The Impact of ICTs on Collaborative Learning: A Literature Review

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Abstract. This study aims to expose prevailing trends of interactions among students in collaborative learning. In particular, social networking is seen as a way of establishing a modern educational reality that promotes more proactive and constructive learning practices. Emerging technology is now used mostly in the classroom without contributing to anticipated creative education developments. By studying how I.T. can fuel different forms of creativity and build profit, students can learn in-depth about expertise and skills. The issue is how interactive learning could be integrated so that soft abilities could be built.

Keywords: Information & Communication Technology (ICT), collaborative learning, literature review, Interactive learning

1. Introduction
Information & Communication Technology (ICT) provides an increasingly wider variety of ways to integrate those innovations in higher education concerns and educational programs [1]. Higher Education is likely to have reached a troubling era, and modern technical abilities have theoretically changed how new forms of teaching and learning are allowed [2].

In particular, social networking is seen as a way of establishing a modern educational reality that promotes more proactive and constructive learning practices [3]. In comparison to personal computing aimed at fostering individual consumer activity, social networking is used to narrowly describe a spectrum of web-based social computing technology centred on the social possibilities to co-create and remix messages, cooperation and content [4].

Many researchers found social networking’s social possibilities, encouraging learners to engage and learn from each other in a collaborative and participatory way [5]. Social networking also provides the ability to develop innovative educational techniques to enhance student interaction and collective learning on campuses [6], in tandem with the proliferation of the Internet and personal computer technology in universities.

However, emerging technology is now used mostly in the classroom without contributing to the anticipated creative education developments and is based on conventional learning management systems (LMS) [7].

It is also stated that there is no link between the structured and unstructured worlds with the incorporation of conventional LMS and social networking to enhance learning experiences for the end-users [8]. Moreover, the technical attitudes difference between students and higher education faculty are noted. [9] found that higher education students are more optimistic than instructors, who favor the old technology, regarding utilizing Facebook and other emerging social computer applications to promote learning.

2. Objectives
Social networking and smart technologies may be summarized as modern and emerging in higher education environments. The current literature reveals that most approaches to the exploitation in Higher Education of technical tools are primarily teacher- suitable for generations of students who prefer to learn more passively from people of authority. Nevertheless, demographics are shifting in the university room. Millennials are the generations that are growing up in their everyday lives with different new technology, often known as tech-knowledge digitals. Independence, individuality, and social experiences through their modes of learning seem characteristic of the way millennia study.

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However, no work was conducted to explain what digital innovations are to be used in essential for their learning activities to develop and train collective information. This study aims to expose prevailing trends of interactions among students in collaborative teaching and their connection to choosing the best technology and collaborative learning environment [10].

Driven by the research question: Do we enhance students’ collective learning and success by utilizing knowledge-sharing and communication technologies in collaborative learning activities?

The paper objectives are:

- To understand the current status of the application of ICTs in the learning management system.
- To determine the impact on collaborative learning and student’s performance of ICTs (technological effect).

Different social networking and collaboration tools are common to students with the same or identical social advantages. Higher Education has driven innovative education and learning over the past decade by the convergence of information and communication technology (ICTs).

To understand how learning management systems, social media, and various other forms of ICTs were approached for Higher Education, two relevant streams of literature were reviewed: (1) literature on learning management systems and social media in Higher Education; and (2) literature examining the attitude of teachers and learners toward the incorporation of ICTs in educational programs.

2.1 Incorporate learning management systems and social media into Higher Education

The most common education technology is a learning management system (LMS) used in many higher education institutions to improve students’ learning and build teachers’ professional skills. In university educational settings, they are learning management frameworks based primarily on the distribution of courses and the provision of resources to teachers to endorse conventional classroom concepts and administrative tasks [11].

Although teacher-centric learning management systems, such systems often aim to provide students with interactive spaces through which their instructional tasks can be exercised. Social networking is a valuable medium that provides a disruptive educational opportunity that allows people to develop a modern educational reality, fostering more involved and constructive learning approaches [12].

If the word “social networking” is sometimes used interchangeably with Web 2.0, the literature is distinct from Web 2.0, usually characterized by technological design trends. Social networking has been described in greater measure as “a category of web-related apps based on Web 2.0 philosophy and technologies and facilitating user content development and exchange” [13].

