Maximising the Effectiveness of Collaborative Learning through Incorporating Information and Communication Technology

Dhaval Sahija[1]*, Geraldin B. Dela Cruz[2]

[1] Softweb Solutions Inc, USA
[2] Tarlac Agricultural University, Philippines
*Corresponding Author Email: [1]dgsahija@gmail.com

Abstract

The modern education system and learning process changed a lot and collaborative learning is one of the new approaches to learning that have the ability to improve the overall learning process. It also has the ability to make students more skilful and help them to choose the right career path in their future. The collaborative learning process has a huge impact on the learning process. It improves the responsibility and self-esteem of a student which helps them throughout their life. There are different factors that can maximise the effectiveness of collaborative learning and information and communication technology (ICT) is one of them. ICT has the ability to digitise the learning process and improves the overall effectiveness of the learning approach. This study is emphasising how ICT can mobilise the way of collaborative learning and also focus on different implementation processes. The secondary qualitative research design is adopted here to perform the research study efficiently and thematic analysis on the role of ICT in the collaborative learning approach enhances the relevance of the study. This research will also focus on the different implementation procedures of ICT that can improve the collaborative learning approach.

Keywords

Approaches, Collaborative Learning, Effectiveness, ICT, Implementation.

INTRODUCTION

Overview of the study

Collaborative learning is an educational approach that uses the group learning method through working together. Often it is called the peer learning process and in this process, students work in groups or pairs to discuss multiple concepts or find solutions to different education-related matters. Collaborative learning is essential in the modern learning process and it is effective to develop a higher level of thinking, self-management and oral communication by this learning approach [1]. It improves responsibility and self-esteem among the students and that helps them in their future professional life. The effectiveness of collaborative learning can be improved by introducing information and communication technology (ICT) in the education system [2]. ICT has the ability to change the way of collaborative learning and enhance career growth more precisely. This study aims to find out the role of ICT in collaborative learning and also try to understand the basic implementation process of collaborative learning.

AIM OF THE STUDY

A collaborative learning process is an effective approach that can be maximised by implementing ICT technology. The primary aim of the study is to find out how ICT can maximise the collaborative learning process and role of the ICT in collaborative learning.

Objectives

- To understand the basic concepts of the collaborative learning approach
- To find out the effectiveness of ICT on the collaborative learning process
- To identify the implementation process of ICT in the collaborative learning process
- To determine the role of ICT to maximise the overall effectiveness of the collaborative learning approach

RELEVANCE OF THE STUDY

Collaborative learning is a modern educational approach that improves the effectiveness of the learning process and it is more beneficial than the conventional learning process. In this collaborative learning process, students have to make a peer group and they have to learn different skills with their groups. This learning approach has multiple positive aspects that help students to improve their social skills, team-building capability, self-management and verbal communication. It also improves the responsibility and self-esteem of a student. That is beneficial for them to choose the right path in their career. There are multiple factors that have the ability to maximise its effectiveness but ICT technology is the most significant factor that can improve the overall collaborative learning process. This study tries to find out how ICT maximises the effectiveness of the collaborative learning

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process and the basic procedure to implement ICT and this objective makes this research more relevant in the present context.

MATERIALS AND METHODS

Research design

The research design refers to the overall strategy that researchers chose to maintain the overall functioning of the research process. The research design is a structural framework that is important in a research study to improve its effectiveness and efficiency. Research design is a coherent way that can effectively address research problems. It forms and develops the blueprint of the data collection and analysis process that improves the relevance of the research. There are different types of research designs that are widely used by researchers to perform research in a productive way. The *exploratory research design* is followed in this study through secondary qualitative data collection. Exploratory research design makes research more time efficient and it has the ability to enhance the relevance of the study [3]. The exploratory research design adopted here is to determine the role of ICT in maximising the effectiveness of the collaborative learning approach.

Research type

Research type is an essential part of research that improves the overall significance of the research. A relevant research type enhances the productivity of researchers and ultimately affects the research study in a positive way. Qualitative and quantitative research are two major types of research that are widely used by researchers to perform a research study in a strategic way [4]. The qualitative research type is followed here in this research to perform the research study in a significant way. The *qualitative research* type is followed here to improve the effectiveness of the research and it is a convenient way of research that helps to meet research goals easily.

