



# Learning Skills Towards ICT of Prospective Teachers: A Study of Srikakulam District, Andhra Pradesh, India

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## ARTICLE DETAILS

### Article History:

Received Date: 16/01/2019

Revised Date: 26/01/2019

Accepted Date: 30/01/2019

e-First: 10/02/2019

### Keywords

Creativity  
educational institutions  
learning and teaching science

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## ABSTRACT

Creativity is an important aspect of human development. The trend towards globalization with technological developments requires energy product that is productive and innovative people in all walks of life. Acculturation creativity is needed in the early development of the mind of an individual. Science curriculum is taught in educational institutions is seen as a subject that can help to improve the quality of creative thinking among students. Among the challenges faced in the cultivation of creative thinking skills in learning and teaching is the knowledge of teachers about the teaching of creativity, not to emphasize the application of creativity by teachers, students who are shy and do not want to show their creativity. Therefore, this paper will describe the basic concept of what is meant by creativity, creative teaching, learning strategy fostering creativity in science, and the role of the science curriculum in the formation of creative minds. Furthermore, this paper will clarify some of the proposals that are expected to bring about change towards fostering an atmosphere of creativity in teaching and learning.

## 1. Introduction

The 21<sup>st</sup> century learning skills are often called the 4 C's: critical thinking, creative thinking, communicating and collaborating. These skills help students learn, and so they are vital to success in school and beyond. Critical thinking is focused, careful analysis of something to better understand it. When people speak of "left brain" activity, they are usually referring to critical thinking. Creative thinking is expansive, open-ended invention and discovery of possibilities. When people speak of "right brain" activity, they most often mean creative thinking.

## 2. ICT in 21st century's Teacher Education

ICT stands for Information and Communication Technology. It is a collection of technological tools and resources used to create, communicate, store, and manage information systematically. ICT includes technologies like computers, the internet, radio, television and telephony. ICT is a key input for economic development and growth (Cox, M. J. 1997). It offers opportunities for global integration while retaining the identity of traditional societies. ICT can increase social well-being of poor people, and empower individuals as well as communities. Finally, ICT can enhance the effectiveness, efficiency, and transparency of the public sector, including the delivery of social services. ICTs have great potential for knowledge dissemination, effective learning and the development of more efficient education services.

Haddad and Draxler (2002) had identified five levels of technology use in education: Presentation, Demonstration, Drill and Practice, Interaction, and Collaboration. They also added that networked computers and the Internet are the ICTs that enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration. There are positive effects of ICT on pupils' motivation (Thornburg, David, 2000). Pupils are spending longer on tasks, increasing their commitment to learning, achieving more through the use of computers and of being enthusiastic about using computers in their lessons (Sam, H. Kant et al. 2005). From the empirical researches, it is clear that there is a positive effect of specific uses of ICT on pupils' attainment in almost all the National Curriculum subjects, the most substantial positive effects being in Mathematics, Science and English at all vital stages. There is a strong relationship between the ways in which ICT has been used and the resulting attainment outcomes (Peng, C., Tsai, and Wu, y (2006). This indicates that the crucial component in the use of ICT within education is the teacher and their pedagogical approaches. It is

confirmed that specific uses of ICT have had a positive impact on pupils' learning. ICT-multimedia were useful for some students in the middle ranges of ability.

UNO reveals that ICT can be used to achieve the Millennium Development Goals, which include the eradication of poverty and hunger, universal achievement of primary education, women empowerment, promoting maternal health, reducing child mortality, combating diseases like HIV/AIDS and Malaria diseases, promoting a global partnership (UNO, 2006). UNESCO admitted that ICT takes a vital role in achieving EFA principles and can enhance the quality of education across the board at primary, secondary and tertiary level and also to support teacher training (UNESCO, 2006). Finally, ICTs contribute to a more conducive environment through the application of ICT in management and administration of Teacher Education (World Bank (1998).

