Sms As An Evolving Digital Culture For Learning

M. Sripriya, Dr. P.E. Thomas.

Full time Research Fellow, Department of Communication and New Media Studies, Bharathiar University, Coimbatore, India; Dr. P.E. Thomas. Associate Professor & Head Incharge, Department of Communication and New Media Studies, Bharathiar University, Coimbatore, India; Email: primegha@gmail.com

ABSTRACT: Gone are the days when SMS was a mere Communication tool. Texting has emerged as one of the most popular digital cultures among youth as it has become an integral part of the day-to-day activities, especially the teens. Though, SMS serves mainly for communication. It also has its own potential in the field of education. Numerous studies support the effectiveness of SMS in the teaching learning process, promising more efficient instruction when it occurs as a blended learning approach. SMS as a unique digital practice could have an encouraging effect on the students when practised. Within this framework it is crucial to understand the potential of SMS in the field of Education. The paper characterizes the benefits of SMS technology as a tool in teaching and learning process. Next it highlights the benefits of SMS in terms of Informal learning, Mobility (Learning on the go) and Collaborative learning. It also speaks about its limitation in terms of its Format, Economy, and Operability of network providers. This paper seeks immediate attention from the academicians and policy makers to adopt this technology to get into the new arena of learning.

KEYWORDS: INFORMAL LEARNING, MOBILITY, COLLABORATIVE LEARNING

1 INTRODUCTION

"The first short message was sent in December 1992 from a Personal Computer (PC) to a mobile phone on the Vodafone GSM network in the UK" [1] Since its joyful inception of wishing "Merry Christmas" in two words, within twenty plus years, its permeation is stunning the universe. No other communication technology has surpassed such a prolific growth as such as the SMS technology. SMS is considered as the king of mobile messaging. The Portio Research (Febuary 2012)[2] reported that 7.8 trillion SMS were sent in 2011. SMS traffic was expected to reach 9.6 trillion in 2012. It also propounded that by 2013 worldwide SMS revenue is forecast to break the USD 150 billion mark for the first time next, and will continue to grow for the next two years. Informa Telecoms & Media (May 2012)[3] also forecasts that mobile operators will generate a total of US$722.7 billion in revenues from SMS between 2011 and 2016.

SMS for Learning

SMS-Learning is a sub-set of m-learning. M-learning refers to the use of any of the mobile technologies for learning. SMS learning refers to the use of SMS for the purpose of learning. Short Message Service (SMS) is a user-friendly and an inexpensive function of mobile devices that could be a capable medium for learning and teaching [4]. SMS as an application is used among students to send and receive text based messages quickly at any time [5]. Lee et al.,[6] described SMS texting as one of the most known mobile phone application among cell phone users, as 70% of cell phone users use short message service. They found that many universities and schools across the US started to implement SMS systems to send alerts or messages in the form of text to their students, staff, faculties and parents. The concept of SMS learning is understood for this article as learning facilitated by the SMS technology. There are much attention being paid to SMS-learning by the educational institutions. But there is a lack of wide application of SMS among Educational Institutions in India. With the increasing attention being paid to the role of mobiles in the educational sector in developing countries, there is need at this juncture to take note of the educational benefits that SMS offer, when provided as a supplementing tool for education. This paper is structured as follows. First, it characterizes the benefits of SMS technology as a tool in teaching and learning process, next it points out examples of SMS learning in scaffolding Informal learning, Mobility (Learning while moving) and Collaborative learning. Then it deliberates about its limitation in terms of its Format, Economy, and Operability of network providers. And to conclude, this paper seeks immediate attention from the academicians and policy makers to adopt this technology to get into the new arena of learning.

2 Characterized benefits of SMS-learning in the Educational sphere

SMS is the most prevalent digital culture among youth. When it used for teaching learning process it has arrays of benefits. SMS facilitates a new mode of learning where it is characterized by Ubiquitous & Flexible learning, Personalized learning, Convenience, Mobile & portable, Reachable, Interactive, Contextual & Situated learning, Learner-centric, Connectivity, Constructivism, Community-centered, Informal, Accessible, Complimenting, Universal, media rich and Economic.

