Use of mobile technology and pod casting for imparting instructions in Physics at Under Graduate level

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***Abstract* -Mobile learning has been proved to be immensely useful from learner point of view, since it encompass learning instruction anywhere, anytime. Mobile learning focus on mobility of learner with advent of interacting portable technologies. An attempt has been made to incorporate mobile learning in the area of content development for supporting the learning process. The content pertaining to Astronomy and Astrophysics from B.Sc. III syllabus of our university was chosen for this purpose Wi-Fi connectivity in the college premises has been utilized for this M-learning. Besides, Mobile learning, pod casting has been used to provide supplementary information to enrich quantum of knowledge apart from traditional instruction in classroom.**

To throw light on effectiveness of M-learning the B.Sc. III students were divided into control group and experimental group. Pre test pertaining to Astronomy and Astrophysics was administered to both the groups. The control group students were taught the topics with the traditional method supplemented by relevant literature along with photographs from Encyclopedia etc. The experimental group was exposed with these topics with the help of pod casting, live videos pertaining to Astronomy and Astrophysics. Besides the students from experimental groups were asked to gather information from net for the post test as well as for presentation of their seminars. The post test was administered on both groups. The analysis of post test scores showed that the students from experimental group scored higher than students from control group, thereby reflecting deeper understanding of the topics by students from experimental group.

***Index Terms*-Mobile Technology, Pod Casting, Instruction in Physics, Innovative Teaching Methodologies**

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I. INTRODUCTION

Higher Education needs a serious concern at par modernization and globalization in the era of knowledge society, information age. In this context David Gurteen has rightly quoted," The learning environment should help people share knowledge, to learn from each other, to innovate and work together effectively to make a difference". There is a dire need of adopting modern technology such as mobile technology to meet the demands of globalization.

The use of mobile technology in education is called as M-learning/M-education Cell phone as a mobile learning device has become popular in comparison with laptop on account of its low cost and light weight features.

In traditional classroom learning take place through traditional lecture method supplemented by demonstrations, audio visual aids, presentation with the help of transparencies, slide show and so on. M-learning is characterized by easy accessibility, interactivity, immediacy, permanency, context awareness [1]. Hence, the learning process in traditional classroom can be effectively supplemented by using mobile technology. The foremost important advantage of mobile devices is learning take place at any time, anywhere at the discretion of the learner [2] .Mobile devices with Wi-Fi capabilities allows the learner on demand access to information [3]. M-learning is a combination of mobile technologies and appropriate pedagogy to allow learners to interact with learning environment and other learners at anytime from any location [4].

With advent of 4G technologies, 4G Mobile phones are useful on account of its ease of movement, their relaxed fit structure, cleanliness, low profile, flexibility, interactive learning, its paper free nature, 24/7 assess, it's handy, easy of transfer of data [5]. Besides, the band width and location information give rise to numerous applications such as video on demand, video conferencing, video in mobile phone, location based services, send receive large e-mail massages, mobile TV, mobile broad band electronic agenda meeting, SMS/MMS Text and picture messages, getting information, scientific application which were not available on earlier mobile phones [5].

Podcasting can be used to review live lectures and provides supplemental information to enhance traditional lectures [6]. In this connection, the following study has been

978-1-5386-1922-3/17/$31.00 © 2017 IEEE

undertaken as "Use of mobile technology and pod casting for imparting instructions in Physics at Under Graduate level".

II. OBJECTIVE

To study the effectiveness of mobile technology pertaining to concept attainment in Physics by the students.

III. METHODOLOGY

A. Sample

B.Sc. III students (with Physics Principal) of Yashwantrao Chavan Warana Mahavidyalaya, Warananagar were taken for the present study.

B. Tools

Pre test for testing prior knowledge of Astronomy, Astrophysics was conducted on entire B.Sc. Ill class (34 students) Post test was conducted (on control and experimental group students) to test concept attainment by the students.

C. Procedure

The sampled students were divided into two groups (17 each). The topics Astronomy and Astrophysics from B.Sc. III Physics Paper XII (Atomic and Molecular Physics, Astronomy and Astrophysics) were taken for the present study.

