A STUDY ON DIGITAL POTENTIALITY OF STUDENT AND FACULTY USING SMART CLASS ROOM - AN EMPIRICAL ANALYSIS

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Changing the “THEN” to “NOW” – GROOMING SMART

ABSTRACT

Learning styles of students are changing as the environment in which we live changes. From an educational perspective learning methods and practices are evolving and improving. Traditional deductive approaches that start with the fundamentals in a formal lecture setting and then move onto applications may not address all learning styles of students. Traditional lecturing clearly identifies to students what is required to be known for exam purposes, while this appeals to many students. It is not necessarily the best or most appropriate learning styles for all students or all subject matter. A Smart classroom is a pseudo intelligent room that can reconfigure the present hurdles in academic environments. This paper analyses the teacher and student perspective on smart class rooms technological applicability, usage and benefits.

INTRODUCTION

Over the years, technology has been used to improve the quality of instruction. However, effective use of technology to enhance the quality of teaching is a very challenging problem. Technology can be used to improve the quality of teaching in many ways. For example, it can improve the interactions between the instructor and the students, or in-group collaboration among the students.

India is a country with more than 1.3 million schools and the world’s largest population of youth between five and 24 years of age. In a 2012 Education Outlook report, New Delhi-based consultant firm Technopak estimates that India will require at least six million more trained teachers by 2020 to attain the world average in student-teacher ratios. With huge illiteracy and teacher training gaps, India may be looking to the private sector for cutting edge education tools. Yet, for the time being, private schools seem to be disproportionately reaping the benefits. Only 20% of India’s schools are private, and only ten percent of those private schools currently utilize multimedia classroom teaching. The remaining majority of government schools are reportedly making little to no progress in utilizing information and communications technology.

SMART ROOM – DEFINED

A "Smart" classroom is one which has been designed for the efficient and flexible integration of a variety of teaching technologies and which takes account of a variety of teaching styles. It could be defined as the large-group delivery system for multi-media. It works because they are part of an "active classroom" which engages the faculty and student. The theory really just follows the “The Seven Principles of Good Teaching“ which encourages 1) student-faculty contact 2) cooperation among students 3) active learning 4) giving of prompt feedback 5) emphasizing time on task 6) communicating high expectations 7) respecting diverse ways of learning.
SIGNIFICANCE

Recent research in the science of learning emphasizes the importance of requiring students to be active inventors rather than passive recipients. Smart Classrooms can make a remarkable difference in how teachers teach and learners learn.*(National Research Council 2000)

- Teaching with Smart Classrooms
  - Smart Classrooms can enhance content and presentation
  - Students respond well to video clips illustrating a concept –YouTube
  - PowerPoint presentation which reviews the major points of the lesson.
  - With the computer's desktop being projected relevant Internet sites can add variety to any lesson.

- Empower students
  - Student presentation using PowerPoint
  - Show their assignments and discuss them.
  - Bring in Experts –videoconferencing Using Skype
  - Harness the Power of the WWW

MAJOR FEATURES OF SMART CLASSROOM

Devices in a smart classroom can be divided into two categories: infrastructure-devices and mobile-devices. The infrastructure-devices are stationary in each classroom, and provide the necessary information to the mobile-devices, such as the relative locations of the mobile devices with respect to those of the infrastructure-devices, and the light intensity of the classroom. The mobile devices usually belong to the students and the instructor. Using these mobile devices, the instructor and the students can actively interact among themselves in a classroom. The infrastructure devices currently consist of PCs and PDAs with the capabilities of location and light detection.

FUNCTIONALITY OF SMART CLASSROOM APPLICATIONS
A smart classroom is a classroom that has an instructor station equipped with computer and audiovisual equipment, Personal Computer, Overhead Projector, Wireless Internet Access, DVD Player, Smart Board.

**OBJECTIVES**

- The current study has two objectives. The first objective is analysed from the spherical aspect of faculty members and the aim was to find out whether these innovations have served the needs for effective teaching.
- The second objective is discussed from students aspect. The aim of the second objective was to find out whether our technological methods enable the students to easily mobilize the new concepts and develop their learning ability.

Following are the stated objective:

- Faculty - To analyze the instructional technology facilities provided in the smart classrooms
- Student - To study the cause effectiveness of introducing technology in the Higher Education

**METHODOLOGY**

**Sources of data**

Both primary and secondary data are used for this study. Primary data are collected through questionnaire and the secondary data are collected from books, magazines, journals and websites.
Faculty members and students were surveyed through two different questionnaires regarding their use, support, feelings and effectiveness of technology classrooms.