Unlike informatics that endorses behaviors, social media are generally described as a set of social networking applications on the Internet that promote the Internet’s social advantages. Many researchers are dedicated to integrating social networking as powerful educational resources to consider social media’s social affordability. In the social networking categories of communication and social partnerships, mutual information exploration and exchange, content growth, and the gathering of knowledge and information, as well as alteration of material, [14] have described the following.

These social opportunities indicate that social networking may promote students’ participation and collective learning, described as “a circumstance in which two or more people study or aim to study together”. Collaborative learning includes people as participants and social connections between them, such as negotiation and purpose exchange. Learning takes place in collaboration when it exchanges expertise and thoughts, questions each other, and reviews details together in a participatory and constructive way in the process of sense exchange and knowledge building.

Social Web-based learning emphasizes the notion of knowledge being constructed by the group members through interactively learning with others; hence, the collaborative learning environment is highly emphasized to complete a
group project or task. Collaboration is initially referred to as social constructivism, as the collaborative interaction between interlocutors creates meaning in dialogue. Collaboration’s influence on learning has shown that learning is supposed to be a socially mediated subject. However, this process seems to be multifaceted with the cognitive, motivational and social aspects of a person.

[15] states that, while the usage of mobile technologies is growing in schools, ways to exploit social networking activities and mobile computing devices for formal official learning are being explored, the approaches to information that are guided by processes and participatory knowledge creation are not being established. Various assessment reports on higher education usage of these innovations indicate that scientific data lags promising new higher education learning.

While most developing countries integrated apprenticeship management structures into their educational systems, the outcomes are not the ones they had hoped for [16]. In a radio mode where teachers publish content, and students use the materials they publish passively the usage of a learning management system also limits the publishing and consumption of information.

A major critique of LMS is that these programs are largely instructor based, designed for interaction without learners in mind and thus challenging to incorporate and perform. The literary analysis of social media usage in higher education also reveals that objective research has lagged behind social media promises. Students’ participation and their effects on their academic performance are considerations explored into social media usage in higher Education. In [17] the study has shown that the reinforcement of Twitter usage will help increase the dedication of undergraduate students with the six-month GPA (GPA).

The other research showed that the time spent on Facebook and the GPA for undergraduate students were strongly negative. Increased media ubiquity and increasingly increasing electronic devices on campuses can explore new educational strategies [18]. The area remains fresh and changing; however, with the current literature restricted to determining the efficacy and reliability of these technical devices.

The numerous studies suggest that the simplistic introduction of learning systems, social networking, mobile computers, and other related innovations in education programs does not immediately change the education environment with important learning results. Criticism of the learning management frameworks also persists that integrating modern technology developments, including social networks and new smartphone app innovations to improve student engagement and instructional success is not readily supported.

From the point of view of instruction to students, [19] states that conventional learning structures are not incorporated into social networking. The structured and informal learning framework for students is interconnected to enhance learning processes for end-users. Formal learning is characterized as learning institutionally funded or strongly organized by the materials a teacher produces for a credential or a credit within a teacher’s curriculum. In contrast, informal learning as an unstructured often occurs by observation, dialogue, or Internet use.

[20] check if facts and reasons justify the suggestions and recognize other elements that might affect outside knowledge throughout reasoning. The principles for creative thought presented to students include integrating data, ideas and assumptions in fresh and imaginative ways, finding several solutions to a dilemma and learning about what has not succeeded and what has occurred. In this course, analytical capabilities are tested like systems’ thinking, recognition of issues, dilemma interpretation, and resolution.

[21] suggests that more study could be studied in the sense of a pedagogical design of learning practices, to gain greater knowledge of technologies’ interactions.

2.2 Teachers’ attitude towards integrating digital technologies and learner changes
The integration of teaching and learning technology is primarily influenced by what teachers require to use these resources. Frameworks like Technical Pedagogical and Material Awareness and Decision Frameworks are suggested
to provide teachers with improved technology preparation in designing, delivering, and assessing curricula and guidance.

