

## Technology Mediated Personalised System of Instruction

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### Abstract:

India has the second largest mobile phone user subscription base in the world, with over 900 million mobile phone users. The use of smart phones has threatened the existence of teachers in conventional classes where Students frequently use smart phones to access several social networks like Face book, twitter just for fun or to make their social connect. The present study was conducted to study the effectiveness of Technology Mediated Personalised System of Instruction using face book messenger for teaching Physics to CBSE class XI English medium students. It is an experimental study in which samples of 40 students were divided into two groups that is control group and experimental group. The experimental group was taught through Technology mediated PSI module along with virtual Student-teacher interaction and sending additional reading material using face book messenger, whereas the control group was taught through traditional method. The results indicate that the Technology Mediated Personalized System of Instruction for teaching Physics was found to be effective in terms of academic achievement and reaction of the students.

Key words: Personalized System of Instruction, Face book messenger

## Introduction

Education plays an important role in the overall development of individuals that leads to the development of a nation. Education across the globe is witnessing revolutionary changes in recent times. In terms of its content, delivery of content and evaluation methodology due to the digital revolution across the globe. The typical Indian classroom was once characterised by students sitting through hour-long sessions, with the teacher used to discuss things without any visual presentation.

Over the last few years, digital education in India is evolving at a faster pace. The traditional chalk and talk method in schools and colleges has been slowly changing with more interactive teaching methods as schools and colleges are increasingly adopting digital solutions. Digital learning guarantees more participation from students as the current generation of students are well-versed with laptops, iPads, and smartphones.

Educators and educational experts have always been interested to increase student performance. They've been working hard to uncover and adopt new technology-driven teaching, development, and learning methodologies. There are numerous responsibilities on educators, among those most prioritised and fundamental one is the knowledge transfer in an acceptable manner based on the respective situation for learning's. As a mentor and guide, to strive for the efficiency outcome from the student is a duty of teachers. A range of instructional approaches can be employed to attain the maximum outcome in terms of student learning.

Technology-mediated Personalised System of Instruction is the expanded form of PSI, and the design of these is to fulfil the requirements of students in order to comprehend the material. It's a teaching technique that emphasises individualised instruction. In PSI courses, instructional content is delivered in written form rather than through lectures. PSI teachers frequently give students with a printed study guide to assist them in their studies. Keller and Sherman (1974) go into great detail about the textual aspects of a PSI course. Later, modified modules began to appear. Print-based study guide materials can and should be converted into interactive computer-based self-instructional aids, according to studies (Bangert-Drowns, Kulik, and Kulik, 1985; Kulik, 1994; Kulik, Kulik, and Shwalb, 1986).

Students can get constant feedback on their knowledge, application, comprehension, synthesis, course material evaluation, and analysis using computer-based training, as well as a more convenient and rapid interface to information resources, results in a much more effective learning process . Kulik, Kulik and Smith (1976) reported that end of year performance of students was better who were taught through PSI to their counterparts following lecture discussion method. Moreover, PSI students performed better on follow up examination than lecture course students. This suggests that PSI promotes more than rote memorisation. The personalised system of instruction (PSI) instructional model is a student- centred instructional model that enables students to progress through prescribed learning tasks at their own pace to master skills set forth by the teacher (Metzler, 2005a). Another study completed by Kulik (1976) reviewed 31 studies that compared PSI methods to traditional teaching. Kulik (1976) found that of the 31 studies, 25 of them found significantly higher final exam scores for courses taught using PSI, while the remain six studies found no significant differences between the two instructional methods. A self-paced technique, in contrast to traditional instruction's lock-step paradigm, recognises and accepts differences in students' rates of learning course material, avoiding grade penalties for students who require additional time to study. Kulik, Kulik and Smith (1976) reported that end of year performance of students was better who were taught through PSI to their counterparts following lecture discussion method. Research completed by Fox (2004) investigated ways of updating the model for the 21st century while at the same time offering the model a broad since of flexibility for instructors. Unit mastery, Flexible learning, On-Demand Course Content, Immediate Feedback, Peer Tutoring are the updated features making PSI the most suitable method of instruction for today. The various reviews suggests that PSI could be used as a mastery leaning at high school and college levels. The present study was initiated to explore the possibilities of using PSI at senior secondary class for the subject Physics.

**OBJECTIVES:**

To develop technology mediated personalised system of instruction for teaching Physics for CBSE Class XI Student.

