Using Computers for Learning Mathematics- Perception of Higher Secondary School Students

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Abstract: *Using computer technology as a means of instruction will help teachers to present the information in various ways to enhance learning for every student no matter the learning style of the student. Enhancing learning and appealing to multiple learning styles may encourage students to have a more positive attitude towards the content, and the students may be excited to create their own presentations further in improving their attitude towards the content. Integrating computer technology into the mathematics unit instead of teaching through discussion, lectures, books, and paper and pencil methods is a different approach to mathematics learning which may improve the attitude towards mathematics. So the investigators decided to conduct a study on Perception of higher secondary students in using computers for learning mathematics. Perception of students was measured using the scale of perception in using computers for learning mathematics developed by the investigators. The Sample consists of 200 higher secondary school students in Malappuram District. Results showed that 40 percentage of the students showed high perception, 33.5 percentage of students showed average perception and 26.5 percentage of students showed low perception in using computers for learning mathematics. Most of the students showed average perception in using computers for learning mathematics.*
Keywords: *Perception, Computers, Mathematics Learning, Higher Secondary School Students*

I. Introduction

Today computers are no longer specialized tools used only by scientist or engineers. Computer systems are using everywhere. They are a fact of life, a common thread that ties together our education, work and home life. The importance of computers in our daily life will continue to increase. The introduction of technology resources into mathematics classrooms promises to create opportunities for enhancing students' learning through active engagement with mathematical ideas. The use of computers in education can be utilized as a new technological support for the visualization of abstract concepts through computer-generated virtual representations, allowing for the generation of mental models of the concept. With computer software, students

Using Computers For Learning Mathematics- Perception of Higher Secondary School Students can interact with educational material designed to develop the skills necessary to solve everyday situations by using their mathematical background.

As information technology continues to progress, teaching mathematics with the help of computer technology is becoming a new way of instruction. Visualization is very useful in the process of explaining mathematical ideas, abstract terms, theorems, problems, etc. Nowadays, usage of different kinds of multimedia is largely included in the education because it allows the wider spectrum of possibilities in teaching and learning. Experience in work with students showed that they are highly interested in modern methods of learning, which include all kinds of multimedia, such as educational software, internet and packages. Experience in working with students showed that they find it difficult to imagine the picture of a given problem and that they will be more successful in solving the task if it is adequately presented both textually and visually. Furthermore, if we use the multimedia presentation of the problem instead of the picture in order to enable visualization with animated movements in three-dimensional space, solving of the problem will be much easier and more interesting.

Wenglinsky (1998) [1] demonstrated that the use of a computer has positive effects on mathematics instruction. Work with computers is less intuitive than work with sheets of paper. Students working with paper were interested in using the computer, but the group work9ing with computers did not favour work with paper sheets. (Lamberty and Kolodner, 2002)[2].

Modern methods in multimedia learning include the whole range of different possibilities applicable in mathematics lectures for different levels of education and with various interactive levels (Hadjerrouit, 2011[3]; Herceg, 2009 [4]; Milovanovic, 2005 [5]; Milovanovic, Takaci and Milajic, 2011[6]; Takaci, Stojkovic, Radovanovic, 2008 [7]; Takaci, Herceg, Stojkovic, 2006 [8]; Takaci, Pesic, 2004[9]). These authors suggested using different kinds of software in education.

To harness the potentials of technology, teachers play a pivotal role in ensuring the use of technology in classroom. The representation of information by using the visualization capabilities of video can be immediate of digital video that provides new and exciting possibilities for the use of digital video in education. There are many instances where students, studying particular processes may find themselves faced with a scenario that seems highly complex when conveyed in purely text form, or by the use of diagrams and images. One of the most compelling justifications for video may be its dramatic ability to elicit an emotional response from an individual. Such a reaction can provide a strong motivational incentive to choose and persist in a task. Using Computers For Learning Mathematics- Perception of Higher Secondary School Students

Using computer technology as a means of instruction will help teachers to present the information in various ways to enhance learning for every student no matter the learning style of the student. Enhancing learning and appealing to multiple learning styles may encourage students to have a more positive attitude towards the content, and the students may be excited to create their own presentations further improving their attitude towards the content. Integrating computer technology into the mathematics unit instead of teaching through discussion, lectures, books, and paper and pencil methods is a different approach to mathematics that will be an effective tool for learning, but also improve the attitude towards mathematics. Hence the investigators decided to conduct a study on perception of students towards using computer technology as a means of instruction in mathematics.

II. Objectives

- To find the perception of higher secondary school students in using computers for learning mathematics.
- To find out the level of perception of boys and girls in using computers for learning mathematics.
- To find out whether science and humanities group students differ in their perception in using computers for learning mathematics.

III. Methodology

- ❖ Survey method was adopted for the present study.
- ❖ The sample consisted of 100 boys (50 science and 50 humanities) and 100 girls (50 science and 50 humanities) of Malappuram district.
- ❖ Scale of perception in using computers for learning mathematics which was constructed by the investigators was used to measure the perception of higher secondary school students in using computers.
- ❖ Percentage analysis was used for the analysis

. IV. Major Findings

The statistical constants of perception of students in using computers for learning mathematics is given in the Table 1.