However, teachers’ instructional applications of teacher equipment in the school remain intermittent. Teacher attitudes to incorporate ICT into everyday teaching practices is assessed in studies. The outlook for Facebook and other emerging social computing technology to help learning is far more promising than that of faculty choosing conventional technologies. In her study of Higher Education social networking, [22] concluded that social media use for education purposes was sluggish among teachers. [23] claimed that “teachers assume that through information gained through the years, their professional interactions will control recent developments in the education field. They see technical expertise as a means of directing technological progress towards the path they see as beneficial for their students. “The relevance of this approach to integrating new technology in higher education by teachers is particularly questioned by the shift in generational cohorts towards technologically informed millennia.

Furthermore, flexibility, individuality and social experiences in their learning styles tend to be common features of how thousands of years learn compared to previous generations of students who traditionally learned experience more passively from figures of authority. Demographic transition and the dramatic developments in technology demand that school technology manipulation methods for achieving student involvement and educational objectives be extensively researched.

2.3 Communication, Collaboration and Student Academic Performance

Previous findings demonstrate various positive problems with good educational results in support and upgrade of learning processes by social networking. They look at ways where online social networks (OSNs) will impact (e.g., social learning, communications, intellectual culture, etc.) and help social networks in building an effective education atmosphere and in improving educational success. Fewer research demonstrated the beneficial effect of the use of OSNs on student results. We may not have a written analysis and personal knowledge in this field: students use Facebook every day for their studies. In the overwhelming majority of student, leaders use OSNs for the course of their studies.

However, some reports have concerns regarding social networking’s beneficial influence in higher Education whilst others show a detrimental influence on the “academic success” of students. According to [24] “academic success depends on students’ concentration, time management, and academic skills.” More precisely, several authors pose questions about whether social approval emotions would eventually prevail in publishing their work in OSNs, or whether they might be plagiarized or rejected.

As already stated, OSNs and good academic success have contrasting points of view. In the other hand, a wider agreement remains for the commitment rendered by education services to connectivity and cooperation. Next, to use more traditional contact.

The ICT methods (e.g., email and instant messaging), or OSNs (modern) are not user-dependent; it seems as if, in a bibliography, it is “technological adequacy.” Simple to use mobile devices (smartphones, computers, etc.) and their profile is described in digital literacy. However, only a few years back, preceding machines proved to be an aid to allow modern machine training programs easy to use for contact with others.

[25] concluded that OSN students appear more versatile concerning the usage of machine learning systems. In one context or the other, most academic studies accept that social networks and OSN channels typically boost student cooperation. In line with this perspective, another study presented some positive aspects/characteristics, such as improving students’ engagement and comprehension or recognizing methods of collective learning by the usage of Facebook [26].

[27] has highlighted the forms in which social networks help community learning. The same findings were obtained in research conducted in Australia with OSN students who were influenced and encouraged enough by social learning environments they had encountered. The findings were identical in Australia.
stressed, and these two components cannot be isolated from one another when attempting to understand that the social aspect of learning is just as critical as the semantic one. Students may also behave individually and in collaboration with each other. That is why [29] and fellow workers actively encouraged educators to use social networks to reach a higher degree of collaboration and education coordination.

[30] described collaboration is another aspect of soft skills. “Collaboration is a mechanism in which individuals communicate and exchange definitions related to the problem-solving mission at hand,” as following: Coordinated, synchronous work is the product of an ongoing endeavor to build and sustain a mutual understanding of a challenge. “Working together requires working in which participants are not inherently contractually and hierarchically tied. Efficient cooperation also includes self-regulation of actions to cooperate with others, with a common emphasis.

Different research has shown the advantages of workplace collaboration. Collaboration is often seen as a crucial ability for the 21st century. A formative methodology for the assessment and evaluation was used in the design of the course. Much has been written on assessment and evaluation – two complementary and important principles for schooling. Evaluation is the concept employed to evaluate how learning is being carried out and include guidance on skills, ability and job products to enhance the consistency standard of the accomplishment or result while evaluation is the word for the determination. The assessment and evaluation may be summative or formative, i.e., carried out during the educational phase.

