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# Multimedia: Different Processes

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## Abstract

The topic includes four main themes: (1) The Collaborative Work in Cloud Storage Services: The collaborative work is seen as a force for the individual and community. It, in the field of education, expresses the interaction among students of individual differences who work within collaborative aims and skills to achieve a specific aim. In addition, cloud storage predicts a tremendous change in the way information is stored and applications are run. That is, instead of storing information and running programs on PCs, everything will be hosted in a cloud that can be accessed anywhere and processed by addition or deletion collaboratively. (2) Computer-supported collaborative learning environment (CSCL): Collaborative learning is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together. It is based on the idea that learning is naturally a social act in which the participants talk among themselves. A group of students engaged in collaborative learning works together to achieve shared goals. (3) Mobile learning: Mobile learning is a term that has been used widely in different places all over the world. It has been encouraged to be used in higher education institutions because of a set of factors such as the availability of mobile phones, their ability to motivate students, and the freedom and privacy they provide to share information. Mobile learning is defined as E-learning that uses mobile devices or learning connected to a mobile device, Laouris & Eteokleous. (4) Open-Source Learning Management Systems: The integration of many Educational technologies in education have been widely promoted for their potential to enrich, enhance and extend student-learning experiences. Hence, pioneer educational establishments all over the world try to benefit of these technologies as much as possible to convey knowledge resources to both of the learner and teacher in least time, effort and cost. One of these educational technology tools which has been prominent in the field of education and technology integration is Learning Management Systems known as LMS.

**Keywords:** cloud storage, CSCL, mobile learning, learning management systems

## 1. The collaborative work in cloud storage services

The collaborative task is seen as a strength for the individual and community. The collaborative in the area of pedagogy, expresses the interaction between learners of individual differences who learn within collaborative purposes and skills to fulfill a specific purpose. Furthermore, cloud storage prophesy a massive change in the way data is stored and run of applications [57]. Thus, instead of storing data and running programs on personal computers, everything will be harbored in a cloud that can be

accessed everywhere and processed by addendum or deletion collaboratively. Kamara & Lauter [1] Confirms that improvements in networking technology and the raise in the need for computing resources have induce many organizations to outsource their store and computing needs. Yang et al. [2] mention that cloud storage is an important employ of cloud computing. Kumar and Lu [3] add that the cloud heralds a new time of computing where application employs are provided through the Internet. Cloud storage allows information owners to host their information in the cloud and data access control is an efficient way to ensure information security in the cloud. Lin and Tzeng [4] also confirms that cloud provides long-term store services through the Internet. In addition, Bowers et al. [5] Confirms a family of increasingly public Internet services for archiving, backup, and even main storage of files.

In cloud computing, information owners host their information on cloud servers and employers who are information consumers can access the information from cloud servers, which allows information owners to move information from their local computing systems to the cloud ([6]: p. 1717). It lets information owners and employers to access all applications and files anywhere in the world. Cloud computing frees them from the limits of the desktop and makes it easier for group members in several locations to collaborate [7]. Using it, employers can remotely store their information and relish the on demand high feature applications and services from a shared gathering of configurable computing resources, without the burden of local information storage and maintenance [8]. In addition, it has been envisioned as the next-generation information technology architecture for projects, due to its long list of adorable advantages in the information technology history: location independent resource pooling, ubiquitous network access, on-demand self-service, fast resource elasticity, usage-based pricing and transference of hazard [8, 9].

Kamara & Lauter, [1] locate three kinds of services that Cloud storage includes:

1. Infrastructure as a favor, where a client makes use of a service provider's computing, storage or networking infrastructure.
2. Platform as a favor, where a client leverages the provider's resources to run custom applications.
3. Software as a favor, where clients use software that is run on the provider's infrastructure.

Virtual resources in the cloud are cheaper than dedicated material resources connected to a personal computer or network. Information stored in the cloud is safe from unwitting erasure or hardware crashes, for cloud is duplicated across multiple material machines. In addition, it continues to labor as normal even if one or more machines go offline since multiple copies of the information are kept constantly [7]. Teeny and medium-sized projects with restricted budgets can fulfill cost savings and productivity rises by using cloud-based services to manage enterprises and make collaborations [10]. On the other hand, Cloud storage providers can differentiate themselves by offering services above-and-beyond basic storage that include integration with other cloud computing produces [11].

