SUSTAINABLE DISTANCE EDUCATION THROUGH MOBILE LEARNING: A CASE STUDY IN MULTICULTURAL CONTEXT

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***Abstract*:** This paper addresses three important issues: How technology does assure sustainable distance learning for multicultural group of students?; What is the relevance of mobile learning in context of developing countries with multicultural social environment?; and How does mobile learning confirm improved learning solution for different levels of students?. This paper reports the impact of mobile learning on distance education in multicultural environment. The emergence of learning technologies through CD, internet, and mobile is increasingly adopted by distance institutes for quick delivery and cost-effective purposes. Their sustainability is conditioned by the structure of learners as well as the teaching community. The experimental study was conducted among the distant learners of Vinayaka Missions University located at Salem in India. Students were drawn from multicultural environment based on different languages, religions, class and communities. During the mobile learning sessions, the students, who divided on language, religion, class and community, were dominated by play impulse rather than study anxiety or cultural inhibitions. This study confirmed that mobile learning improved the performance of the students despite their division based on region, language or culture. In other words, technology was able to transcend the relative deprivation in the multicultural groups. It also confirms sustainable distance education through mobile learning and cost-effective system of instruction. Mobile learning appropriates the self-motivation and play impulse of the young learners in providing sustainable distance education to multicultural social groups of students.

***Keywords*:** Distance Education, Mobile Learning, Multiculturalism, Sustainability

I. INTRODUCTION

Mobile learning is increasingly applied in distance education. It focuses on learning across contexts. It is concerned with portable technologies and mobility of the learner. M-learning is accessible from virtually anywhere, which provides access to all the different learning materials available. It is also collaborative and sharing. It is almost instantaneous among everyone using the same content, which leads to the reception of instant feedbacks. Studies have been conducted mostly in developed countries in this case [1]. Right from the second generation of mobiles, SMS text messaging became possible initially on GSM networks and eventually on all digital networks. Mobiles are evolving into platforms for collaboration, knowledge access and performance support. Mobile phones deliver learning materials whenever and wherever the learners needs arise. Currently, mobiles have advanced features like e-mail, Internet and e-book reader capabilities, and a built-in full keyboard or external USB keyboard and VGA connector. In other words, it is a computer, communication device and learning device on the hand. However, the main challenges regarding mobile deployment include screen size, battery life and security. Since the internet becomes both personal and portable, learning will move more and more outside of the classroom and into the learner's environments, both real and virtual [2]. The emergence of web based instruction for mobile learning assists and expands the learning syndrome of distance learners of developing countries as well [3].

II. MOBILE LEARNING IN DEVELOPING COUNTRIES

A. Scope and Relevance

The relevance of mobile learning in developing countries is as significant as in developed countries [4]. It is believed that mobile learning in developing countries is not different from developed countries. The use of wireless technologies can help to increase collaborative learning and communication, as well as independent learning among learners, because of the mobility and capacity of the devices [5]. There is an increasing and unprecedented adoption of wireless technologies in developed as well as developing

countries [6]. Using wireless technologies in education may contribute to combating the digital divide in developing countries, as this technology is generally cheaper than desktop computers, particularly mobile phones and PDAs [7]. In developed as well as developing countries of Asia, cell-phone usage for learning has proved to be beneficial for both instructors and learners, not only as a cost-efficient method, but as an effective educational tool [8]. Studies have also been undertaken to reveal the prospects and problems in e-learning initiatives [9]. These problems include, lack of proper course monitoring; lack of adequate feedback to students; poor instructional design; poor training for instructors; lack of necessary technology; lack of Internet accessibility; lack of online resources; high costs; and lack of credibility for online degrees [10]. Mobile learning shows the significance of collaborative learning as well [11].

