

Influence of ICT in Mathematics Teaching

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Abstract: Information and communication technology (ICT) is contemporary model which has combined in many streams. It has several assistances in mathematics connected pedagogical performs. Several research has shown it is beneficial for the development of Permute pedagogical skills, teaching efficiency, professional skills, content knowledge and teaching skills, communication skills, adjustment skills and other related skills of teachers and increase knowledge, skills, abilities, performance, achievement, self-learning capacity, communication skills, develop problem solving skills, motivate to learn, promote mathematical understanding, funny learning and engage with mathematical problem solving to the students. So every teachers and students should extremely utilize it in their teaching learning activities.

Key Words: *ICT, Skills, Learning, Development, Motivation.*

1. INTRODUCTION:

Mathematics is scientific and behavioral discipline so every country has integrated it as a compulsorily subject in school education. It is valuable in our each life events. Generally we can found five characteristics of understanding mathematical concepts as introducing a problem using a realistic context, identifying the main objects of the problem, using appropriate social interaction and teacher intervention to refine the models of the problem, encouraging the process of reinvention as the problem develops and focusing on the connections and aspects of mathematics. It is necessary to developed technical and cognitive proficiency of mathematics teachers. Algebra, Analysis, Topology, Mathematical Logic, numerical analysis and discrete mathematics are the area of modern mathematics. All sciences and other disciplines like psychology, sociology, philosophy, epistemology, pedagogy, curriculum studies and science are based on mathematics directly and indirectly (Stacey, 2004). ICT is sympathetic for collaborative and individual learning (Shunaq, 2002). Hence this discipline is more important in our daily activities. ICT supports mathematics for composing, revising, editing, publishing, calculating, making connections, visualizing data, finding importance, synthesizing and problem solving. Varieties of notations, formulae, symbols, figures and graphs are available in mathematics which are really difficult to demonstrate in blackboard/whiteboard like 2D and 3D figures, graphs and chart, transformation of objects and other associative matters. By ICT related applications, tools and software such matter can be taught expressively. Pupils use to come to mathematics lessons with expectations about how they might apply ICT to move their own learning forward. Mathematics teachers will not need to teach ICT capability but can exploit new chances for apprentices to apply and advance the competence that they previously have, to improve their learning in mathematics.

Mathematics is basic substance of each technologies and technologies support mathematics teaching. Outcome of computer technology on education is superior in mathematics than in any other discipline (Aydın, 2005). Technology develops abstract ideas for teachers by which they can build students prior knowledge, abilities and skills, links to the materials with mathematical concepts, address common understandings and introduce more advanced ideas (CTLI, 2007). The quality of mathematical software packages has been improving rapidly; however technology is still marginally integrated into education at all levels (Lavicza, 2008). ICT helps to teach mathematical facts, skills, knowledge, concepts and recover their mathematical understanding more effectively besides it helps to upsurge the capability of students and teachers. It comforts the individuals to organize, present and treat their mechanism and transfer their inference with others. "Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning" (NCTM, 2000). Pedagogical shift of technology engenders new teaching approaches to expand students' conceptual understanding, procedural fluency and strategic competence in mathematics. ICT makes mathematics teaching healthier and helps to increase the achievement of students (Safder et al., 2011; Gera & Verma, 2012). So every teacher has to use related technological tools, application

and software for effective and meaningful learning of mathematics. Rendall (2001) found ICT assisted teaching is more effective in raising the arithmetical and logical skills in mathematics.

2. TEACHER RELATED BENEFITS TO USE ICT:

Use of technology is also helpful for mathematics teachers, on the basis of several research report some of them has been included under this study. ICT can improve the excellence of teaching, learning and management in schools (Livingstone, 2012) and teachers' professional development (Ojugo et al., 2015). Rendall (2001) found ICT assisted teaching is more effective in raising the arithmetical and logical skills in mathematics. Texas Instruments (2007) mentioned that by using ICT, teachers can focus on faithful or imperative problems, flexible strategies, exploration and sense making with manifold representations, mathematical meaning and concepts clarified, teaching mathematics better and teaching better mathematics, student's prior knowledge and skills, assimilate among mathematical concepts, clarify common understandings and increase more innovative ideas. Some learners used to feel it as a difficult subject and found common errors in problem solving. The process of problem solving in mathematics involves four steps as understanding the problem, devising a plan or solution, implementing the plan and looking back or examining the solution. Bergqvist, Holmquist & Lingefjard (n. d.) suggested that teacher have to use technology for the effectiveness of teaching learning process which makes learning easy and helps to clear the concept of different mathematical aspect as well as increases the creativity and achievement of students. Philipps (2008) suggested that separating the learning of mathematics from the consideration of issues of mathematics teaching and learning is counterproductive to their development of mathematical content knowledge and to the development of their beliefs about mathematics teaching and learning. Karami & Attarn (2013) found that integration of ICT and problem based learning were very effective in enhancing student teachers' content knowledge and teaching skill. Jabr (2007) found positive attitude among mathematics teachers towards the use of ICT in teaching learning process. By these result it can be said that educational technologies are highly supportable for several aspects of teachers.

