learning engagement, which is reflected in students' active participation, eagerness to complete assignments, and proactive pursuit of additional learning opportunities (Shao, Kang, Lu, 2024., Schnitzler, Holzberger, Seidel, 2021.) Respondents also highlighted that students who engage in collaborative learning tend to perform better academically. These responses are similar to the findings of Chad, (2022) who concluded that collaborative activities require higher-order thinking skills, such as analysis, synthesis, and evaluation.

On-line platforms are one of the effective digital platforms for facilitating collaborative learning in modern environments which was mentioned by respondents. They said on-line platforms improve interaction, that is, on-line collaborative tools, such as discussion forums and group projects, can enhance student interaction and engagement. These tools provide opportunities for students to communicate and collaborate asynchronously, which can be particularly beneficial for those who may be less likely to participate in a traditional classroom setting (Raes, 2022). Respondents also indicated that on-line collaborative learning can lead to significant improvements in student achievement. Thus, positive academic outcomes can be built among students through on-line platforms. This idea compares well with the findings of the study of Chad, (2022), on on-line collaborative learning in physical science which concluded that students showed significant gains in both engagement and academic performance.

Responses indicated that hybrid learning models combine the benefits of both traditional and on-line learning environments. This flexibility can enhance student engagement by allowing them to select the mode that aligns best with their individual needs and preferences. More so, hybrid models can yield balanced academic performance which help balance the advantages of face-to-face interaction with the convenience of on-line learning. This concurs with the findings of Gamage, Gamage, & Dehideniya (2022) which stated that students in hybrid learning environments often perform as well as, or better than, those in traditional or fully on-line settings.

It was deduced from responses that collaborative learning plays a significant role in developing essential 21st-century skills such as communication, teamwork, and digital literacy. Responses indicated that collaborative learning requires students to listen to their peers' ideas and perspectives, enhancing their active listening skills. They indicated that in collaborative learning students practice expressing their thoughts clearly and effectively,

both verbally and in writing, which improves their overall communication abilities. When students engage in group discussions and peer reviews they learn how to give and receive constructive feedback, fostering better communication.

More so, working in groups helps students develop interpersonal skills such as empathy, patience, and conflict resolution. Students learn to share responsibilities and work towards common goals, which is crucial for effective teamwork. If students are exposed to different viewpoints and approaches within a group setting it broadens their understanding and appreciation of diversity.

Furthermore, collaborative learning often involves using digital platforms and tools, which enhances students' proficiency with technology. Students learn to collaborate effectively in virtual environments, a skill increasingly important in the modern workplace. Engaging in collaborative research and projects helps students develop the ability to find, evaluate, and use information from digital sources responsibly.

Respondents further stated that collaborative learning encourages students to analysese problems from multiple angles and develop well-rounded solutions. Group activities often require brainstorming and creative thinking, which can lead to innovative solutions and ideas. Working in teams helps students practice making decisions collectively, considering various inputs and potential outcome. Collaborative projects often involve changing dynamics and unexpected challenges, teaching students to adapt and remain flexible. Students become more adept at learning new skills and concepts quickly, which is essential in a rapidly evolving world.

Integrating collaborative learning into the curriculum, can make educators help students develop these critical 21st-century skills, preparing them for future academic and professional success. The perceptions and attitudes of students and teachers towards collaborative learning significantly influence its implementation and outcomes. Students' perceptions and attitudes include positive engagement, challenges with group dynamics and enhanced learning experiences. Respondents indicated that if students are exposed to collaborative learning they appreciate the opportunity to interact with others and engage in active learning. If this positive attitude is developed among students, it can boost engagement and motivation, which often leads to a more collaborative environment. If students have a positive mind set, they can overcome challenges and be resilient thereby contributing to sustainable motivation and overall success.

Also, respondents reported that collaborative learning helps them understand concepts better and develop critical thinking. When individuals come together, they bring unique perceptions and ideas, which can lead to more innovative solutions and a deeper understanding of the subject matter. Peer support usually fosters a sense of community and shared responsibility which makes the learning process more enjoyable and effective. However, some respondents pointed out that collaborative learning can make some students feel frustrated with unequal participation or conflicts within groups. Such negative experiences can influence their overall view of collaborative learning. Experiencing negativity can shape how individuals perceive the value and effectiveness of working together which can lead to a more critical or sceptical attitude towards group learning activities.

The benefits of collaborative learning that were highlighted by respondents include, such as improved student engagement and the development of 21$^{st}$ century skills. They typically endorsed incorporating these methods into their teaching. They actually recognize the benefits of integrating diverse teaching practices. However, some teachers have concerns about managing group dynamics, ensuring equal participation, and assessing individual contributions. These difficulties can cause some teachers to be reluctant to fully adopt collaborative learning. Hence teachers expressed the need for more training and resources to effectively implement collaborative learning strategies. This is supported by McMahon (2024) who concluded that teachers may feel unprepared or lack the necessary training to implement collaborative strategies effectively.

If both teachers and students have positive perceptions and attitudes towards collaborative learning, this can lead to a more effective implementation of collaborative learning practices. Positive student attitudes towards collaborative learning can enhance engagement, motivation, and academic achievement. Thus, the effectiveness of teachers plays a crucial role in the educational outcomes of students. When teachers are confident and well-trained in collaborative learning strategies, they are better equipped to foster an environment where students can work together effectively. This collaborative approach not only enhances student engagement but also promotes

deeper understanding and retention of the material. Overall, fostering positive perceptions and addressing concerns through professional development and support can enhance the effectiveness of collaborative learning.

Respondents concurred that technology can be leveraged to create inclusive and equitable collaborative learning environments through various strategies. One of the strategies is the use of Web technologies which support collaborative problem solving in an authentic learning environment. These Web-based designs and tools like blogs and user groups can foster virtual collaborative communities, connecting diverse student populations and enhancing their learning experiences (Anderson & Lin, 2009; Neo, 2003).

In the same vein libraries can use digital media to provide learners with opportunities for collaboration, interest-driven learning and creative production. This is supported by Subramaniam, Scaff, Kawas, Hoffman and Davis, (2018), who said that libraries have long been sites of learning, inviting patrons from all backgrounds to explore their curiosities and interests. They further say that, these explorations are supported by digital and networked technologies which offer unprecedented opportunities for people to access, create and share information.

In addition, some respondents commented that technology can support equitable learning by lifting students up, attending to individual needs, empowering student collaborations in learning and providing equal opportunities for learning. Effective technology integration can also enhance learning outcomes, accommodate diverse learning styles and create interactive environments. Some respondents, however, argued that achieving equitable access to technology requires investments in infrastructure and digital literacy training for the users. As such, aligning technological tools with pedagogical goals and fostering collaboration among students should be the goal of educational institutions to create more equitable and enriching learning environments that enhance problem solving, critical thinking and teamwork skills.

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