Inclusion and exclusion criteria

Inclusion and exclusion criteria are an important part of research that incorporates the data collection procedure. Inclusion and exclusion criteria help to improve the overall authenticity of the research and make the research study more efficient.

Inclusion criteria

- Journals, articles, newspapers and websites are taken here in this research from authentic sources.
- Journals, articles and newspaper reports that were published after 2018 are taken here for data collection.
- Sources with authentic author names and publication years are taken here in this research for data collection.

Exclusion criteria

- Sources that are published before 2018 are excluded here for data collection.
- Sources other than the English language are excluded in

this research for data collection.

Data collection and data analysis

Data collection and data analysis is the most important part of a research paper that is important to maximise the performance of the research. The overall effectiveness of research depends on the data collection and analysis process [5]. The qualitative data collection and analysis process is adopted in this research which helps to maximise the significance of the study. The qualitative data analysis provides insightful knowledge about the role of ICT in maximising the effectiveness of collaborative learning. The thematic analysis process is also adopted here in this research to evaluate every angle of collaborative learning and that gives an optimum understanding of the ICT and also improves the relevance of the study.

RESULTS

Concept of collaborative learning

The collaborative learning process conducts a variety of learning approaches including a joint intellectual effort by the students and teachers. Usually, students and teachers in this process collaborate and establish different groups that mutually help them to better understand each other and their cultures. Apart from that, students and teachers come together to find solutions that are associated with education and also establish different strategies to improve their understanding of an issue and solve power problems. In the collaborative learning process, students and teachers from different religions, castes and cultures come together and pair in a group which helps them to improve their acknowledgement of each other's cultures and thus it develops a better relationship between these students and teachers [6]. Besides that, this process helps to enhance the learning power of each student and also enhances the teaching power of each teacher by connecting them in a group.

In this process, approaches solving different issues in the educational sectors and presents them as projects to the students and they need to solve the problem as a team. This teamwork enhances their listening power, and also it helps them to understand different concepts through the different opinions of the team members. Besides that, this process actively engages learners]in improving their learning process and synthesising information techniques rather than just memorising it which helps to improve their brain development and acknowledgement power. Through listening to different perspectives from different members of the group regarding the solution every student develops more understanding of the problem and defending their position, reframing different ideas, and listening to others' viewpoints helps the learner to improve their acknowledging power and establish a better understanding about the problems than they could as individuals [7]. This process is a unique and effective process that helps the students to actively engage in different activities that helps to raise their psychological

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growth and also enhance their solving power by sharpening up their brains through different projects.

Collaborative learning and ICT

Collaborative learning encourages students in their education sector and enables students to work and learn together to improve their academic careers. It also helps the students to explore a particular subject in detail that helps them to solve a problem and also it helps them to improve their knowledge about teamwork and its effectiveness establishes a better improvement in their career and strengthens their learning power. The ICT process also encourages the students to improve their learning process and establish a better academic career in this process through different communication strategies and with the help of advanced technologies all the students and the teachers are effectively getting beneficial progress in their academic careers. The ICT process in the collaborative learning process has a huge number of advantages as it provides a better education structure which is constructed with different new and advanced technologies [8]. Besides that, the implementation of ICT in the collaborative learning process not only facilitates collaborative activities among the students but also enables their working process collaboratively even when they are in different locations and places.

The help of ICT and its advanced technologies in the educational sectors helps students to practise several essential 21st-century skills such as collaboration. Communication, knowledge creation and many others. Apart from that, this process helps to gain more flexibility in solving problems regarding an issue and also improves the teaching process of the teachers who are associated with collaborative learning. The ICT programme in the collaborative learning process has improved the educational structure and also has improved the education system through different changes as this process suggests effective and appropriate methods that are relevant to the issues and helps to establish strategies accordingly. Besides that, the ICT process provides technical support to solve complex situations and helps them to tackle them with ease [9]. The ICT programme in the learning sector helps the students to change their minds about certain things in a positive way and gives them better access to explore the world and solve their problems as a team.