Besides, collaboration is defined as the mutual work of more than one person where the task is undertaken with a feel of shared aim and attitude that is heedful and responsive to the environment, Montebello [12]. Collaborative working is came from the concept of virtual workspaces, and is related to the concept of e-task [13]. Arguably, it system is an organizational unit that protrudes anytime when collaboration takes place, whether it is informal or formal, unintentional or

intentional [12]. Collaboration provides the traditional concept of the professional to contain any type of knowledge operator who intensively employs Information and Communications Technology environments and tools in their working practices [14]. Collaboration, in most organizations, happens naturally. Ill-defined task practices may make barriers to natural collaboration, while well-designed collaborative tasks systems not only conquer these natural barriers to communication, but also establish a cooperative task culture that becomes an integral part of the organization's framework [15].

## **2. Computer-supported collaborative learning environment (CSCL)**

Collaborative learning is a global concept for a variety of pedagogical approaches involving joint intellectual effort by learners, or learners and teachers together [16]. Specifically, collaborative learning is based on the idea that education is surely a social act in which the learners talk among themselves [10]. A group of learners engaged in collaborative learning works together to fulfill shared aims ([9]: p. 365). Furthermore, collaborative learning is based on the model that information can be formed within a population where members actively react by sharing expertise and take on asymmetry roles ([17]: p. 330). In addition, it involves the reciprocal engagement of learners in a arranged effort to solve the problem together, and leads to critical thinking, shared understanding, deeper level learning, and long-term retention of the educated material ([18]: p. 337). Knowledge construction promotes in a collaborative learning environment where learners communicate by sharing data in groups for solving given works ([19]: p. 216). Lehtinen et al. [20] discusses that preparing students for participation in a networked, knowledge society in which information will be the generality critical resource for social and economic development is one of the basic requirements for learning in future. CSCL is one of the most favorable innovations to improve education and learning with the help of modern knowledge and communication technology. CSCL is an emerging branch of the education sciences concerned with studying how learners can learn jointly with the help of computers ([21]: p. 409). Thus, computer-supported collaborative learning enables all learners to express themselves and make considerable contributions to the final work ([22]: p. 356). Besides, CSCL is as a dynamic, international, and interdisciplinary field of research focused on how technology can ease the sharing and creation of information and expertise during peer interaction and group education processes ([23]: p. 67). Online collaborative learning permits discussion to happen at greater depth where information can be constructed remotely ([19]: p. 216).

The primary purpose of computer-supported collaborative learning is to supply non-task situations that allow social, off-task communication (e.g. casual communication) and that ease and increase the number of impromptu encounters in work and non-work contexts during the inclusion of persistent presence and consciousness over time and space of the other members of the distributed learning group ([18]: p. 349). Furthermore, the field of it is increasingly becoming a trans-disciplinary field of inquiry inclusive educational technology, educational psychology, cognitive science, computer science, communication, epistemology, augmented reality, and virtual reality ([23]: p. 67). Overall, this scope draws heavily on knowledge theories such as social cognitivist learning and constructivist theories. With respect to social interaction that is main to collaborative learning, collaborative learning builds onto the cultural theory and socio theory where a causal connection exists among social interaction and personal cognitive change ([24]: p. 193 and [19]: p. 217).

Furthermore, computer-supported collaborative learning environments contain synchronous and asynchronous software, communication tools, and shared workspaces ([25]: p. 111). CSCL also contains reactive group learning, social construction of knowledge, deep learning, sustained critical dialog, and competency-based education. More specifically, CSCL is known as education based on the acquisition of information, skills, and attitudes, as well as to the application in an ill-structured environment [71]. Besides, CSCL focuses on embracing group education, constructivist learning, critical thought, and competency-based learning and confirms social interaction [26, 27].

Shukor et al. [19] discusses that previous studies found that learners chose to share and compare the available data rather than progressing to construct new information through collaborative discussions. It shows that learners resort to interact at the level of rapid consensus, where learners resort to accept peers' opinions not necessarily, for they agree with each other, only merely to speed the discussion. Besides, CSCL environments promotes their potential to support current insights in instruction and learning that depend heavily on the social interaction between the group members [27]. In addition, CSCL is significant to confirm the fact that utilize of technology in educational environments should be based on the prevalent learning theories [28], which in turn applies to computer-supported collaborative learning environment as a form of technology employment in the learning process.