B. Technology for Sustainable Distance Learning

Sustainable distance learning can be gradually achieved by expanding mobile learning. Mobile technology greatly influences human interaction in general. It facilitates and carries communication of human voice with ideas, emotion, feeling and knowledge. It binds human beings transcending place. It gives freedom from inter-subjective inhibitions which normally occur during face-to-face in-person communication. It provides an expansion of two different worlds at a time. An individual may plunge into subjective world through the entertainments provided by the mobile device. Or an individual can use it for effective inter-subjective communication. But the latter occupies more space in contemporary civil society. People want to talk or communicate more with fellow beings. The geographical limits do not adversely affect their aspirations. The technology for human interaction also facilitates learning process. The students of open learning and distance education are in this context greatly benefited.

C. Multiculturalism in India

India is a nation of great cultural diversity reflecting in different types of social groups and communities. They are defined by language, religion, sect, race or caste. The Indian nation-state is socially and culturally one of the most diverse countries of the world. It has a population of about 1029 million people, currently the second largest – and soon to become the largest – national population in the world. These people speak about 1,632 different languages and dialects. Among them, 21 languages have been officially recognized and placed under the 8th Schedule of the Constitution of India [12]. In terms of religion, about 80.5 percent of the population are Hindus, who in turn are regionally specific, plural in beliefs and practices, and divided by castes and languages. About 13.4 percent are Muslims, which makes India the world's third largest Muslim country after Indonesia and Pakistan. The other major religious communities are Christians (2.3), Sikhs (1.9), Buddhists (0.8) and Jains (0.4). The Constitution declares the state to be a secular state, but religion, language and other such factors are not banished from the public sphere. In fact these communities have been explicitly recognized by the state. Several studies illuminate the multicultural aspects as well as problems in Indian society [13]. The problem of backward classes and the issue of protective discrimination are also under critical analysis [14].

D. Higher Education and Technology in India

Higher education in India is one of the largest in the World. In terms of population, the demand for education at primary, secondary and higher levels is increasing. However, the government alone could not meet the demand. Private institutions do share the responsibility. Number of institutions is increased every year. But the enrollment of students in higher education stands at 6 percent only. This figure is far behind in comparison with the developed countries.

Programmes on experimental basis have been initiated at regional as well as national levels in India. The following programmes can be mentioned on this line: Headstart, a computer assisted education programme in Madhya Pradesh; Rural Relations, a programme to prepare children from rural areas for life and work; Goa computers in Schools Project (GCSP); nationwide project Shiksha, a computer literacy programme with Microsoft; Community Learning centres in Karnataka; mobile classrooms and IT buses in rural Maharashtra. Of course, they were implemented by government with the partition of private sector and NGOs. In 2004, India launched the first nationwide exclusive educational satellite. Edusat is an interactive satellite-based distance education system for the country that provides a total of 74 channels. The limitations of the existing telecom infrastructure are such that reaching all communities is difficult in the Indian context. The population of India resides largely in villages where the digital divide is real. Nevertheless, ICT can provide effective tools and techniques for a variety of applications in rural scenarios [15].

Distance education in India had its genesis in the early 1960s. It tries to meet the growing demand for higher education [16]. Since then it has expanded rapidly and provides higher education to over 2.8 million students. Each year, nearly 1.5 million students register for various courses in distance education. The Consortium for Educational Communication (CEC) and the National Programme

on Technology Enhanced Learning (NPTEL) assist in applying ICT in higher education. Radio, Television, and web-technology are adopted for instruction. Mobile learning is getting momentum in Indian universities. The introduction of 3G service is a positive input in this direction.

III. STUDY SETTING

A. Aims and Objectives

This experimental study has been conducted among the distant learners of the Vinayaka Missions University located at Salem in India. Distance education in the university was started in 2005 with the objective of widening access to higher education for diversified learners at national levels. The Directorate of Distance Education has seven Schools of Studies. The School of Social Sciences offers courses through its study centres. Self-learning materials are delivered to students in the form of printed books and CDs. An automation system has been developed to facilitate the admission and examinations.

