Teaching and Learning Process Using Multimedia Technology in Education

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ABSTRACT

Multimedia technology is used effectively in class room at least in the past two decades. There is an inherent change in the ability of understanding of students, their cognitive skill and the need to implement new techniques in the teaching methodology though the teaching fraternity’s experience and subject knowledge have greater influence in the educational process. The teaching process requires constructive methodologies to be incorporated in the teaching process. This method of teaching is widely followed in the developed countries of the world and is picking up in the developing and underdeveloped countries. An attempt is made in this study to understand the impact of multimedia technology in teaching and learning process. The problems that are faced from the point of view of learners and educators are also identified and suggestions made towards the changes that should be incorporated in the teaching pedagogy to effectively make use of the multimedia technology in the class rooms. This if implemented will make all the students get benefitted from the multimedia teaching which is going to become the norm in the future.

Key words: Multimedia Technology, teaching learning process, educational methodology, constructive methodology

INTRODUCTION

In the current scenario of educational institutions, multimedia has dig up its own kind of space in some or the other way as a tool of educational technology. Multimedia has overcome the barriers of time and space and provides evidence to be accepted as an anytime and anywhere tool for educating multi-disciplinary masses. The process of knowledge acquisition becomes more efficient when the learners experience an event through a multimedia simulation. Multimedia technology empowers the educational process by means of increased interaction between teachers and the students. Apart from the fact that multimedia can provide educators and students with endless possibilities of quality teaching and learning, taking vital considerations of the pedagogical strengths and limitations of Multimedia, it can be used to its fullest potency, and reach the eminence of ‘New Educational Technology tool’

STATEMENT OF PROBLEM

Multimedia technology does not meet the educators and learners requirements as expected though it has been used widespread all over the world. Based on the backgrounds of the students some find it extremely difficult and some find it relatively easy. But the teaching and learning styles has been modernized and the impact (positive and negative) on educators and learners using multimedia technology is significant. It has become necessary that the negative impacts of educational multimedia is explained properly and this paper tries to identify the positive and negative impact of the same.
OBJECTIVES OF THE STUDY

1. To find out the significant impacts of multimedia on the teaching learning process
2. To study the impact of multimedia on teaching and learning process
3. To find out the changes required in teaching and learning process to use available multimedia in the classroom.

REVIEW OF LITERATURE:

Evans-Andris (1995) summarised three styles of computing use among teachers: avoidance, integration and technical specialisation. These styles play a significant role in student access to computer technology. Her study evolved over an 8-year period in the elementary schools of a large metropolitan area. The dominant style of computing among teachers was that of avoidance. In a study of projects to promote educational changes in America, Canada and the United Kingdom (UK), Fullan (1991) found that one of the most fundamental problems in education reform is that people do not have a clear and coherent sense of the reasons for educational change, what it is and how to proceed.

Cox et al (1999) carried out a study examining the factors relating to the uptake of ICT in teaching. A questionnaire was designed to collect evidence from teachers and other educators about their ICT experiences, expertise and use in teaching, their attitudes to the value of ICT for teaching and learning, the training they had received. The factors that were found to be the most important in these teachers in their teaching were: making the lessons more interesting, easier, more fun for them and their pupils, more diverse, more motivating for the pupils and more enjoyable. Additional more personal factors were: improving presentation of materials, allowing greater access to computers for personal use, giving more power to the teacher in the school, giving the teacher more prestige, making the teachers’ administration more efficient and providing professional support through the Internet. Sheingold & Hadley’s (1990) study also identified that the source of motivation for teachers to use technology included gains in learning and using computers for their own development as teachers.

Kinzer and Leu (1997) demonstrated positive effects of technology on both learning in a content area and learning to use technology itself. They studied the potential of multimedia and hypermedia technologies. It was found that students made statistically significant improvement in their recognition and use of elements such as main ideas, supporting details, and cause and effect relationships. Their writing was also more cohesive than their control-group peers who were taught using similar materials and sequences but without the use of technology.

Findings consistent with these emerged from a meta-analysis conducted by Susan et al. (2005). They concluded that a wide range of digital tools enhance reading comprehension and vocabulary development by providing students access to word pronunciation, word meaning, contextual information, and comprehension scaffolds to guide an individual’s reading. Thus, a strong research base supports the conclusion that technology can enhance all aspects of literacy development.

RESEARCH METHODOLOGY

DATA COLLECTION

Primary data was used for this research purpose. The data were collected by distributing the questionnaires to people related to educational multimedia development methodologies and knowledge enhancement tools. The collected data were analyzed to identify the impacts of educational multimedia on teaching and learning perspectives. The data collected were segregated, summarized and analyzed. The closed ended questions were categorized based on the research questions. The answers of the open ended questions were considered for theoretical definitions and explanations.
To get a clear idea about the usage and impact of educational multimedia in their day – to – day teaching and learning processes Interviews were conducted with some of the respondents. Professors, lecturers and teachers opinions were considered for conducting study about the educator’s perspectives of multimedia. In order to judge learner’s perspectives Students’ opinions were used. General users in private and public sectors were included in studies to know the view of professional development impacts of multimedia. Developers, who had enough knowledge about educational multimedia development processes or developed some multimedia, were considered to identify the developer’s perspectives.