2.1 UBIQUITOUS AND FLEXIBLE LEARNING

The ubiquitous and the flexible nature of SMS allows learner to learn anywhere as just in time learning. For example, sudden change in the class schedule, cancellation of classes, an emergency meeting etc. Learners can send and receive SMS in real time anytime of the day and that can lengthen the learning space and give more flexibility to the learning process beyond the classroom hours[7]. Lim, Fadzil and Mansor (2011) found that 95% of students involved in their study agreed that text messaging allowed them to learn anytime and anywhere and they expressed that they would like have this kind of SMS-learning for other courses too. Besides it is much useful in emergency communication.

2.2 Personalized learning

SMS learning enhances personalized learning. Most of the teachers take effort for the individual concentration of the students and SMS promises great potential for personalization. The benefits of being able to learn on the move at any place underpin an approach toward a flexible as well as personalized learning environment [8]. Also students tend to Perceive the received SMS "simultaneously as personalized and as something shared with fellow students"[9], [10]&[11]. Moreover, in providing prompt feedback, m-learning maintains the appeal of learning and provides a motivating factor that can at

times be lacking in traditional modes of education [12], [13], [14].

2.3 Convenience

SMS supports for the convenient manner of learning. Whenever a learner feels to learn he can learn. But in a formal learning setting they have to fix themselves to a particular timing and also to a particular person. Though at times they are not in mood to listen, they adhere to the policies of the formal setting of learning. But SMS as an educational delivery tool makes it on the convenient time of the learner, enhancing both physical as well mental presence of the learner. SMS is a convenient medium and learners can learn on their convenient time. The convenience offered through receiving small size of educational content on easy to access and easy to use mobile phone, rather than using paper-based educational materials distributed in classrooms have also contributed in enhancing students learning [15]&[16]. Learning in smaller chunks has support from learning psychology and short-term memory literature [17]. Further more, it allows students spare time in spending on learning [18].

2.4 Mobile & Portable

The mobility and portability of the technology provides an unique opportunity for students in engaging learning. They can utilize their fragmented time in learning. For example, during journey, waiting for a bus at a bus stop, at restaurant, to meet somebody etc. Educational SMS permits students to learn on their own pace, away from traditional classrooms [19]. It also provides an opportunity to learn while on the move [16] & [20]

2.5 Reachable

Reaching through SMS is easier than any other mode of communication. Even when the mobile is switched off the educational contents can be delivered via mobile. Moreover it is quicker in its reach than calling, mailing, faxing, courier and posting. It reaches the learner within no matter of times. It offers more benefits to distance education students[21]& [22] people in rural areas[23]& [24], non-regular group of students[25], for hard to reach population such as young offenders, traveller communities, and disengaged teenagers [26] and also for difficult geographic location.

2.6 Interactive

Communication and interaction is an important aspect in learning and teaching. SMS allows for greater interactivity in and outside the classroom and in formal and informal setting. Only through interaction knowledge will be shared and gathered. SMS is a great platform for the interaction [27], [28] & [29]. It paves way for two way interaction and to engage in meaningful academic activity. It can be used peer-to-peer, in groups and create and enhance in-class discussion [30] & [31], to send quizzes to students [32].

2.7 Contextual and Situated communication

Context and the occasion are two important aspects for any kind of communication. SMS learning can happen according to the context as well as the situation of the student. When these two are addressed properly learning becomes meaningful and further it promotes for lifelong learning to take place. Sharples et al., 2005, points out the feasibility of m-learning in lifelong learning.

2.8 Learner-centric

The personalization of the technology leads to learner centric learning where every individual gets a chance to be centered based on his need. On being learner-centric SMS enable students to customize the transfer of and access to information in order to build on their skills and knowledge and to meet their own educational goals [33].

2.9 Connectivity

SMS communication helps in bringing a feeling of connectedness among students. Though a teacher tries to provide individual concentration for all the students, it is not possible with the reluctant learners. In those case when SMS is used it creats a feeling of oneness among the students. Text messages are a form of gift, in that they have value, which 'is connected with the giver, the recipient, and the context in which the exchange takes place, and is embodied and retained in material form'[34].

2.10 Constructivism

SMS learning empowers students to actively get involved in constructive learning,   where students construct meaning and learning. It breaks the conventional method of teaching merely by instructing. It thus represents learning that is not 'just-in-case', education for the sake of producing a bank of knowledge, but rather represents learning that is 'just-in-time', 'just enough', or 'just-for-me' [35] as a facilitator of learning, m-learning goes beyond an emphasis on the possession of information to enabling learners to find, identify, manipulate, and evaluate existing information [36].