Pre test was administered on the students from control group and experimental group for testing prior knowledge, awareness, general understanding of the topics from Astronomy and Astrophysics.

The students from control group were taught these topics by traditional lecture method. The lecture notes were prepared with the help of standard reference books prescribed in syllabus as well as selected reference books, McGraw Hill Encyclopedia of Science and Technology (Vol. I to XV,) Scientific American Resource Library (Vol. 1,2,3). The traditional lecture was followed by a slide show pertaining to the topics.

The experimental group students were bestowed upon with a special treatment. They were imparted the instructions in the topics Astronomy and Astrophysics with the help of mobile technology. The film pertaining to Astronomy and Astrophysics was shown to the students from experimental group. The film was then transferred to mobile phones of students through Bluetooth. Some important texts, facts, figures, statistical data, graphs were sent through S.M.S. to the students of experimental group.

Since the campus has Wi-Fi connectivity users have on demand access to the information. The experimental group students were given training as how to search information and effective use of internet. The students from experimental group were asked to gather in formation pertaining to the topics as well as sub topics through Internet during leisure time.

The students from experimental group has an opportunity of surfing the film, pictures, textual information, audio-video files, S.M.S., anytime anywhere and are useful in the teaching learning process [7].

Pod casting has been employed to the students from experimental group. Scientists from Inter University Centre for Astronomy and Astrophysics, (IUCAA) Pune and Indian Institute of Science Education and Research (IISER), Pune, Institute of Physics, Bhubaneshwar visited Yashwantrao Chavan Warana Mahavidyalaya, Warananagar under auspicies of Marathi Vidnyan Parishad, Mumbai under the banner "Shastradnya Apalya Bheti". The experimental group students were asked to listen the presentation of Scientist from IUCAA pertaining to Astronomy and Astrophysics. The recording of these deliberations were done using tape recorder. The recorded lecture was further recorded on the mobile phones of students from experimental group. Post test was conducted on both control group and experimental group students to test the concept attainment of the topics.

IV. STATISTICAL ANALYSIS AND INTERPRETATION OF DATA

The pre test source of both control group and experimental group students were noted. Since pre test was designed to test prior knowledge, awareness, general understanding of the students, the pre test scores of entire class (both control group and experimental group) were lying in the range 20 to 50% (Table I). The post test was conducted to test clarity of concepts, understanding the post test scores of control group students lie in the range 40 to 70% (Table II). This reflected the utility of lectures in which textual matter enriched with encyclopedia, standard reference books.

However post test scores of experimental group students lie in the range 70 to 90% (Table III), thereby showing20% gain over control group students. Thus experimental group students has a clear edge, deeper understanding, clarity of concepts, authentic statistical data, since they were rigorously exposed to mobile technology and pod casting.

TABEL I

Pre Test Scores

Scores	Purpose	Control Group	Experimental Group
Pre Test	Testing Prior knowledge, awareness, general understanding	20 to 50 %	20 to 50 %

TABLE II

Gain in Scores of Control Group

Group	Pre Test Score	Post test Score	Gain in Score
Control	20 to 50 %	40 to 70 %	30 %

TABLE III

Gain in Scores of Experimental Group

Group	Pre Test Score	Post test Score	Gain in Score
Experimental	20 to 50 %	70 to 90 %	50 %

According to Saylor the highly active process such as M- Learning has proven that increase in examination score from Fiftieth to seventieth percentile and cut the drop out rate in technical field by 22%[8]. Besides, the students from both control group and experimental group were asked to present seminars pertaining to the topics of their interest from Astronomy and Astrophysics. The students from experimental group scored higher than control group students. Also the students from experimental group faced the question answer session in confident manner in comparison with the control group students.

V. CONCLUSIONS

(1) Analysis of post test scores revealed the clarity of concepts, deeper understanding on the part of experimental group who were given pod casting and mobile technology enriched way of teaching.

(2) Teachers should incorporate M-Learning, Pod Casting to supplement traditional lecture as and when ever possible, as per the experimental result depicted in this paper, which enhances student concept retention and enhances their skills further.

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