Sample size

The number of student respondents for this study is 150 and faculty members are 150.

Area of the Study

The area of this study is confined to Coimbatore city.

Period of the Study

The required primary data for the present study are collected from sample respondents during the month of November 2012.

Tools for analysis

♦ Percentage Analysis
♦ Mean Ranking
♦ T-Test

Limitations of the Study

• The survey was done only in Coimbatore hence not universally applicable.
• Due to time constraints the sample size was limited to 150 student and 150 faculty respondents.

REVIEW OF LITERATURE

Kabir of Technopak perspective. "Despite numerous studies on the impact of ICT in education, the outcomes remain difficult to measure and open to much debate. It needs to be understood that technology is only an enabler and a force multiplier and cannot be treated as a panacea. We believe that impressive gains in teaching-learning outcomes are possible only through an integrated approach rather than a piecemeal intervention."

Don Huesman, managing director of Wharton's innovation group, recommends caution in considering potential investments in educational technologies. "These are very exciting times for online and distance education technologies, but there are risks facing parents, educators and policy makers in evaluating the opportunities these new technologies, and their proponents, represent."

ANALYSIS AND INTERPRETATION

Source: Primary data

Faculty Members – 150 Respondents
Smart Lecture Hall Equipment adequacy

- On analyzing equipment adequacy in smart class rooms among 150 respondents based on the listed technical factors it has been found that all the technical facilities have been 60% met.

Smart Lecture Hall Equipment Usage

- On analyzing equipment usage in smart class rooms among 150 respondents based on the factors it has been found that maximum respondents use projector and computer and 52% of the respondents use USB and 64% use Internet facilities and 34% of the respondents use web camera and minimum usage is with respect to microphones and CD player.

Services availed by faculties for acquiring knowledge on smart classroom usage

- Majority of the respondents to acquire knowledge seek the help of technical persons and minor response in attending workshops on improving skills.
Majority of the respondents had responded that their problem in using the technology is inability.

The table shows the different factors analyzed on the opinion of the faculty members in using smart class rooms. Even faculty members claim the usage to be burden they do accept that it improves knowledge of students and digitize faculty members and it can be an alternative choice for classroom teaching.

<table>
<thead>
<tr>
<th>Choice of opinion</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves knowledge of the students</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>Digitize teachers to fit to competitive world</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Better than classroom teaching</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Burden on Teachers</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>
Smart Lecture Hall Equipment Quality

Mean Rank analysis

The above table shows the ranking of quality of the instructional technology equipment provided in the Smart Classrooms and majority of the respondents validated very good and minor respondents validated to be poor. This analysis shows that quality of the equipment match to the respondents usage.

<table>
<thead>
<tr>
<th>Quality validation</th>
<th>Mean rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>3.64</td>
</tr>
<tr>
<td>Very Good</td>
<td>3.87</td>
</tr>
<tr>
<td>Good</td>
<td>2.62</td>
</tr>
<tr>
<td>Fair</td>
<td>1.8</td>
</tr>
<tr>
<td>Poor</td>
<td>1.1</td>
</tr>
</tbody>
</table>

T Test

Level of Satisfaction of Equipment availability and usage

There is no significant difference between availability and Usage of the equipment.

<table>
<thead>
<tr>
<th>t</th>
<th>DF</th>
<th>Asymp.sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>49.219</td>
<td>199</td>
<td>.000</td>
</tr>
</tbody>
</table>

From the above table it is clear that with the significant value .000 there is a significant difference between equipment availability and its usage. The value of T-test is lower than the table at 5% level of satisfaction. Hence the hypothesis is rejected.

Students – 150 Respondents

Opinion of Students on teaching effectiveness

Almost one third of the survey group strongly agree that if quality lesson is there they never mind the presence of a teacher and 42% need the presence of a teacher and 30% strongly disagree that the situation without a teacher is not at all possible.

Opinion on Satisfaction of the Methods adopted for teaching

♦ In regard to which method of learning students like best, 45% of the survey group believes a combination of all these methods is the best way to learn and an negligible percentage rely on notes and the chalk and board method of lecture given by the teacher.
Potentiality analysis of digitized learning students

Awareness to smart class rooms

♦ Majority of the respondents are prone to smart classrooms and 65% of the respondents agree that teachers integrate media and 55% of them are comfortable in smart class room teaching and 87% of the respondents learn in a remote location.