AREA OF STUDY

For this purpose, convenience sampling method was followed and questionnaires were distributed to respondents belonging to Coimbatore. It is one of the top 10 fastest growing cities of India. It has a population of about 42.72 Lakhs (Census in 2011). Coimbatore is an educational hub of south India. As of 2010, the Coimbatore district is home to 7 universities, 78 engineering colleges, 3 medical colleges, 35 polytechnics Colleges and more than 150 Arts and Science Colleges and a large number of schools. The city has reputed universities like Tamil Nadu Agricultural University (est. 1971), Bharathiar University (1982) and Anna University Coimbatore (2007). The city also houses research institutes like Central Institute for Cotton Research, Sugarcane Breeding Institute, Institute for Forest Genetics and Tree Breeding, Indian Council for Forestry Research and Education and Tamil Nadu Institute of Urban Studies.

DATA ANALYSIS AND INTERPRETATIONS

ANALYSIS ON NUMBER OF RESPONDENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educators</td>
<td>54</td>
<td>30.3</td>
</tr>
<tr>
<td>Students</td>
<td>90</td>
<td>50.1</td>
</tr>
<tr>
<td>General Users</td>
<td>26</td>
<td>14.6</td>
</tr>
<tr>
<td>Developers</td>
<td>8</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 shows the professions of the respondents considered for the study. Educators include 25.9% of Ph.d’s, 51.9% of Master’s and 22.2% of bachelor’s and other educational qualification holders. 40% of the students were studying bachelor, 44% of the students were studying diploma and 16% of the students were studying foundation. 23.1%, 30.8%, 27%, 19.1% of the general users were Master’s, Bachelor’s, Diploma and other qualifications respectively. These general users were the people basically working in different administration related works in public and private sectors who were using multimedia in some or the other way, in their job profile. Also, the general users had the good knowledge about the impacts and usage of educational multimedia, as they were using multimedia during their studies. These general users basically supported the research as the feedback of multimedia usage and impacts. 100% of the developers were Master’s, who were working in IT sectors as programmers or assistants. The backgrounds of the respondents were analyzed by asking about their knowledge of multimedia. Though the knowledge about multimedia cannot be exactly measured and rated, the basic idea about these optional questions was to have an overall opinion about the knowledge of the respondents about the education multimedia. This helped the researchers to relate their responses in close – end questions with their experience and knowledge. This has been shown in Table 2.
TABLE 2 – RESPONDENTS KNOWLEDGE ABOUT MULTIMEDIA

<table>
<thead>
<tr>
<th>Response</th>
<th>Educators</th>
<th>Students</th>
<th>General User</th>
<th>Developers</th>
<th>Total</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>49</td>
<td>39</td>
<td>4</td>
<td>5</td>
<td>97</td>
<td>54.5</td>
</tr>
<tr>
<td>Very good</td>
<td>5</td>
<td>34</td>
<td>8</td>
<td>2</td>
<td>49</td>
<td>27.5</td>
</tr>
<tr>
<td>Good</td>
<td>0</td>
<td>15</td>
<td>13</td>
<td>1</td>
<td>29</td>
<td>16.3</td>
</tr>
<tr>
<td>Average</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>No idea</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>90</td>
<td>26</td>
<td>8</td>
<td>178</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In the respondents, 90.7% of the educators had excellent knowledge about multimedia usages in the classroom. 87% educators were using different multimedia. 85.2% of the educators had excellent knowledge about up – to – date multimedia tools. 74.1% of the educators said that they know the pros and cons of multimedia in teaching and learning processes. 43.3% of the students had excellent knowledge about multimedia usages in the classroom. 38.9% students said that they know about different multimedia. 33.3% of the students had excellent knowledge about up to date multimedia tools. 52.2% of the students said that they know the pros and cons of multimedia in teaching and learning processes. The students studying foundation level said that their knowledge about multimedia usages in teaching and learning processes is average and also they were not aware of pros and cons of the multimedia technology in education. 15.4% of the general user had excellent knowledge about multimedia usages in the classroom. 46.2% general users knew about using different multimedia. 38.5% of the general had excellent knowledge about up – to – date multimedia tools. 34.6% of the general users were aware of pros and cons of multimedia in teaching and learning processes. 62.5% of the developers said that they have excellent knowledge about the multimedia technology. 75% of the developers knew about the usage of different multimedia. 87.5% of the developers said that they were aware of up – to – date multimedia tools. 75% of the developers knew about the pros and cons of multimedia in educational methodologies.