3. OUTCOME OF ICT USAGES IN LEARNING MATHEMATICS:

ICT has an edit properties in terms of quality of student work and practical examples through visualization. Mathematical literacy is essential for every child's future (Gera & Verma, 2012). The appropriate use of computers matching the ability of children leads to them more efficiently understanding the different mathematical notions (Howie & Seugnet Blignaut 2009; Trouche & Drijvers 2010 cited by Zaranis & Synodi, 2016). It improves learners' poor handwriting and language skills, balanced individual differences with special needs and simplifies self-pacing. It helps to enables and encourages for collaborative and independent learning, ensures individual preferences, develops communication skills, access to resource based learning and real world information through the Internet. It increases reliability of information, accuracy and student motivation, gives students more control, allows to produce high quality multimedia products, changes teacher practices, planning tools and assessment headers, increases learning occasions in the classroom (Youssef & Dahmani, 2008). ICT helps to increase the critical thinking skills, analyzing skills (Fitzallen, 2005) understanding and application skills of students (Al. Balawai, 2000; Wilson et al., 2005). It is extra favorable for conceptualize mathematical thinking, self-learning by Internet and other audio visual instruments, professional development of teachers, to make effectiveness of classroom activities, motivate students towards learning, updated teachers and students with new technologies and so on. Noor-Ul-Amin (2013) found that ICT affect the escape of education, it increases the flexibility of learning activities and achievement of students. Guzeller & Akin (2012) found ICT helps to mathematics achievement, attitude, anxiety, and self- efficiency. Mdlongwa (2012) explored some benefits of using the ICT in teaching and learning as learners can connect to experts and have access to global resources, learners have access to quality learning material, learners can improve owns knowledge and standard of work, makes communication easier and faster, and easily get information's from the Internet, it makes communication easier, learners acquire skills which they can use beyond school or university or workplace. Goos (2010) mentioned that digital technology helps students to learn mathematics more quickly and accurately. Dynamic graphical, numerical and visual technological applications provide new opportunities for teachers and students to interact, represent, and explore mathematical concepts (Anthony & Walshaw, 2009). Becta (2008) noted six major opportunities for learners to be benefited from the use of ICT in mathematics learning are learning from feedback, observing patterns, seeing connections, developing visual imagery, exploring data and teaching the computer. Chrysanthou (2008) stated some benefits of mathematical software GeoGebra as it makes teaching significant, easy, gorgeous, pleasant, funny and practical and increase attendance rate of the students. Drews (2007) found some potential of ICT as to motivate children, supply variety of teaching and learning experiences, connect mathematics classroom with function to the real world, act as a visual support to allow students to construct mental images, facilitate teachers and students to representation of mathematical processes concerned in specific number operations or calculations and support the understanding of mathematical ideas.

From the above result it can be said that ICT positively reinforces the students, develop their mathematical thoughts and several skills, upturn reasoning and analytical power, engage them in learning and increase their co-operation power.

4. AFFECTING FACTORS TO USE ICT IN TEACHING MATHEMATICS:

Verities of factors can be found to affect the use of technology in pedagogical practices like policy related factors, infrastructure related factors, human resources related factors, software and hardware related factors, technical factors. Hermans et al. (2008) found constructivist beliefs about teaching and learning have a significant positive effect on the class use of computers and traditional beliefs were found to have a negative impact on the integrated classroom use of computers. ICT policy of school being more important for ICT integration in the classroom than their ICT profiles (Tondeur et al., 2008). Panke (2016) noted six importance of developments in educational technology are bring own device, learning analytics and adaptive learning, marker spaces, augmented and virtual reality, active computing and robotics. Suman (2013) suggested that prospective teachers should have a relatively favorably attitude towards the use of computers. Skill development of teachers in ICT positively affected ICT implication (Twinomujuni, 2011). Eickelmann, Gerick & Koop (2016) have pointed out some affecting factors to average computer use in mathematics lessons which are computer availability, inadequacy of IT infrastructure: PCs and Internet, school leadership (professional development, school goals and importance of student competences), school strategies and teachers attitudes. According to Douglas (2011), ICTs for teaching are those technologies that support the teacher in their teaching of students. This could include a teacher computer (laptop, desktop or other device) that can be connected to a data projector and sound system to provide rich media to the entire class. Thompson & Mishra (2007-2008) suggested that for superiority of teaching every teacher should have good command on technological knowledge, pedagogical knowledge, content knowledge, technological pedagogical knowledge, technological content knowledge, pedagogical content knowledge and technological pedagogical content knowledge. In addition skill/experience of teachers, pedagogical and technology knowledge, pedagogical beliefs, access to resources, support from institutions, institutional culture, curriculum & assessment requirements, perceived abilities, motivation and behaviours of students, preservice education program, practicum and professional development of teachers can allso affect the proper use of ICT in teaching practices.

5. CONCLUSION:

From the above description it can be concluded that ICT supports mathematics teacher to improving their designation of lessons, teaching learning tactics, updated to subjective and pedagogical knowledge and expansion of other several relevant skills. It is also highly beneficial for students as stimulate and involve in learning, assembled confidence in their mathematical capabilities, share and develop several subjective ideas and others. On the basis of these all causes related stakeholders should have facilitate and encourage them for its proper utilization in teaching learning activities.

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