2.11 Community-centered

SMS facilitate community-centered learning. meaning learning that the learner deems valuable because of its relevance to the surrounding social context; m-learning could be used to achieve socio-economic goals that respond to problems, such as problems related to health or family care confronting the surrounding community [33].

2.12 Collaborative

It facilitates sharing of thoughts and formation of groups. Mobile phones allows for collaborative learning and continued conversation despite physical location and thus advance the process of knowing, which occurs through conversations across contexts and among various people. Via mobile technology, learners engage in conversation whereby they resolve differences, understand the experiences of others, and create common interpretations and shared understanding of the world [37].

2.13 Informal

SMS learning is not adhered to formalities in engaging the learners for learning. It supports flexibility and can also happen outside the class room setting and does not have to follow the common rules.

2.14 Accessible

Anybody can receive and send SMS. The benefit of increased access afforded by m-learning is particularly relevant in the developing country context. The capital of investment of SMS system is negligible, unlike other ICT interventions students buy or already own the necessary hardware. SMS requires only basic handsets to operate. Thus SMS as an educational

delivery tool extends the accessibility of education through decreased cost and increased flexibility in enhancing the effectiveness of administration and learning among educational sector.

2.15 Complimenting
SMS as an educational delivery tool is complimenting or supporting the mainstream learning[38],[22] & [25]

2.16 Universal
It is practised all over the world. For those who are in geographically dislocated and where environmental and infrastructure challenges hinder other modalities, particularly e-learning and m-learning presents great opportunities. It has a high acceptability, coverage and ownership. It is socially inclusive. It gives a sense of local 'ownership' and control.   M-learning exerts an impact on educational outcomes by increasing access, it represents a continuation and improvement of distance learning through increased utility and applicability [39].

2.17 Economic
It is more economical than any other technology. Visser and West (2005) suggest that it can increase access in those situations where cost represents a significant barrier to learning. SMS allows a method of educational delivery that could be more cost-effective than e-learning methods.

2.18 Media richness and modernity
In addition m-learning presents an appeal simply because the use of mobile technology in and itself presents something new and exciting for a great array of learners [41]. SMS as a medium makes one coolly involve in looking or checking for the message and it is become the habit of the mobile users to check whether they received any message. As a whole SMS learning offers characterized benefits such as Ubiquitous and flexible learning, Personalized learning, Convenience, Mobile & portable, Reachable Interactive Contextual and situated learning, Learner-centric, Connectivity, Constructivism, community-centered, Informal, Accessible, Complimenting, Universal and Economic. It is personal, mobile and flexible and is low-tech, accessible, universal and scalable [42] . Likewise, mobile technology is increasingly personal, user-centred, mobile, networked, ubiquitous, and durable [33].

3   SMS IN SCAFFOLDING LEARNING
When a person is learning in a formal learning setting there are certain limitations. For example the learner is fixed to place, time and person. SMS when used for learning it overcomes these limitations and provides an enriching experience to the learner. This section engages in how SMS is scaffolding informal learning, learning on the move and collaborative. This paper high lights examples for these three criteria of learning because all the three are not practised in a formal class room atmosphere.

3.1 Learning in an Informal context
Informal learning is the learning that takes place outside a formal setting. It's the learning that happens at any of the time – that includes situations where the learner determines some or all combinations of the process, location, purpose, and content and may or may not even be aware that instruction has occurred [43]. The Information and Communication Technology for Development (ICT4D) program of the International