Table 1 Statistical Constants of perception of students in using computers for learning mathematics

Sample	Size	Mean	Standard Deviation
Total	200	47.92	19.38
Boys	100	45.79	20.23
Girls	100	50.05	18.33
Science students	100	45.77	19.39
Humanities students	100	50.07	19.21

The total sample and sub samples were classified into three groups based on the values of mean and standard deviation. Students having score greater than or equal to M+ σ are classified as High perception group, those having score between M+ σ and M- σ are included in the Average perception group and those having score below M- σ are coming under the Low perception group.

The percentage of pupils coming under each group is shown in the Table 2.

Table 2 Percentage of students with different levels of perception

Sample	Level	N	Percentage
Total	High	80	40
	Average	67	33.5
	Low	53	26.5
Boys	High	38	38
	Average	36	36

	Low	26	26
Girls	High	40	40
	Average	41	41
	Low	19	19
Science	High	32	32
	Average	43	43
	Low	25	25
Humanities	High	23	23
	Average	52	52
	Low	25	25

From the Table 2 it can be seen that out of the total sample 40 percentage of the students showed high perception, 33.5 percentage of students showed average perception and 26.5 percentage of students showed low perception in using computers for learning mathematics.

Out of the total sample 38 percentage of boys showed high perception, 36 percentage of boys showed average perception and 26 percentage of boys showed low perception in using computers for learning mathematics. Out of the total sample 40 percentage of girls showed high perception, 41 percentage of girls showed average perception and 19 percentage of girls showed low perception in using computers for learning mathematics.

For the Science group students, 32 percentage of students showed high perception, 43 percentage of students showed average perception and 25 percentage of students showed low perception in using computers for learning mathematics.

For the Humanities group students, 23 percentage of students showed high perception, 52 percentage of students showed average perception and 25 percentage of students showed low perception in using computers for learning mathematics.

Science and humanities group students were compared to find out their difference in perception in using computers for learning mathematics and the result of mean difference analysis is shown in Table 3.

Table 3 Result of Mean Difference Analysis of Science and Humanities Group in their perception in sing computers for learning mathematics

Groups Compared	Mean	Standard Deviation	t-value	Level of Significance
Science	45.77	19.39	1.575	NS
Humanities	50.07	19.21		

From the table it is inferred that the obtained value is below the tabled value (2.58) at 0.01 level of significance. Hence Science and Humanities group students does not differ significantly in their perception in using computers for learning mathematics even at 0.05 level of significance.

V. Conclusion

Teaching and learning process has been greatly influenced by a variety of technological, instructional and pedagogical developments in the present times (Bonk & King, 1998 [10]; Marina 2001[11]). A positive attitudinal change among both the learners and educators is required and the use of instructional technology catalyses this process by motivating them. Merely introducing technology into classroom does not guarantee the expected innovation in learning. The main purpose of this study was to investigate the perception of students in using computers for learning mathematics.

The study revealed that out of the total sample 40 percentage of the students showed high perception, 33.5 percentage of students showed average perception and 26.5 percentage of students showed low perception in using computers for learning mathematics.

The study revealed that most of the students of each sub sample showed average perception in using computers for learning mathematics. Hence it can be suggested that computers may be used in learning situations to improve learning mathematics.

Also it is found that Science and Humanities group students do not differ significantly in their perception in using computers for learning mathematics.

References
[1]   Wenglinsky,H.(1998). Does It Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics. Educational Testing Service, Princeton, NJ, available at:http://ftp.ets.org/pub/res/technology.pdf
[2]   Lamberty,K.K. and Kolodner, J.L. (2002). Exploring digital quilt design using manipulatives as a math learning tool, available at : www.cc.gatech.edu/projects/lbd/pdfs/digiquiltlong.pdf.

[3]   Hadeerrouit,S.(2011).Using the interactive learning environment Aplusix for teaching and learning school algebra: a research experiment in middle school. The Turkish Online Journal of Educational Technology-October 2011, volume 10 issue4.
[4]   Herceg,D., & Herceg,D.,(2009). The definite Integral and Computer. The teaching of mathematics, Vol.XII,1,pp 33-44
[5]   Milovanovic,M.(2005). Application of Multimedia in teaching isometric transformation. Msc thesis (in sebian) Faculty of Mathematics. Belgrade University, 2005.
[6]   Milovanovic,M., Takaci,D., Milajic,A.(2011). Multimedia approach in teaching mathematics-examples of interactive lessons from mathematical analysis and geometry in Interactive Multimeida, In Tech, Croatia, ISBN:979-953-307-623-1.
[7]   Takaci,Dj,Stojkovic,R.,Radovanovic,J.(2008). The influence of computer on examining trigonometric functions. Teaching Mathematics and Computer Science, 6/1,111-123, Debrecen, Hungary.
[8]   Takaci,Dj., Herceg,D., Stojkovic,R. (2006). Possibilities and limitations of Scientifc Workplace in studying trigonometric functions. The Teaching of Mathematics, VIII-2/2006,61-72,Belgrade.
[9]   Takaci,Dj., Pesic,D.(2004). The continuity functions in mathematical education- Visualisation method, in Serbian, Nastava mnatematike (The teaching of Mathematics). 49,3-4, Beograd.
[10]   Bonk, C.J. & King, K.S. (1998). Electronic Collaborators: Learner Centred technologies for literacy,apprenticeship and discourse. Mahwah: Lawrence Erlbaum Associates.
[11]   Marina, S.T. (2001). Facing the challenges, getting the right way with distance learning. Education at a Distance, 15 (30), 1-8.