There are different indicators of the collaborative learning process such as it creates multiple efficient opportunities for the students by promoting collaboration among the students, designing learning methods that require positive independence among the students, developing their communication skills, providing various activities and assessments to improve their learning performances as both individuals and as a team member and many others that effectively increase their performances in their academic career. Apart from these, there are many other indicators of the students such as they can negotiate with others and collaborate with students from different countries with the

same goals, get constructive feedback while solving an issue, and different perspectives of the students increase their general knowledge and impact their viewpoints in a positive way and many others that have effectively increased their engagement in the educational system [10]. The ICT process of collaborative learning helps them to improve their communication skill with different cultures and students from all around the world and the help of advanced technologies increases their educational growth.

Implementation of ICT in collaborative learning

The collaborative learning process has different effects that improve the learning skills of the students such as establishing common goals between the students, establishing clear accountability in both individuals and groups, developing confidence in the students that increases their interactivity and negotiability and some others. Apart from these, the collaborative learning method develops maturity in individual team members that matures the processing of groups and creates positive interdependence in the students that impacts their educational growth. The ICT process helps to support the interpersonal communication of the students and improves their working skills in a team [11]. The ICT programme provides advanced interpersonal communicative technologies such as chatting, messaging, video conferencing, emailing and many others that help the students to connect with international students personally and help them to collaborate as a team regardless of the country or religion.

Apart from this, the ICT process provides effective and efficient strategies to increase the participation levels of the students and conduct proper guidance for the students by improving the teaching skills of the teachers. However, the ICT process in the collaborative learning process helps to close the barriers of the traditional learning process and implementation of ICT in the educational structure guides the education system to grow positively by collaborating with students from all around the world with different cultural backgrounds to increase their performance skills in a larger way [12]. In the ICT process of this collaborative learning, the students get some other advantages such as *computer-supported collaborative work*, *computer-supported collaborative learning* and many others. In computer-supported collaborative work, the students get knowledge of shared work or group work and through different technologies, the students can capture appropriate information through internet access and both the teachers and students can track their work progress and performance through efficient technologies.

Apart from that, the computer-supported collaboration learning method emerges with different educational fields of learning sciences to establish better futures for the students. Besides that, this method focuses on the development of different learning skills in the students through communication and improving their learning skills through the help of different technologies. However, the

implementation of ICT in collaborative learning increases classroom practices improves the relationship between students and teachers through different advanced technologies and changes the viewpoints of the students about different cultures in a positive way. Over some time, the collaborative learning methods and ICT process has been changed and in this digital era, classroom sessions are now available in online mode which positively increases student engagement in this process [13]. However, ICT collaborative learning is supported by strong theoretical and empirical foundations, it is evidence that the quality of this method is higher than the traditional methods of previous decades in the educational sector and it has positively impacted the educational growth of different countries.

Role of ICT in collaborative learning in maximising its effectiveness

The ICT programme in the collaborative learning process has different beneficial facilities that positively affect the learning process and increases academic growth in the educational sector. Advanced technologies like social networking, virtual services all around the world, online games, online courses, chat facilities, audio and video conferencing and many other beneficial facilities have been given to the students throughout this process. Besides that, many other technologies have been invented over a while and have been implemented in the education system which has positively impacted the collaborative learning process [14]. Apart from that, the ICT programme enhances the performance of the collaborative learning process as it increases the level of the students participating in the CL process by discussing the problems in the online mode that helps to encourage their participation level outside of the school, by giving them time to learn new subjects as per their own pace and time, also helps the students to get knowledge from all around the world through this collaborative learning process.

Apart from this, the ICT programme in the CL process gives students a better and more positive educational environment which provides enough freedom and flexibility for the students to adjust to the education environment easily. Before using ICT programmes in the collaborative process this process was limited by time and distance but after implementing ICT in this process it is no longer limited by time or distance which positively increased the rate of student engagement in this process and they are more actively participating in this process [15]. Furthermore, the students have more accessibility to ICT tools regardless of the time and distance have encouraged the students in pursuing further studies in their interested education sectors.

The global ICT spending rate have reached 4.9 trillion U.S dollars in 2020 and it is estimated that it will grow up to 5.8 trillion dollars by 2023 [16]. However, there are still some barriers to the ICT programme in the collaborative learning process such as poor communication, poor community infrastructure, inadequate ICT skills of the students and the

teachers and many others that are negatively impacting the ICT collaborative learning process. Apart from this, over-population of the students causes the lack of funds for the collaborative learning process and thus it is hampering the learning skills of the students. However, all of these problems are affecting the process but still, the negative impacts are lesser in front of the positive effects. Hence, it is evident that ICT in collaborative learning is efficiently maximising its effectiveness in the education system.