Education according to situated educational theory, for instance, is not merely an acquisition of information by students; only rather, it is primarily an operation of social participation [29]. The important implications of this theory with regard to computer-supported collaborative learning environment are summarized in the fact that it confirms the social context and participation in education. While education according to Sociocultural Theory happens at premier, in a social form during the interaction with the social environment more than its occurrence in an individual way [30]. Implications of such theory are summed up in what is so called social situation and participation computer-supported collaborative learning environment. Among the applications of this theory are social networking, forums, RSS [31]. The hypothesis of Dialog education can be summed up in "education is embedded in dialogue among different cognitive regimes" statement [32]. Reliance on communication and interaction is the most significant implication of this hypothesis. Communication between learners and collaborative task are the most significant applications of dialog education hypothesis [31].

Many of the researches conducted in this scope showed that utilize of computer-supported collaborative learning environment was emboldening and effective in developing students' achievement and skills. Baharudin and Harun [33] aimed to identify the better pattern of interaction that occurs in computer-supported collaborative learning environment that helps to maximize learners' critical thinking skills and achievement. Results showed that computer-supported collaborative learning environment improved learners' performance and their conception in the "Programming Language Concepts and Paradigms" course. CSCL also amended their level of critical thinking skills. Mathee et al. [58] confirmed also that computer-supported collaborative learning can be effectively performed in an IS learning environment and can be used to fulfill specific aims apart from simply promoting the learning process. CSCL could develop students' communication skills; prepare learners for task environment, enable higher education institutions to share certain workloads and work effective to utilize of their scarce resources. Dewiyanti et al. [34] purposed to earn response from distance learners on their experiences with collaborative learning in asynchronous CSCL environments. Results showed that the distance students appreciated the opportunities to task collaboratively. They presented positive practices and were quite contented with collaborative

learning. Results as well proved that group show influences group operation regulation and group cohesion influences learners contentment with collaborative learning. Ada [35], confirmed that utilize of computer-supported collaborative learning environment created some good skills that supported learner-centered learning and prepared learners to be lifelong learners. Inuma et al. [36] presented that administering computer-supported collaborative learning improved learners' awareness in collaborative practices such as interpersonal practices, inquiry practices and group management practices, as well as CSCL raised their dependability level of computer skills.

### **3. Mobile learning (M-learning)**

M-learning is an expression that has been utilized widely in several places all over the world [72]. M-learning has been supported to be utilized in tertiary institutions because of a set of factors like the availability of mobile phones, their ability to motivate learners, and the freedom and privacy they supply to share data. It is defined as electronic learning that utilizes portable devices or learning connected to a portable device, Laouris & Eteokleous [28]. M-learning is fundamentally based on mobility of technology, mobility of students and mobility of education that augments the tertiary institutions [37]. Tertiary institutions are these days facing the reality of the speedy development and diffuse of mobile phones, which are considered one form of those mobile devices utilized for electronic learning all over the world. It is noteworthy that development has included a raise in both mobile phones speed and store capacity. On the other hand, the continuous decline in prices has resulted in the great diffuse of these mobile phones making them one major component of most students' daily lives. More specifically, mobile phones are not accessory anymore; they are incorporated like our wear [38]. Arguably, it is fact that mobile phones are fundamentally utilized for completely communication objectives. Besides, some lecturers have begun to consideration them as a core educational activity in tertiary institutions [37]. The number of those lecturers and learners who have begun to utilize them as an instruction or learning tool is growing extremely. Most learners have begun overcoming their difficulties related the place and time of sessions through the effective utilization of their mobile phones or what has been so called M-learning. Lecturers, on their turn have begun to consider seriously of providing their learners with the instruction materials and activities via their mobile phones. Thus, students have exceedingly accepted M-learning. Specifically, learning through M-learning is exceedingly accepted by the student community for its application in addition to its philosophy and standards [33, 39].

Furthermore, the instruction- learning materials should be re-prepared, developed, and carried out in a way that adapts this new type of education and makes it most effective. The improvement in technology utilized in today's mobile phones qualify them to be pedagogical as well as communicational tools. Besides to their major purpose, mobile phones, are these days utilized to send and receive pedagogical messages via text, voice or even forms [40]. In addition, mobile phones and consequently M-learning ease accessing various pedagogical resources on Internet and help developing and making interesting instruction content that can be utilized inside or outside schoolroom [41]. M-learning can deliver the right knowledge to the right learner at the right time better than any other learning/instruction technology yet designed [33]. In addition, learners' interest to utilize all available resources of M-learning via their mobile devices and Personal Digital Assistants (PDAs) to access data anytime and anywhere has as well played an important role in the success of M-learning prevalence [42]. In other words, M-learning not only fosters

the way we access data, but also helps students be innovative and kindly problem-solvers [43].