Development Research Centre (IDRC), Canada, had supported around 20 projects based on several themes such as livelihoods, poverty reduction, health, education, the environment and disasters. Ahmed T. Rashid and Laurent Elder[44], explored the development role of mobile in education, considering researches carried out in Asia called PANDORA (Pan Asia Networking Initiative on Distance and Open Resource Access). Baggaley & Belawati in [44] in the project MIND tested the Viability of Mobile SMS Technologies and examined the socioeconomic and gender based factors that motivate or hinder cell-phone subscribers to use SMS for non-formal education. It surveyed 123 ALS students (out of school youth and adult learners) in Manila. The study depicted that 81% of the respondents allocated at least half their pre-paid cell-phone credits to SMS usage. The majority of the respondents were willing to learn through SMS and they loaded credits to learn through SMS. The content of learning was developed on the basis of the needs of the students. Findings of the project indicated that overall the participants expressed curiosity and excitement about the prospect of using new SMS methods to study. Another project called Technology-Supported Distance Education [45], explored the potential of ICTs and distance non-formal education to achieve the mandate of the Water, Sanitation, and Hygiene (WASH), in Manila. SMS technology, among other ICT tools, was used to enhance the delivery of WASH information through distance non-formal education strategies. The project resulted in a more engaged learning experience and contributed to improved lives of the targeted people in terms of empowerment of the community. Besides, two major projects were conducted in Philippines and Mongolia [46], to examine the potential of cell phone and short message service (SMS) techniques, for formal and nonformal education. The study experienced positive reactions from students and trainees for nonformal education [45]. Besides, Botturi et al., [63] used SMS-based, location based game called City Treasure to support out door engaging informal learning experiences among primary and early secondary school children on urban, cultural heritage, both artistic and civic. These works illustrate that SMS is a viable technology for enhancing informal learning among learners.

3.2 SMS Technology and learner mobility
The traditional class room setting is fixed and it is static. It never allows learner to learn with a movement. It never allows a student to walk in the classroom. But SMS allows one to learn on the go. He may be jogging or walking, on the treadmill, travelling in bus, etc. But mobile learning endorses learner to learn while he is moving from one place to other. Alexander [47], argued that as a result of the untethered, wireless, and advanced features of mobile phones, learners have turned into nomads. Learner nomads are spending time within the constrained environments of educational institutes using their portable phones *and* they are engaging almost as much in different types of m-learning activities outside of the classroom [48]. As a result of m-technology, instruction in the future is more likely to be conducted anytime and anywhere with any resource regardless of location. Thus, technologies and learners are simultaneously becoming more mobile [49]. In England, a university[50] applied the use of SMS in their lesson which requires students to visit museums (Tate Modern) then engage in discussions by sending SMS to each other. In this study researchers show that students are adapted their seminar groups quickly .This study also discuss the advantages

and the importance of engaging in social activities with the support of mobile technology. Another example [51] of SMS usage for learning was in 2004 Olympics, where tourists were sent Greek vocabulary via SMS. It aided the tourists with just-in-time learning. Besides, *MyArtSpace, Frequency 1550, National Museum of Natural Science[52] are other* three examples that illustrate how mobile and wireless technologies put more control in learners' hands; enabling them to access, aggregate, create, and share information in a variety of media formats across space and time while moving. These examples showcasts that mobile learning and SMS can foster on the go learning, when somebody is moving from place to place.

3.3 Collaborative learning

Mobile text messaging provides a novel opportunity to engage learners in collaborative learning experiences. In a traditional learning environment there are only minimal chances for collaborative activities. It is a mere instructional media where the tutor delivers his mode of course. At the same time, mobile technologies grants for interaction, accessing, discovering, discussing, sharing and collaboration. Nadire Cavus [53], implemented New Mobile Technologies and Environmental Education System (NMobTec-EnvEdu) designed for m-learning environments. The NMobTec-EnvEdu system provided environmental education in a collaborative framework to undergraduate students through the Internet using mobile phones. The study investigated the results of integrating mobile technology with e-learning and traditional classroom environments; specifically, the use of mobile telephones and data services (i.e., WAP, SMS, MMS, e-mail). The evaluation showed that NMobTec- EnvEdu was an useful m-learning environment and it adds value to the anytime and anyplace flexibility of m-learning. Liu et al., [54], implemented a web-based collaborative learning scheme in Taiwan among undergraduate class based on activity awareness carried out through mobile phones. The proposed mechanism automatically sends SMS messages on a GSM network, based on student identity and learning activity. Experiments demonstrated that the collaborative learning context through mobile phones significantly increased student participation in learning activity and improved students learning performance. Peter et al., [55] used mobile text messaging to engage learners in an interactive role-playing game based on water cycle and found that SMS is a viable and entertaining alternate to lesson based teaching for appropriate topics. These instances demonstrate that SMS encourages collaborative learning. It cherishes interaction among students, teachers and between communities and also promotes conversation across space and contexts.

4 Limitations of SMS technology

Though there are numerous advantages there are some disadvantages oriented with the SMS-learning.