B. Target Group

This experimental study has been conducted on the third year students studying HEP (History, Economics and Political Science). The age of group of students ranged from 21 to 26. The experiment was conducted among 120 students who studied this program. They have different linguistic and cultural background. Among the 120 students 12 students were selected for the experiment of mobile learning. Among the study group 10 per cent was used as sampling for mobile learning. These 12 students were selected from different parts of India representing different social and linguistic communities. The duration of experimental study continued for four months prior to the term-end examinations.

C. Profile of the Study Group

Since the distance mode of instruction has no territorial limitations, students were enrolled for this academic program all over India. They hailed from different linguistic and cultural environment. The rural and urban ratio was 36 and 60 respectively. 4 students were drawn from hill area. The age group from 21 to 26 years covered 90 percent of the group. The following table shows the profile of the study group.

In India, the multicultural identity of an individual is defined by language, religion, class and community. Sampling for the study was based on these criteria. The study group was composed of multi-linguistic background. 10 students were drawn from each major linguistic group of India. In this way, 120 students were selected from 12 linguistic groups. The following table shows the composition.

Table 1.
Profile of the study group

S.No	Particulars	Numbers
1	Students selected for experiment	120
2	Male	60
3	Female	60
4	Rural	36
5	Urban	60
6	Hill Area	4
7	Students who speak Hindi in addition to their mother tongue	46
8	Age Group (Below 21)	20
9	Age Group (21 – 26)	90
10	Age Group (Above 26)	10
11	Mobile holders (general)	92
12	Mobile holders (with internet facility)	28
13	SMS sent per day (average)	6
14	SMS received per day (average)	3

Table 2.
Linguistic background of study group

S.No	Language	No of Students
1	Tamil	10
2	Telugu	10
3	Malayalam	10
4	Kannada	10
5	Oriya	10
6	Hindi	10
7	Gujarati	10
8	Marathi	10
9	Bengali	10
10	Punjabi	10
11	Kashmiri	10
12	Urdu	10

Apart from the linguistic background, the religious background was also taken into consideration when selecting the students for the study. The religious background of the study group is as follows:

Table 3.
Religious background of study group

S.No	Religion	No of Students
1	Hindu	72
2	Muslim	18
3	Christian	16
4	Sikh	6
5	Buddhist	4
6	Jain	4

In India, an individual identity is also based on class and community, besides, language and religion. It is more important to avail the benefits out of the policy of protective discrimination of government. The composition of class and community is as follows:

Table 4.
Class/community background of study group

S.No	Class/Community	No of Students
1	Scheduled Caste	12
2	Scheduled Tribe	6
3	Backward Class	72
4	Upper Class	30

IV. METHODOLOGY AND ANALYSIS

A. Successive Steps

Successive steps were initiated in m-Learning. These included content preparation, delivery mechanism, reception and study, answering questions, discussions, etc.

The graduate program of HEP was descriptive and theoretical free from practical courses. The 'HEP' is the abbreviated form of History, Economics and Political Science. The third and final year program consists of five courses, namely, History of Europe, History of China and Japan, Economic Thought, Public Policy, and Local Governments in India.

B. Content Preparation

Among the five courses, one course, namely, public policy was selected for this experiment. The self-learning material of this course was organized in twelve lessons. The task of each learner was to prepare question-answer format of content for one lesson only. In other words, each learner had to prepare one lesson and received eleven lessons from other learners. In this way, all the twelve learners prepared and sent the contents to their fellow learners. A teacher facilitated the students in preparing the question-answer format. An example is as follows:

Program: HEP – Third Year

Course: Public Policy

Lesson No. 5: Policy Making Process

Question No. 3: Who are the official policy makers?

Answer: Official policy makers are those who occupy the formal offices prescribed by the government. They include members of the legislature, local councilors, ministers, and bureaucrats.

Question No. 4: What are the four important Cabinet committees for policy making?

Answer: They are political affairs committee, economic affairs committee, committee on parliamentary affairs, and appointment committee.