### 3. Need and Significance of ICT Integration in Teachers' Education

Theoretical knowledge of technologies in education is not sufficient unless and until the practical aspect of teacher training is not adopting ICT. Education technology is an essential part of our B. Ed courses. It encompasses e-learning, multimedia learning (MML), information and communication technology (ICT), technology enhanced learning (TEL), computer based instruction (CBI), computer assisted training (CAT), computer aided instruction (CAI), internet based training (IBT), web based training (WBT), computer mediated communication (CMC), virtual learning environment (VLE), m-learning and digital education etc. Many of these technologies are being used successfully in distance learning programs, but to develop the effective classroom teaching the use of ICT should be well woven in our teacher training program to make prospective teachers more competent with enhanced capacity in this era of globalization. A successful teachers training program is one which develop teaching skills and capacity to face the challenges in present scenario. Use of ICT for teacher training program has been recognized by the government of various South Asian Countries. In India Intel has initiated "Intel Teach across India Program". Several other programs are also running in the same direction. Training a teacher to use ICT in his teaching is more crucial than acquiring theoretical knowledge of ICT tools. ICT use is not to make content attractive, but it is used to organize, share and collaborate the information and communicate in an effective manner making teaching learning more productive. Only blackboard may not be helpful in elaborating various instructions. Imparting the knowledge through ICT tools may reduce efforts and energy and make more impressive effective learning. Thus the use of ICT has changed the role of teachers from disseminator of information to learning facilitator, helping students to construct their own understanding (P.S.Kawatra, 2006).

### 4. Role of ICT in 21st Century's Teacher Education

The concept of moving the traditional classroom of desks, notebooks, pencils, and blackboard to an online forum of computers, software, and the Internet intimidates many teachers who are accustomed to the face-to-face interaction of the traditional classroom. In the past 10 years, online instruction has become extremely popular. Technology encourages teachers to take on new and expanded roles, both inside and outside the classroom. Within the classroom, technology supports student-centered instruction. The teacher assumes the role of coach or facilitator while students work collaboratively. Outside the classroom, technology supports teacher collaboration. Instead of working in isolation, teachers can work together on school-wide programs that they can help find solutions to problems, act as peer advisors to provide information and feedback, and collect data to test hypotheses. Their new roles may involve distance collaboration with cross-school peer groups and study groups through telecommunications. Professional development for technology use provides opportunities for teachers to become comfortable and effective in these new roles.

Research studies indicate that educational use of ICT is challenging for teachers (Hammond, et al. 2009). ICT is expected to change teachers' pedagogical practices; meanwhile integration is seen to be based on teachers' attitudes and knowledge (Cullen et al. 2011). Attitudes and pedagogical beliefs are traditionally examined as teachers' individual perceptions and individual choices (Sang, et al. 2010). Recently, teachers' attitudes and pedagogical beliefs are discussed from the perspective of generation. Integration of technology is expected to be easier for younger generations than for older generations. Nowadays student teachers are assumed to belong to this younger generation who are born in a digital age and who are familiar with ICT (Bennett 2010, Valtonen, et al. 2011). However, generation is seen to be too wide perspective to evaluate the educational use of ICT and research has indicated that there are differences how student teachers use ICT in everyday life and how student teachers integrate ICT into teaching and learning.

- ICT helps teachers in both pre-service and in-service teacher training.
- ICT helps teachers to interact with students.