Characteristic	Spending in trillion U.S. dollars
2023*	5.82
2022*	5.47
2021*	5.16
2020	4.9
2019	4.92
2018	4.66
2017	4.57
2016	4.31

Figure 1: Global ICT market spending rates (2016 - 2022) [16]

DISCUSSION

A collaborative learning process is an effective approach to learning that refers to the joint intellectual efforts of students and teachers. Generally, students and teachers work mutually and help to better understand each topic. In this learning process, students form groups and share different problem-solving techniques associated with the education and also make different strategies to improve their understanding. This learning approach helps students to enhance their learning power and it also helps the teachers to identify the problems of different students and find solutions accordingly. The collaborative learning process is essential to improve student and teachers relationship and that benefits the students in their education [17]. This effective learning process enhances teamwork skills among the students and also improves their learning ability which is essential in their professional life. The collaborative learning approach enables listening to the different perspectives of different members of the group and that helps them to solve complex study-related problems. This learning approach is also beneficial for students to improve responsibility and it enhances the self-esteem among the students that makes them confident throughout their life.

The collaborative learning approach encourages students in education and enables students to learn together which is important for their academic careers. ICT has a major impact on the collaborative learning process. It gives students a huge number of advantages by implementing different advanced technology. It helps students to learn from different locations and places. ICT also helps students to learn various modern skills including collaboration, communication, knowledge sharing and many others [18]. Technology makes students flexible in academic problem solving and that gives them an

advantage in their careers. ICT enables students to gain multiple other skills that are not associated with the conventional education process and that are important in the career growth of a student in their professional life. ICT provides different assessment tools that help students to assess their understanding and improvement in academics and it is essential for them to get success in their academic careers. ICT enables students to learn about different cultures around the world and makes them compatible in the contemporary scenario.

The ICT programme provides advanced communication technology including chatting, messaging, video conferencing, emailing and many others that help students to connect with their peer groups, teachers and other international students personally and enable them to collaborate as a team regardless of country or religion. The computer-supported collaborative learning approach emerges in different educational fields and establishes a better future for students [19]. Over time collaborative learning methods with the help of ICT have changed. In the era of digitisation, classroom sessions are now available in online mode which increases student engagement. The ICT implementation in collaborative learning is supported by a strong theoretical and empirical foundation and different evidence shows that the quality of this method is better than the conventional learning approach.

ICT influence development in computer-mediated communication and that improves the overall learning method in recent time. ICT contributes to collaborative learning in three main ways, it improves the interpersonal communication skills among the students, it makes it easier for learners to work on a common document and also contributes to computer-supported collaborative learning where the main focus is to support the negotiation of meaning among the group of learners. With help of ICT technology learners now can work on common documents in their learning program and share ideas among them it improves productivity and helps the learners to learn additional skills. ICT technology improves interpersonal communication which is helpful for learners to maintain healthy relations with teachers and their group members [20]. Therefore, it can be stated that ICT makes it easier for learners to learn different skills and enhance their career growth.

CONCLUSION

Collaborative learning is a modern learning approach that enables students to learn with their peer groups and that is important to enhance their skills and get advantages in their careers. The collaborative learning approach helps to maintain good student and teacher relationships which is important to build a healthy and effective learning process. Information and communication technology (ICT) has a huge role in maximising the effectiveness of collaborative learning. The incorporation of technology helps to learn modern skills more precisely and enables students to get advantages in the competitive professional market. It also helps the student to learn about multiple cultures around the world and that makes them compatible in their career and also helps them to make healthy relations with others.

ICT has a major role in the collaborative learning process as it helps to improve interpersonal communication among the students which is an important part of knowledge sharing. ICT also makes learners more productive in their academic field which is important to enhance the overall career growth among students. Besides that, ICT makes online classes possible and enables learners to connect with other students from different countries and locations which helps to improve their knowledge sharing and ultimately improves career opportunities among the students.

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