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Research Paper

A Study on Technology Based Learning and Strategies for Innovative Teaching Methods.

Engineering

KEYWORDS : technology, teaching methods, e-learning, smart computing, smart devices

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ABSTRACT

In the era of technology development, innovative teaching methods can be applied for making teaching and learning process more effective and efficient. Students can use technologies like internet, mobile apps, cloud computing and smart devices for making their learning process more interesting and interactive. A survey study conducted among students reveals that students are equipped with smart devices and the world of internet is more close to their fingertips. The possibilities of developing innovative teaching methods with these new opportunities also analyzed. Based on the analysis, strategies for developing technology based learning and strategies for innovating teaching also proposed in this work.

INTRODUCTION

Developments in technology opened new windows for innovative teaching and effective technology based learning. Technology based learning involves the learning process supports with computer, mobile technology and Internet facilities. Students can use these technologies for making their learning process more interesting and interactive one. The best example for technology-based learning is using iPad and Internet at classroom and home for accessing and sharing information for learning different subjects. Cloud based computing helps to share the resources and apps reduces the effort in teaching more flexible and ease. The main advantage is of technology based learning is enhancement of teaching, learning and assessment experience. The different studies shows that technology based learning improves student engagement and brought about positive change in the way students learn helping broaden their horizons become independent learners and enhancing their learning skills. The collaboration of technology can make visual based teaching and learning effective these days. Learning beyond classroom made possible by the mobility of electronic devices like laptops, iPad and smartphones. iPad replaced the use of textbooks and they can even submit their home works, assignments and project reports by working at home. The smart boards and assisting software made the interaction and real time response more efficient. Different IPad or Tablet apps lets the students review their class works and exam papers. Modifying curriculum with smart learning ease the task of teachers in collecting data and sharing resources. This also leads to a paperless classroom and schools that conserves the nature and its resources.

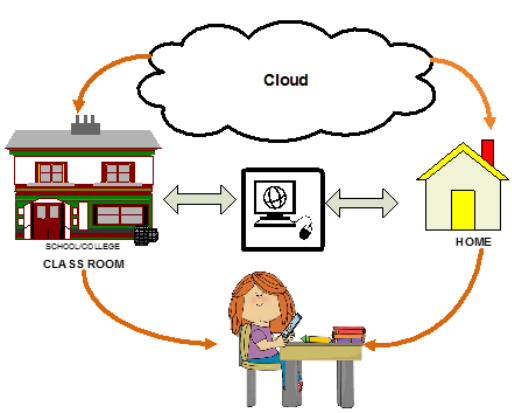

Figure1: Technology based Learning

This technology based learning and teaching is facing more implementation issues and challenges. There is a lack of awareness among teachers, students and parents as most of the technologies are new to them. In some regions, there are issues in connectivity and bandwidth leads to the problem of engagement and downloading contents for learning. The resources for e-learning also scarce now a day as few developers in this field. This paper focused on the study of technology-based learning supported by a survey about the technology use by the students. Based on the study some strategies for innovative teaching methods are also proposed.

SURVEY ON THE USE OF TECHNOLOGY BY STUDENTS:

A survey was carried out among students randomly chosen from four different grades. Around 120 students participated in the survey from four grades- Grade 9, 10, 11 and 12. The majority of participation was 58 students from grade 11, 26 students from grade 12, 19 students from grade 10 and 17 students from grade 9.

TABLE – 1
SURVEY RESULTS TABLE

Title	Choice	Freq	%
Grade	Grade 9	17	14.3%
	Grade 10	19	16.0%
	Grade11	57	47.9%
	Grade 12	26	21.8%
Do you have a laptop or Ipad?	Yes	108	90.0%
	No	12	10.0%
Do you use computer at home connected to internet?	Yes	93	77.5%
	No	27	22.5%
Do you have smartphone with internet?	Yes	95	79.2%
	No	25	20.8%
Do you have email address?	Yes	114	95.0%
	No	6	5.0%
Do you depend on internet, mobile apps and YouTube for learning?	Yes	112	93.0%
	No	8	6.7%
Do you use cloud storage services?	Yes	56	46.7%
	No	64	53.3%

From the results, we can observe the following facts:

- Majority of the students have personal laptop and iPad.
- For learning, they also use personal computer at home that has internet connection.
- Smartphones with data connection is also available with the students.
- Majority of students have personal email address and depends on internet, mobile applications and you tube for supporting their learning process.
- Awareness among students are required to make them familiar about the features and merits of using cloud services like Google drive, Drop box etc. for storing and sharing their resources.