- It helps them in preparing their teaching, provide feedback.
- ICT also helps teachers to access with institutions and Universities, NCERT, NAAC NCTE and UGC etc.
- It also helps in effective use of ICT software and hardware for teaching –learning process.
- It helps in improving Teaching skill, helps in innovative Teaching.
- It helps in effectiveness of classroom.
- It also helps in improving professional Development and Educational management as well as enhances Active Learning of teacher Trainees.
- It is now replacing the ancient technology. As we know now-days "students are always having a competitive mind. So the teacher must have the knowledge of the subject. This can be done through ICT.
- ICT helps teachers in preparation for teaching. In order to introduce ICT in pre-service teacher education different methods and strategies are applied. Different tools are used such as word processing, Database, Spreadsheet etc. Various technology based plans are used to help the teachers for their practice teaching.
- ICT prepares teacher for the use of their skills in the real classroom situation and also make students for their future occupation and social life.
- ICT used as an „assisting tool" for example, while making assignments, communicating, collecting data & documentation, and conducting research. Typically, ICT is used independently of the subject matter.
- ICT as a medium for teaching and learning. It is a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn. It appears in many different forms, such as drill and practice exercises, in simulations and educational networks.
- ICT as a popular tool for organization and management in Institutions.
- Teachers must provide technological support to learn to use motion picture, animation, simulation training which helped student teachers to give a model presentation. If the teacher is highly equipped with technology, the student will also be equipped with technology.
- It removes the traditional method of teaching and prepare the teacher to apply modern methods of teaching.
- ICT plays an important role in student evaluation.
- ICT is store house of educational institution because all educational information can safely store through ICT.
- ICT helps Teacher to communicate properly with their students. So ICT bridges the gap between teacher and students.
- ICT helps Teacher to pass information to students within a very little time.
- ICT helps Teacher to design educational environment.
- ICT helps Teacher to identify a creative child in an educational institute.
- ICT helps Teacher to motivate students and growing interest in learning.
- ICT helps Teacher for organizational preconditions (vision, policy and culture).
- It is also helps Teacher for their personnel support (knowledge, attitude, skills).
- ICT helpful for technical preconditions (infrastructure).
- ICT helpful for designing learning situations which are needed for both vocational education and the training of future teachers (in the teacher training institutes).
- Teacher training institutes can develop their curriculum using ICT.
- With the help of ICT Teacher training institutes can develop communication network.
- Teachers learn most of their own networks (learning from others) with the help of ICT.

### 5. ICT for prospective teachers

In this 21st century's new perspective on teaching and learning, it is now necessary to open a new window for thinking about how 21st century skills and standards impact these traditional teaching roles. The goal is to make these roles relevant for today's evolving learning needs. Thus, we visualize the aim of 21st century teaching as the development of knowledge, higher-order skills (such as the 4Cs of creativity, critical thinking, communication, collaboration), and character, as well as the establishment of lifelong learning habits and an ability to learn how-to-learn with technology as the central roles in the new picture of teacher effectiveness.

To prepare students for a multiple career life-path, we will need teachers capable of developing learning plans for students who are ready to fulfill their capacity as a whole person adaptable for whatever career paradigm that will emerge. Given these multidisciplinary demands, effective teachers will plan lessons and learning units that give priority to the skills students will have to carry across the disciplines and into new and different jobs. Thinking, problem solving, collaborating and communicating must emerge onto center stage and provide the means for all students, not just a select handful, to traverse this multi-disciplinary landscape.

Instead of using uniform strategies for all students, this century's effective teacher must design instruction that motivates each student by providing experiential, authentic, and challenging experiences. These teachers communicate content in such a way that students are able to comprehend based on their individual prior learning and ability.

Because these students are learning in various ways and at different rates, effective teachers deliver their lessons with appropriate differentiation. It is important to note that effective teachers do not implement high-yield strategies in isolation. They must be implemented simultaneously and in a differentiated manner to create meaningful learning opportunities for all students. Implementing a variety of classroom strategies, also enhances student motivation and decreases discipline problems.

**5.1 Learning Skills:** Learning skills mean making our mind capable to find solutions on problems offered in a specific field, which requires some kind of sound decision making. The 21st century learning skills are often called the 4 C's: critical thinking, creative thinking, communicating, and collaborating. These skills help students learn, and so they are vital to success in school and beyond.