### 3.1 M-learning and E-learning

M-learning is a massive method for engaging students on their own terms and promotes their broader education experience because of its mobility quality and supporting platform. Thus, M-learning is considered merely an extension of electronic learning joint to mobile computing. Learners of M-learning should be aware of mobile devices' utility and specific restrictions when delivering M-learning quality, ([44]: p. 65). The development of electronic learning, as a new type of distance learning whose nomenclature is close to those of traditional learning, has promoted the diverse applications of M-learning. However, M-learning is a distinguish technology and has its own nomenclature that adopts expressions such as spontaneous, informal, situated, intimate, connected, and lightweight, while electronic learning utilizes different expressions like hyperlinked, multimedia, interactive, and media-rich environment, ([45]: pp. 1926–7). Laouris and Eteokleous [28] have presented **Table 1** below to contrast among the nomenclature of both expressions.

### 3.2 Rationale of M-learning

It is noteworthy that technology utilize in pedagogical environments must be based on the predominant educational theories and approaches [46], which is thus applied to M-learning as one form of technology utilize in instruction. For example, education, any education, according to Behaviorism, takes place while a conditional correlation is established among a particular stimulus and a specific response [47]. In other words, M-learning, applications of Behaviorism are limited to its major precept, which is stimuli and responses. That is, learners through M-learning are provided by the education content, the stimuli in this situation, while the attached tasks, short exams, and feedback are the learners' responses that follow. On the other hand, cognitive Approach concentrates on enabling the student to reorganize his/her cognitive structures in a task that allows him to process and storage newly acquired data that will be saved and recalled in future [48]. Thus, students should be provided in advance with the education materials and new information. The

E-learning	M-learning
Computer	Mobile
Hyper learning	Constructivism, situations, collaborative
More formal	Informal
Media-rich	Lightweight
Hyperlinked	Connected
Collaborative	Networked
Interactive	Spontaneous
Distance learning	Situated learning
Multimedia	Objects
Simulated situation	Realistic situation
Bandwidth	GPRS, G3, Bluetooth

**Table 1.**  
*Terminology contrast between electronic and mobile learning [28].*

availability of multimedia included in students' mobile devices will help them process, organize, storage, and recall the data they need anytime and anywhere. Situated Learning Theory hypothesizes that education is not merely a process of information acquisition yet firstly a social participation that seeks a resolution for a problem [29]. Therefore, an emphasis on making real social cases in which new information can be delivered to students provides them with a wealthy opportunity to simulate real life. Through the utilize of social communication and networking means available on mobile devices such as blogs, learning, groups, and discussions at task environment can promote and foster learning more than any other way.

Contextual Learning Theory blends modernistic developments of status-aware computing with instruction strategies that boosts situational and status-sensitive education [49]. Arguably, M-learning can make education contextual via specific practices based on mobile devices' technology that can bring real existence in front of students. A learner can administer the education context based education content, browse, and restore it whenever he wishes. Location-based learning theory aims to fulfill what is known as Just-in-Time Learning linked to the physical location in which the student lives. In other words, M-learning should account for the place of education where the student can be given a hand to acquire and study not any information but conceptual information [50]. According to the Cognitivist, education is an active, constructive, accumulative, and self-directed process that is dependent on the mental activities of the student [51]. Arguably, taking into regard all these points discussed previously, one can argue that M-learning, because of the sophisticated technology embedded inside, can provide such contextual, mental, social, and locative activities through micro learning all the day long and make the study process more self-directed and regulated (2011).

### **3.3 M-learning theoretical framework**

Today's mobile devices are various those ones that were common 5 or 10 years ago. Arguably, mobile phones each month get smarter and smarter. Learners of all kinds and fundamentally university students keep pace with all technological developments Included in these devices. These learners are more skilful in utilizing them than parents or grandparents. Besides, users of mobile devices can be directed to utilize them for pedagogical, as well as, for communication aims in a way that makes their study easier and more interesting. Learners that have investigated how lecturers can do so are many. Besides, learners that have checked whether mobile devices make an effect in learners' academic achievement are many, too. For instance, Jabbour [52] showed that 3G technology based-mobile devices when utilized for educational aims affected learners' attitudes. Learners could enjoy themselves and attempt a positive learning experience. Their prospects of mobile devices' effectiveness had a positive effect on their learning outcomes. While Dos [38] revealed that university, learners heavily utilized mobile devices. Learners' metacognition awareness and academic achievement were developed and improved because of these devices sets usage. Wang et al. [53] also concluded that M-learning activities could engage learners in the learning process much better than traditional ones. Learners changed into active students. They were intellectually, behaviourally and emotionally involved in their education works. Bidaki et al. [54] on the other hand proved that utilize of M-learning process had quite significant effect on both learners' self-regulation learning and academic achievement.