4.1 It is only a complimenting tool

Despite that many studies showed that educational SMS would enhance students learning, SMS alone will not be an only medium of learning. SMS applications are a perfect fit as an additional support medium. A study by [56] & [57], depicted that depending solely on the SMS technology to deliver educational content would only be effective for short term learning but not for long term one. SMS with its 160 characters cannot become a mainstream media in teaching. It could be provided as an extention of e-learning and supportive tool in main stream learning.

4.2 Illiteracy of populations:

To use SMS for learning, people should be able to write and read. In order to reach larger segment for the creation of awareness or any other form of learning this is a barrier. In India there are several states each one practicing its own language and this diversity has resulted in transliteration (writing in English language with their local dialect). Also it becomes a problem where there is a high level of illiteracy.

4.3 Limited input capabilities and user interaction:

Mobile phone keypads are very restrictive for typing textual information, and this prevents one from quickly entering a large quantum of data. Some of the drawbacks were related to the limited capacity of the mobile phones in terms of small screen size and keyboard [58] and limited storage capacity [57]. Complex multi-cycle interactions are almost impossible to implement in SMS-learning. The availability of the only "raw" text (no style or decoration techniques available) could also be a problem to attract users attention on important points. Students found SMS learning as plain, small in size, lacking colour and text types [38]. Students also reported some negative issues related to the SMS technology i.e., the limited characters in a single SMS message [57] and the lack of pictures and visual stimulation [19] & [58]. In addition, students have encountered some difficulties retrieving old educational messages on their phones [57]& [58]. Some students reported that "messaging could be a source of annoyance and distraction"[57].

4.4 Interoperability between operators:

When SMS is sent between the students of the same network provider, technical issues don't emerge. When there is a need to reach the larger segment, it becomes a costly affair depending on the tariff charges of the individual network provider what the student has. When one cross from one state to another state it attracts Roaming charges which are higher than the normal.

4.5 Lack of standardization for application development:

There are no standardized platforms of programming languages and libraries to develop SMS applications. There are few free/open-source environment and few commercials ones, but the knowledge required to develop those applications is very specific to each platform [59] &[60].

4.6 Infrastructure requires for hosting and deployment of SMS services:

Each SMS service needs its own infrastructure. Due to interoperability problems, and lack of widely available and affordable hosting services, the set up and deployment of a SMS service requires a quite a heavy infrastructure (a computer to host the application, a GSM modem a GSM subscription, electricity etc.,)

5 Conclusion

SMS is more than just a passing fad, it is a communication medium integral to young people's lives [61]. Simplicity of use, relatively low cost and the asynchronous nature of SMS, which gives people time to reflect before responding to a message,

are undoubtedly part of its phenomenal success. Literature shows that though there are certain limitations SMS-learning is very appropriate educational delivery tool for the developing nations. SMS could be effectively used in administration communication, learning support tool for both formal and informal learning, collaborative learning and also can be used for life-long learning. It reaches larger segment simultaneously than by calling. Literature shows that there are more of advantages than disadvantages in using SMS for learning. M-learning is finally being embraced by many of those concerned with effective training in the modern environment. It is valuable to audiences who are remote and for learners who need information quickly and easily. New technologies will create new audiences and new opportunities for learning. Generally low literacy, poor health care, low per capita income, and other infrastructure problems are the impedances that inhibit to the development of the society. If only the mobile phone and associated wireless technologies could be used to tackle one of the problems, namely, literacy, it might have a cascading effect on the economic development of the country. Learning is in fact personal and contextual and it needs to be facilitated by relevant, reliable, engaging and cost effective activities and tools. SMS is technological and sociocultural practice by which individuals are empowered. It doesn't mean that SMS will replace other modes of learning, but when used as an additional support media and as an extension of e-learning it can become increasingly important to the student who can compress time and space. It is high time to think about pedagogical rethink of the way we educate "digital natives" to include the kind of learning activities that excite them and from which, they may indeed learn. So, we must prepare our learning strategy for the learning devices of the next decade. The academic institutions can consider in applying SMS for learning. Jeff Hawkins, inventor of the Palm Pilot, in [64] said that, *"one day, 2 or 3 billion people will have cell phones, and they are not all going to have pcs … the mobile phone will become their digital life". And after all, now 'The message(SMS) is a medium of learning".*

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