## 6. ICT Learning Skills among Prospective Teachers

Integration of ICT in teaching has very important significance of learning attitude of students, creativity, knowledge construction, learning environment, teaching strategies, problem solving skills and understanding concepts using various tools. The learner has the opportunity to keep records of information in electronic version and understand different concepts on the basis of self-teaching. Different forms of Multimedia channels provide information about content knowledge, understanding of different concepts, a variety of approaches and expertise. Teachers have had to learn new things and handle new teaching skills. Indeed, there is now a range of media competencies teachers must have to maximize the value of ICT learning in classrooms. Use of ICT is increasing day by day to achieve educational objectives and its application has great influence in teaching and learning process which encourage teacher educator to use technological application for training programmes. Use of ICT in education has reshaped the conventional teaching approaches and provided innovative methods in teaching and learning process. ICT are innovations in teaching and learning inspired by a constructivist perspective. In this context, an attempt is made to find out the ICT learning activity of the prospective teachers.

Table 1.1 explains the prospective teachers' perception on statements tries to learn the ICT activity. The statement is sub-divided into two parts basing on the nature of the activity. Regarding digital media like the differentiate instruction with digital media and Capture and edit images, audio, video and Produce digital multimedia educational experiences are explained in Statements L1 to L3 why to learn the activity. 67.13% to 86.18% of the respondents are concentrated in this regard. Respondents by 74.81% to 90.48 are learning ICT skills to create effective digital presentations & employ new media devices for learning (statements L4 to L7).

**Table 1.1:** Prospective teachers' perception on statements tries to learn the activity

S. No.	Statements	Response % to 651		Total
		Yes	No	
I	Digital media: Differentiate instruction with digital media and Capture and edit images, audio, video and Produce digital multimedia educational experiences			
L1	Awareness of assistive technologies for disabled students as well as the ability to use a computer to prepare and present academic ideas in a variety of forms for better learning by all students.	86.18	13.82	651(100.0)
L2	Use digital still and video cameras, edit their output on a computer, and produce learning materials that range from simple slide shows to the achievement of student presentations and performances.	67.13	32.87	651(100.0)
L3	Combine media from a wide array of sources into a useful presentation of academic content, and to teach this skill to students.	70.20	29.80	651(100.0)
II	Presentation and deliver: Create effective digital presentations & Employ new media			

devices for learning				
L4	Using common tools for preparing slide shows, videos, and podcasts	80.18	19.82	651(100.0)
L5	Create presentations that follow the principles of communication, and can apply these design principles to the evaluation of students' digital work.	74.81	25.19	651(100.0)
L6	Using common devices such as computers, projectors, and screens to set up classroom presentations	89.55	10.45	651(100.0)
L7	From large Smart Boards to tiny iPods incorporate a variety of digital devices into the instruction in the classroom.	90.48	9.52	651(100.0)

Source: Field survey

## 7. Conclusion

About 67.13% to 86.18% of the respondents are interested in ICT to differentiate instruction with digital media and Capture and edit images, audio, video and Produce digital multimedia educational experiences (statements L1 TO L3). It useful to get awareness of assistive technologies for disabled students as well as the ability to use a computer to prepare and present academic ideas in a variety of forms for better learning by all students, use digital still and video cameras, edit their output on a computer, and produce learning materials that range from simple slide shows to the achieving of student presentations and performances, combine media from a wide array of sources into a useful presentation of academic content and to teach this skill to students.

About 74.81% to 90.48% of the prospective teachers expressed 'yes' to learning activities of effective digital presentations & Employ new media devices for learning (statements L4 TO L7) towards using common tools for preparing slide shows, videos, and podcasts, and create presentations that follow the principles of communication, and can apply these design principles to the evaluation of students' digital work. It includes using common devices such as computers, projectors, and screens to set up classroom presentations and large Smart Boards to tiny iPods incorporate a variety of digital devices into the instruction in the classroom.

The ANOVA test results on variation in prospective teachers' perception on trying to learn the activity towards ICT shows that the p-Value of 4.57 at  $p > 0.05$ . Thus, the null hypothesis is rejected and accepted the alternative hypothesis that "There is a significant difference between the prospective teachers on ICT learning skills" at the 5% level of significance. However, the ANOVA results shows that there is a significant difference between the male and female, rural and urban, UG and PG prospective teachers on ICT Learning Skills" at the 5% level of significance.

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