1. To study the effectiveness of developed technology mediated personalised system of instruction for teaching Physics for CBSE Class XI Students in terms of Academic achievement of student
2. To compare the academic achievement of students studying through developed Technology Mediated Personalised System of Instruction with those studying through traditional method for Physics Class XI

#### Hypothesis

- i. There will be no significant difference between the mean pre and post-test achievement score of Class XI students studying through Technology Mediated Personalised System of Instruction
- ii. There will be no significant difference between the mean achievement score of students studying through Technology Mediated Personalised System of Instruction with those studying through traditional method for teaching Physics for class XI

#### Limitations of the study

- i. The study was restricted to English medium CBSE XI Class students only.
- ii. The samples were selected according to the availability of required technical gadgets i.e. android mobile phone/handheld device with internet service.
- iii. The contents of the Technology Mediated Personalised System of Instruction module were restricted to the syllabus of CBSE Class XI subject Physics

For this study, the pre- test post- test non-equivalent group design was used. The selected samples (40 students of CBSE CLASS XI) were subjected to a pre-test using the self- prepared Criterion Reference Test (CRT). The samples were then divided into two groups. The control group (20 students of CBSE CLASS XI) was taught by traditional method i.e. lecture method. The experimental group (20 students of CBSE CLASS XI) was taught through developed Technology Mediated Personalised System of Instruction . At the end post-test f was administered to both the groups.

#### Objective 1 :Development of Technology Mediated PSI Module

The PSI module was developed for Physics for two units .The modules was converted to PDF (Portable Document Format). A concise MS Power Point was prepared for each unit. The aim was to highlight the content of each topic and to provide an overview. The Power Point presentations were also converted to PDF format. Suitable audio-visual content from the internet were selected for each topic and the links were saved for further use.

The modules were executed for learning purpose through Facebook Messenger App which is a free mobile app used especially for social interactions. The Facebook Messenger is a social media website (<https://www.facebook.com>) that takes the ideas of a social network and refines them and makes appropriate for a classroom.

Using this app, students and teachers can reach out to one another and share ideas, problems and helpful tips. A teacher can develop a virtual interactive environment and assign as well as grade students performance on Facebook Messenger. The online test and assignments were given through Facebook Messenger. Students complete the given assignment and send to the respective teacher. The live classes was also conducted through video conference. For the present study, a teacher account was created using Facebook messenger mobile app. 20 English medium students of CBSE Class XI studying at Kendriya Vidyalay , Ajni Nagpur were enrolled in the class. The modules were uploaded within the Facebook messenger class group to provide accessibility to the students. Virtual interaction with the students was maintained during the

study period by posting assignments, quiz, polls and posts about their experiences with mobile learning. Live classes were conducted through video conference to clear doubts of the students.

## Objective 2

To study the effectiveness of mobile learning module in terms of achievements of CBSE class XI students for subject “Physics

Objective 2: To study the effectiveness of Technology mediated personalised system of instruction (PSI) for teaching Physics to class XI students in terms of achievement.

The mean value and the standard deviation of the pretest and posttest scores of the experimental group was calculated and the t-value was computed. The calculated t-value was compared to the tabulated critical value of t to determine the level of significance.

Table1:Comparison between Pre- and Post test of experimental Group:

Test	Number of samples	Mean	S.D.	Calculated ‘t’ value
Pre-Test (E)	20	11.21	3.89	3.66*
Post-Test (E)	20	16.64	4.71	

\* Significant at 0.01 level / \*\* significant at 0.05 level

The mean value of the posttest was found to be greater than the mean value of the pretest of the experimental group thereby making the researcher infer that that that there was significant difference in the mean achievement scores of the students before and after teaching through personalised system of instruction. The calculated t value 3.66 is greater than the tabulated t-value at 0.01 level of significance for df=40.

Therefore, it is concluded the developed PSI module is effective in terms of achievement for Physics

Objective 3: To compare the mean achievement score of class IX students studying through Technology mediated personalised system of instruction with those studying through traditional method for subject Physics.

The mean value and the standard deviation of the posttest of the traditional method and posttest of the PSI method was calculated and the t-value was computed. The calculated t-value was compared to the tabulated critical value of t to determine the level of significance.

Table 2 Calculation of 't' value for post-test of Control and Experimental Group:

Test	Number of samples	Mean	S.D.	Calculated 't' value
Post-Test (C)	20	12.51	2.08	2.0135*
Post-Test (E)	20	16.64	2.26	

\* Significant at 0.01 level / \*\* significant at 0.05 level

### Conclusions

Overall, the findings of this study suggest that PSI increases its effectiveness for improving academic performance, student motivation, and overall satisfaction. This study has important implications for educators who are considering the implementation of PSI to improve teaching efficacy. In the course of the present study, it can be asserted that the PSI as a constructivist instructional strategy is more amenable to the teaching of Physics.

Though the school system tends to be designed more for group-based instruction, PSI pays a direct attention to each learner. It pursues their

needs to master the contents of instruction, motivate the learners to put in their greatest efforts to ensure success and adopt more positive attitudes to learning.

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