C. Delivery Mechanism

Smartphones and iPhones were used for delivering the content preparation. The prepared contents were sent as SMS and word format. Discussion forum was encouraged after sending the content preparation. The student who prepared the content was also responsible to test the other learners by asking questions and to evaluate the answers received from others. It had a double function. The student not only learned but also taught and examined the fellow learners. Official instructions and formal messages were not used in the discussion forum. The discussion and chats were voluntarily initiated by students themselves with an informal mode of approach. Play impulse rather than study anxiety was noticed in the discussion forum.

V. RESULTS AND FINDINGS

A. Impacts on Students

Among the 120 students, 12 students were experimented with mobile learning practice. The remaining 108 students were trained in conventional teaching methods, that is, counseling sessions at study centres approved by the university. The average score of the study groups in the previous examination was 62 percent. After the experiment of m-Learning, the score of the experimental group was increased to 72 percent.

By the time, the average score of control group who followed the conventional counseling sessions was increased to 64 percent. The mobile learner scored higher than the conventional learners. It should be noted that the experimental group of the 12 students were drawn from 12 different linguistic groups.

The following table shows the study impact on both conventional learners and mobile learners.

The major advantage for the mobile learners was the continuous learning efforts adopted by way of self-motivation and play impulse. In the case of conventional learners, their learning was limited to six weeks. For the remaining period they had to undertake home study. In the case of mobile learners, they had the opportunity of continuous discussion and chatting with their fellow learners in view of term-end examinations.

Table 5.
Impact on mobile learners

S.No	Particulars	Numbers
1	Total number of students	120
2	Conventional Learners	108
3	Mobile Learners	12
4	Total lessons	12
5	Content sent by each mobile learner	1
6	Content received by each mobile learner	11
7	Average score of the m-learners before experiment	62
8	Average score of the m-learners after the experiment	72
9	Average score of the control group before experiment	62
10	Average score of the control group after experiment	64

Table 6.
Success and failures

S. No.	Exercises	Prepared	Delivered	Failures
1	Content Preparation	12	12	Nil
2	SMS notification	120	102	18 not reached
3	Questions	120	114	6 not reached
4	Answers	104	104	16 not prepared
5	Discussion	3 rounds	10 participated	2 not participated

B. Reactions of Teachers

The support for mobile learning showed a mixed trend among the teachers. Among the 10 teachers who taught this program, 4 teachers did not support the application of mobile learning and 2 teachers directly supported the use of mobiles in learning. The remaining 4 teachers supported mobile learning as an additional way of learning. The policy of management is to reduce the cost and to increase the efficiency in instructional method.

C. Level of Success and Failures

There were failures in the process of preparation of content, delivering the content, discussion forum and answering the questions. The following table explains the scenario.

The failures have both human technological dimensions. In the case of content preparation, the learners fully prepared and delivered to the respective learners. Out of 120 SMS 18 could not be delivered due to network failures. The questions prepared by the learners sent promptly and received in time but 6 could not reached. In the case of sending answers for questions 2 learners did not participate due to personal reasons. Discussions were envisaged in 3 rounds regarding the evaluation of questions and answers. Each time 2 students did not participate due to personal reasons.

VI. CONCLUSION

This study reveals that mobile learners scored higher than the conventional learners. Mobile device proves to be a technology for sustainable distance learning. It is also a symbol of technology for human interaction. Initiatives and enthusiasm are higher among mobile learners. Divided by place, language and culture, mobile learning is more prompt and convenient than attending the conventional counseling sessions. The result of the study has an impact on the traditional views of teaching. It also opens a way to apply this technique to other academic programs in wider perspective. This study also confirmed that mobile learning is more suitable and fitting for the distance learners who are divided by language and culture. Uniformity in the usage of spelling and grammar is to be resolved. Currently, mobile learners are using both American and British spelling inconsistently. The default mode accepts the American sellings. But , in India students were accustomed with British usage due to colonial heritage.

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