TABLE 3: RESPONSES ON QUESTIONNAIRE

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Area</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>No Idea</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypermedia has significant impacts on teaching and learning processes</td>
<td>139</td>
<td>36</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Currently available hypermedia are effectively used in conceptual and contextual learning</td>
<td>14</td>
<td>19</td>
<td>5</td>
<td>92</td>
<td>48</td>
</tr>
<tr>
<td>3</td>
<td>Constructive methodologies are incorporated in the available hypermedia to ensure all educators and learners get benefit</td>
<td>9</td>
<td>12</td>
<td>4</td>
<td>42</td>
<td>111</td>
</tr>
<tr>
<td>4</td>
<td>Hypermedia adversely affects the personal information infrastructure</td>
<td>57</td>
<td>96</td>
<td>4</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Changes are required in teaching and learning processes to use available hypermedia in the classroom</td>
<td>49</td>
<td>52</td>
<td>11</td>
<td>37</td>
<td>29</td>
</tr>
</tbody>
</table>
INTERPRETATION

More than 98% of the respondents, either strongly agreed or agreed that multimedia has significant impacts on teaching and learning processes. 78.7% of respondents, either strongly disagreed or disagreed that the currently available multimedia is effectively used in conceptual and contextual learning. For this question, 32.7% of the educators either agreed or strongly agreed that the currently available multimedia is used effectively. 80.4% of the respondents strongly disagreed or disagreed that constructive methodologies are incorporated in the available multimedia to ensure all educators and learners get benefit. In this, 74.1% educators and 77.8% of the students either strongly disagreed or disagreed. 55.6% of the educators, 53.9% of the general users, 87.5% of the developers and 55.6% of the students suggested that changes are required in teaching and learning processes based on the available multimedia to use available multimedia potentially in the classroom.

IMPACTS OF MULTIMEDIA ON EDUCATIONAL PROCESSES
POSITIVE IMPACTS ON TEACHING PROCESSES

Multimedia technology makes the teaching processes easy. The educators could use multimedia in the classroom environment irrespective of the subject being taught. As educator’s knowledge plays a vital role in using multimedia, educators could select any multimedia methodology based on their training and knowledge. New teaching methods have been introduced. The educators need not to be physically present even in the classroom. The virtual classrooms are increased and classrooms have become global. Any educator can teach any student in the other corner of the world. The doubts could be clarified by the experts at any time, from any corner of the world. The educators shall adopt any teaching process based on the classroom environment. As numerous resources are available in multimedia, the learning processes continue even for the educators. Educators could know and learn new concepts and utilize the same in their teaching processes

NEGATIVE IMPACTS ON TEACHING PROCESSES

To utilize multimedia effectively in the classroom, the educators need to prepare themselves by spending considerable time for preparation. The cognitive skills of the educators has become nearly zero in the classroom due to lack of text book usage. The traditional teaching methodologies have been totally eradicated. In some places traditional teaching is more effective than the multimedia teaching. New teaching processes have been introduced irrespective of the educational atmosphere, in which, the educators may not have enough knowledge and training. The educators need to train themselves to know the usage of the technology. Thus, the educators cannot fully utilize the multimedia in their teaching processes. The resources available in some multimedia are not enough for the particular course. Thus the educators could not provide enough guidance for cross references and resources. Some multimedia lacks in required links like links to learning outcomes, links to various format of the course materials and links to descriptive test manager. These make the educators to lack in proper classroom assessments, which are major part of teaching processes.

IMPACTS ON LEARNING PROCESSES
POSITIVE IMPACTS ON LEARNING PROCESSES

Students could get good benefit out of the available multimedia at any time. As multimedia provides necessary information regarding any subject immediately, students shall learn the subject easily with the help of experts advises and methods. Virtual classrooms assist the learning processes in various ways. Students could contact any experts as and when they get the doubt. Educational advises are
available freely at any time. Students could use the given references to learn in depth of the subject. Students could get full subject knowledge, if they could utilize the potentials of the multimedia. Simultaneous preparation, relating the various courses and continuous learning are the some the important impacts on learning processes.

NEGATIVE IMPACTS ON LEARNING PROCESSES

The most important negative impact of multimedia is using textbooks in the classrooms. Students lack in learning through reading books. As, multimedia provides various assistances, students get cognitive laziness. In some cases, if the students have poor language knowledge, they get frustrated in learning and show very poor interest. The students with poor background of English language could not benefit fully out of multimedia features. As, multimedia affects the personal information infrastructure in all levels, students are deficient in reading, writing and logical thinking.

CONCLUSION & RECOMMENDATIONS

Multimedia as a technology that supports teaching and learning processes in many ways. But, the educational environment, socio – cultural heritages and ethical issues need to be considered while using multimedia in the classroom. The technology should provide required resources and other related materials to support teaching and learning processes. They should be interactive. The language barriers should be removed by introducing translations to other languages. The educators must know to utilize the multimedia in the classroom based on the student’s level. Educators should be well aware of various features of the available multimedia, in order to get full benefit. More contextual and conceptual methodologies must be used while creating multimedia. The developers should think in various directions to assist the learning processes in all stages. Multimedia should provide shared teaching and learning environment to help the educators and learners. Students should be self – motivated and their responsibilities should be increased. The required knowledge enhancement tools should be added to the currently available multimedia. The educator’s responsibilities should be increased by developing new teaching processes. The educators should use various teaching processes to reduce the negative impacts on cognitive skills. Textbooks should be used in the classrooms to avoid cognitive laziness.

REFERENCES