Nevertheless, other researchers found that utilize of M-learning was not always effective. For example, [47] also concluded that unexpectedly control group learners' achievement was better than the achievement of learners in the experimental group who were learning through mobile devices. No variation among learners'

extraneous cognitive load and germane cognitive load were found. While there was a variation among learners' mental load degree in favor of the experimental group. Kuznekoff and Titsworth [55] after examining the impact of utilizing mobile devices on learners' learning through video watching concluded that learners who were utilizing their mobile phones wrote down and recalled less information. The notes they took were few. Their achievement degree on the exam were lower than peers who did not utilize their mobile devices actively [73].

Thus, it is true that M-learning phones definitely influence learners' university life whether positively or negatively. Nevertheless, once they are utilized in the right way, they can influence interaction patterns of lecturers as well as learners. They can promote learning and teaching practice. Therefore, pedagogical, organizational and curricular factors affecting the adoption of M-learning in tertiary institutions should be accounted for as long as we wish to utilize them effectively. Students will be in danger and can be insecure to superficial learning if M-learning practice are not well designed. Besides, mobile phones might distract learners from learning and deteriorate the type of interaction among lecturers and learners, Handal et al. [56].

#### **4. Learning management systems (LMS)**

The incorporation of numerous Educational technologies in instruction have been widely confirmed for their potential to enrich, promote and extend learner-learning experiences, ([59]: p. 330). Therefore, pioneer tertiary institutions all over the world try to profit of these technologies as much as potential to convey information resources to both of the student and lecturer in least time, cost and effort, ([60]: p. 6). Nevertheless, without a favorable shift from the lecturer-centered education to student-centered education, this incorporation will remain worthless. That is, lecturer-centered education deals with technology as a complement to lectures to display the teaching content to the students while student-centered education believes in greater incorporation of technology into classroom and yields great gains in learners' achievement. Besides, the function of technology incorporation should modification the roles of both the lecturer and the student. It also should be utilized as experiential education activities such writing, study, analysis, and collaboration, ([61]: p. 14). One of these educational technology tools which has been eminent in the field of learning and technology incorporation is LMS. Iwasaki, et al. (2011:479) indicated that the issues, which pedagogues in general, have been facing for more than 15 years such the lowering academic and lowered motivation ability have led to the appearance and adoption of theses learning management systems to promote active learning not restricted to a specific time or classroom, communication among the lecturer and learners, and collaborative learning between learners.

A report by Durham College Leadership Team in 2015 has Confirmed that LMS refers to both software and web-based technologies that are utilized by lecturers and learners to access, plan, perform, complement, observe, and/or assess learning or to communicate about learning. Learning management systems are centralized, online platforms that commodity curriculum, and estimate delivery and reception, ([62]: p. 302). LMS is a highly developed style of distance learning because it provides a set of software tools that help to transfer and manage the education content [63]. Esther [64] emphasizes that learning management system as a teaching tool has been developed to control and regulate the administrative works of tertiary institutions and other organizations. Lecturers and instructors who utilize learning management system have the chance to share syllabus, course materials, notes, calendars, links, idea, and online assignments [65]. One of the most public LMS is Moodle, which favors collaborative education, enabling interactions with resources

from different media and between all lecturers [66]. Much web-based learning which has the ability to address the needs of end employee and student is facilitated through learning management system like Moodle, Blackboard, and Sakai [67, 68]. Moodle for example, is equipped with all aspects of online learning like the ability to store the education resources, connection and activities that are based on certain education topics [69]. When utilizing Moodle, persons or institutions can download the system free of charge and the downloading comes with permit (William, 2006). Nordin [70] also concluded that the motivating features of Moodle contain downloading and sharing of files, developing content in HTML, discussions or forum, questionnaire, grading, journal writing and other features, which are seen as significant to the development of online learning. In addition, Moodle is characterized through its site administrator and management tools; a variety of utilize management choices, containing multiple authentication choices, online profile building. Role-based tasks and licenses; enrollment and registration tools and plug-ins; and course administrator and communications choices, containing chat, questionnaire builders, forums, wikis, are also within the difference features of Moodle, (Monarch Media, Inc., 2010).

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