Based on this study we can observe that the students are more

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equipped with IT and smart devices. The availability of internet is wider and higher bandwidth range made high-speed video streaming. Thus, technology can improve the overall learning experience and student's performance in all aspects. Most of the time students have internet connection and if they have experience in cloud storage services like google drive; they can access their study materials any time and save their work to a common folder. Microsoft, Android and apple store provides various free and commercial applications such as schoology, showbie, evernote etc. for supporting the learning process. Most of the students depends on YouTube for searching and viewing course related videos and animations. The technology based learning and teaching mostly adopted in STEM: Science, Technology, Engineering and Mathematics field. It also opens the windows for differentiated learning and support. Information search also so quick because of searching keywords in digital notes. The students also share their notes through email or cloud services, which enables the collaborative learning process, and group project works. Social Medias play a vital role in spreading information, sharing ideas and updated technology news. Students create their own class groups in social media websites for a common space to spread information and ideas. Thus, technology creates a space for students to use their smart devices to extend their learning outside the classroom.

INNOVATIVE TEAHCING METHODS

From the survey we can realized the fact that students are using various technology tools and devices for supporting their learning process. This will be a right opportunity for the teachers to incorporate more innovative teaching methods into their teaching scheme. Technology will enhance the abilities of teaching not replacing the traditional blackboard teaching. Technology based teaching can be evolved from incorporating e-learning process, cloud computing and smart devices together in same platform.

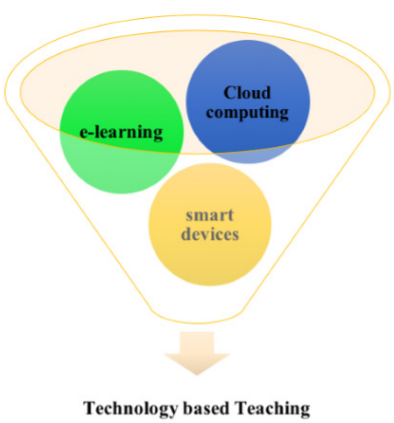

Figure 2: Technology based Teaching

The following strategies can be adopted for an effective technology based teaching:

- Enrich the lesson contents with more visual presentations and videos. Creating books in i-books and interactive apps will help to add multimedia contents to the lesson.
- Assess and improve the teaching by taking feedbacks from the students periodically. Google forms and survey apps helps to collect the feedbacks and conducting analysis of data collected quickly than the traditional feedback collection methods.
- Simulation based apps can help in teaching the practical aspects of lesson and supports the lab or workshop classes.
- Share the quizzes, power point slides, assignments and other resources through cloud storage services like google drive helps the students to access the material anywhere and anytime at his or her convenience.
- Adopt online learning management system (LMS) that connects students, parents and teachers in managing academic courses and connecting with parents.
- Implement smart boards and smart touch screens in the classrooms will strengthen the interactivity and motivates the students' interest in learning.
- Analyze the performance of students and quiz results using spreadsheet software like excel for making any changes in the teaching activities.
- Classroom management can be improved by using applications like Class dojo that offers behavior management tool which teachers can assign positive and negative points to the students depends upon their behavior and performance inside the classroom.
- Use online grading system to track grades, recording attendance and sending students progress reports.
- Consider students do a power point presentation as a review tool before their final examinations.
- Develop a website or class blog for sharing the notifications, articles about the lessons, gallery of class activities etc. with students.
- Online examination or weekly quiz using tablets or iPad for evaluating the student's performance in the lesson.

There are some implementation issues such as cost, availability of high bandwidth internet connectivity and lack of ICT knowledge among teachers and students. The efforts to overcome this implementation issues will lead to a path of innovative technology based teaching and learning.

CONCLUSIONS

Technology helps to engage students in active learning and improved teaching process. We can never substitute teachers with technology but technology can support teaching. Survey among students reveals that they are equipped with smart devices and online connectivity opens the wide window of implementing innovative technology based teaching. In future, virtual classrooms and distance education will take a big leap as development in technology is making everything possible. There is a need of constant monitoring and evaluation required for the implementation of new technologies in both teaching and learning.

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