<table>
<thead>
<tr>
<th>Factors</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience on Smart Class Room</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Teachers integrate media in their way of teaching</td>
<td>65%</td>
<td>35%</td>
</tr>
<tr>
<td>Comfortability in smart class room teaching</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Open to learning in an environment with an expert teacher and students from a remote location</td>
<td>87%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Advantages of smart class room

Mean Rank analysis

♦ Majority of the respondents has ranked Easy understanding and score more marks as the major advantage of smart class room learning

<table>
<thead>
<tr>
<th>Factors</th>
<th>Mean rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning capacity has increased</td>
<td>3.87</td>
</tr>
<tr>
<td>Easy understanding and score more marks</td>
<td>4.63</td>
</tr>
<tr>
<td>Knowledge not restricted to teacher</td>
<td>2.98</td>
</tr>
<tr>
<td>Learning become Enjoyment</td>
<td>3.21</td>
</tr>
<tr>
<td>Improves concentration and memory power</td>
<td>3.64</td>
</tr>
</tbody>
</table>
Short coming of smart class room

- The biggest concerns or shortcoming of a digital classroom is video/audio delivery problems as 69% of them responded to it. Minority of the respondents have accepted that teachers not prone to the technology as a shortcoming factor.

<table>
<thead>
<tr>
<th>Factors</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of the teacher-student personal relationship</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Lack of concentration and discipline in the classroom</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>Video and audio delivery problem/technical/connectivity problems</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Inefficient instructional resources</td>
<td>31%</td>
<td>69%</td>
</tr>
<tr>
<td>Speed and accuracy of content delivery</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td>Teachers not prone to the technology</td>
<td>36%</td>
<td>64%</td>
</tr>
</tbody>
</table>

**Level of Satisfaction in smart class rooms over class room teaching**

There is no significant difference between classroom teaching and smart class rooms

<table>
<thead>
<tr>
<th>t</th>
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<th>Asymp.sig</th>
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</thead>
<tbody>
<tr>
<td>49.660</td>
<td>199</td>
<td>.000</td>
</tr>
</tbody>
</table>

From the above table it is clear that with the significant value .000 there is a significant difference between classroom and smart class room teaching. The value of T-test is lower than the table at 5% level of satisfaction. Hence the hypothesis is rejected.

**FINDINGS & SUGGESTION**

Based on the responses provided by the student and faculty group we can conclude the following:

**Findings from Faculty members**, The main point of contention for the respondents is that they have adequate facilities and the resources have quality but due to lack of knowledge and inability they use only some facilities. They have given response on their training to equip with the technology but it was only with web facilities and help from technical persons. They also accept that it digitizes them and improves knowledge of the student besides being burden in terms of overheads and time.

**Suggestion based on findings**, It is suggested that faculty members should come forward to use all the facilities available and they should not restrict themselves with technical persons. Faculty members to have ability to use the technology should willingly attend workshops, seminar and other training programmes to equip themselves. As students are prone to high technology faculty members should withstand with the new modern techniques for providing expected knowledge and content to students.

**Findings from higher education students**, the maximum respondents are aware and willing to learn using smart way of teaching. It is also found that the important aspect is the quality of the lesson and they believe in integration of all the methods in teaching will be best way to learn. They also accept that they score good marks and their knowledge grade has become high and there is significant difference between classroom teaching and smart class room Students are open to digital classrooms and learning remotely as they see it as an opportunity to broaden their cultural horizons and interact
with students from across the world. The shortcomings are also reported and technical problems were major and teacher’s knowledge was only a minimal shortcoming.

**Suggestion based on the findings**, It is suggested to concentrate on quality of lessons as it is considered as the most important factor. As majority of respondents are satisfied it is suggested to improve on shortcomings reported by the respondents and improve their effectiveness and interest in smart way of learning

**Conclusion**

Smart classrooms provide an interesting technical solution that does not necessarily guarantee improved student learning based on grades measured. Overall, students want more engaging ways to learn and are open to technology in their classrooms as it seems like a natural progression. It is necessary to support the technology with appropriate learning styles and pedagogies and then assess the appropriateness of the technical solution. Students seem to be more passive learners and require more effort from educators to get them to engage in traditional learning approaches. The difficulty for the educators is the additional burden in using these methods in classroom environments with large number of students. Smart class rooms has the potential to play a supporting role for educators in gaining student engagement and getting measurable gains in student learning and exam performance.

**References**

1. John Selegean and Dr. Judy Shoemaker “Instructional Technology Survey Results” DUE/Office of Research and Evaluation.