The multi-dimensional teaching approach, inspired by constructivism’s educational philosophies, provides lectures complemented by diverse ways for students to adapt the ideas and hypotheses learned to real-life scenarios independently and in teams.[31] describes social constructivist learning environments as “sites where students can collaborate and help each other by utilizing different methods and information services to direct learning objectives and problem-solving efforts.” The central concept of social-constructivist pedagogy is that teachers actively participate in learning instead of actively communicating expertise.

For example,[32] designed a 10-week project team mission is then formulated as a part of the course training methods. The team project work involves teamwork when students conduct collaborative learning work outside the school. The team project operates together. This team project requires students as team participants and connections with them to solve practical challenges together. This team project’s goal is to objectively examine how the nature of a business has evolved through the years and how I.T. has been a part of this transition, to recognize the I.T. issues confronting students through lectures and lecture sessions, review of case-by-case conversations, guest lectures by professionals of the business and individual independent study. A formal report containing conclusions and feedback and three in-class presentations of their work were the two main project deliverables each team completed. The second week of the semester is the creation of teams. The team action of students begins with the selection of a business and a business company. In the third week of Team Preparation, the first presentation will take place. Each team shares the industry and the organization they want to research with other class students and plans to carry out the project as a team. Students from other teams will inquire and give the presenting team input. The second team lecture takes place in the mid-term classroom to share their fieldwork and obtain and interpret data on the market and the business they are researching. Other classroom students will pose questions and provide the presentation team with input. The final, seventh, will end students’ 10-week project work with their squad.

3. Discussion and conclusion
This study explores how students’ technology choices affect their understanding and progress in teamwork and how their technology choices can change their academic performance. By analyzing the past ten years’ research results, we have built up a theoretical framework for new research.

From literature review it shows that a team-based collaborative learning assignment has been designed as part of a program for colleges on campus. To achieve this school mission, the students must work in teams to solve challenges together, using the necessary soft skills in information and education, to apply the values and frameworks they studied in real life.
LMS providers must also define the role of LMS to be easily embedded and remain applicable to student learning experiences. The STCI method aims to create future studies to examine teachers’ role in technology selection, the application of knowledge processing and its impact on technical choice and mutual student learning performance.

It may seem to be common knowledge that a modern era existed for students with heavy use of social technology and teamwork in their daily lives. Moreover, this reform alone does not mean that the support program offered by such instruments does reliably help students.

The constructive contribution of students to contact and teamwork for educational purposes was almost universally acknowledged. It proved to be a valuable teaching method for most researchers. Although analysis (or anticipation may be said to be) is seen, several problems for researchers to obtain detached, analytical knowledge concerning the subsequent enhancement of academic success have been noted.

Indeed, some of them object to beneficial outcomes. Almost all studies on the beneficial influence of OSNs converged on other parameters promoting good education practices such as contact, collaboration, academic community. Teachers appear hesitant to participate in social networks’ instructional processes while they are motivated to do this by studies.

Naturally, further observational data tend to hinder the enrichment of science. Some studies have addressed the possible effect of ICTs on students’ personality and cognitive actions; their results are almost good with some reservations. They also demonstrated enhanced self-esteem, increased social reception by other pupils, stronger memory control and successful language tests performance. The critique is focused mostly on the sort of things taking place in social networks and that they may not always be helpful. Instead of looking for facts, chattering and online gaming do not seem to benefit, nor are events. Any research has disclosed relationships between social networks and online learning structures at least so far (CMS, LMS, MOOC, etc.). This is possibly because these relationships are new to the subsequent literature. The first findings of their collaborative mixture seem very promising. It is also fair to foresee more study in the immediate future. Administrative and instructional workers still seem very reluctant about their contribution to social networking’s administrative and instructional internal structures.

This may be attributed to the restraint of teachers before all successful outcomes are checked and registered. In either case, study with objective proof is robbed of enrichment. In one side, the expectation that social networks can be connected to good academic results is supported by our study. On the other side, educators find it impossible to incorporate OSNs massively and constructively into educational activities. This may also be that the methodology and practices that implement social networks into the instructional community have been not proposed, well-designed and coordinated. We can expect that such measures will be stepped up in the immediate future.

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