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Bringing Technology into Classrooms - Practices and Challenges

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Abstract **– India is witnessing a paradigm shift in the field of education, in terms of curriculum, teaching methodology, learning styles, modes of assessment and evaluation with the upcoming changes and advancements. One good example is the revolution led by advances in information and communication technology (ICT) which is successfully restructuring education in such a way that it reflects and responds to present and future needs of the students who function in a challenging intellectual environment. One most widely used ICT tool in the hands of both the teacher and the learner is the computer. Uses of computer are many, but our abilities to understand and make use of these uses are slow. There are different ways by which teachers react to introduction of computers into pedagogy, teaching and assessment procedures. Some adopt a resistant attitude, others may see this change as an antidote to boredom, while some see themselves as innovators. Knowledge of teachers on computer usage and significant experience in the usage of computers is said to have a positive effect on their attitude towards computers. Undoubtedly, the success of student learning will depend largely on the attitude of teachers and their willingness to embrace technology. The present paper throws light on information based on a pilot study on teachers in Hyderabad city, who reflected on their opinions, challenges they encounter and best practices they adopt in their classrooms in the use of computers such that meaningful and authentic learning experiences are made possible and available to the learners.**

Keywords **– Computer Usage, Digitalised Literacy, ICT, Technology in Classrooms, Pedagogical Practices.**

I. INTRODUCTION

The need for radical changes with a view to keeping up with the ever increasing volume and variety of knowledge has been recognized as an inevitable phenomenon in the changing process of education in India. The nation is witnessing a paradigm shift in the field of education, in terms of curriculum, teaching methodology, learning styles, modes of assessment and evaluation. With the upcoming changes and advancements in the scientific world, education seems to be necessarily evolving, absorbing all such changes and subsequently in turn is bringing about a positive change in the world. One such good example is the revolution led by advances in information and communication technology (ICT) which is successfully restructuring education in such a way that it reflects and responds to present and future needs of the students. Educational systems around the world are under increasing pressure to use ICT as an important tool to teach students the knowledge and skills they need in the 21st century. There lies the need to change the traditional perception of teaching into an active learner centered model; the teacher to transform from the role of a 'transmitter of information' into the role of a counsellor, guide, an "agent of change" and the learner to shift from being a passive listener to an active explorer of knowledge. To meet the demands, designing and implementing successful ICT enabled pedagogical practices that can help provide an impetus to teaching practitioners is the key to fundamental, wide ranging educational reforms. This is because it is teachers who have a direct and active contact with the learners at every step. It is teachers who need to make the classroom a conducive workplace that can be exciting, satisfying, and appealing to the eyes, ears and especially the head of the learners. It is teachers who should take every care to provide such an environment to the learners that can challenge the intellect and high order thinking skills of the learner. Thus, it is a sheer necessity that teachers should mould themselves to extend their limits of knowledge to encompass multimedia digitalised literacy as well.

The learning outcomes expected of an individual and also the whole class are now different. The learners are no more ready to sit passively to receive theoretical content 'poured' out from prescribed text books. To learn meaningfully, to think flexibly, to make reasonable judgement, to thoroughly understand, to logically reason, to go beyond given information, to deal systematically novel problems and situations and of course to communicate effectively are the skills, the present day learner is expected to be equipped with. Learning is about searching out meaning and imposing structure. Learners are viewed as active creators of their knowledge and frameworks of interpretation. Thus learning has to be pursued in an atmosphere where there is a good scope for discussing ideas/ thoughts, questioning, predicting, contradicting, doubting and arguing. To make such a highly desirable constructive shift possible, ICT can be of great help. An exploratory interactive environment accompanied with multi-media, hyper media and networked communication can simply create wonders in the teaching- learning domain.

ICT use helps to pursue higher-order thinking and problem-solving skills. It is believed that learning to solve problems, developing research skills and studying problems of personal interest are the key to a successful education (Zuga, 1993). Other benefits derived from ICT usage are that it fosters collaborative learning and flexible learning opportunities independent from time and place and that it offers opportunities arising from cross-cultural use (van Braak, 2001). Hawkridge (1990) also stresses the educational innovation potential of ICT use. A recent study (Hennessy & Deaney, 2004) reports that teachers are gradually starting to integrate ICT into their teaching strategies. More essentially, the use of internet is widely utilized. The internet supports a variety of content- text,

audio, video, games, animations and simulation. (Dubey M, 2011)

II. Computer-An Important Resource

The first step to technology integration is to understand teacher's beliefs and attitudes towards ICT. (Meyer, 1997). The teacher's own beliefs and values play a very important part in shaping their pedagogical practices and in creating innovative learning opportunities in the class room. The success of a 21st century teacher depends on her ready willingness to integrate technology into education. From the wide array of ICT tools available like the range of audio devices, Television, Radio, Mobile gadgets, interactive white boards etc, one commonly and widely used user friendly ICT tool is the computer. Computer can be utilised with other multimedia or it can stand alone and still serves its basic purpose. If teachers see introduction of computers into their subject as bringing curriculum change with it, they may react in different ways; some may adopt a resistant attitude to this change; others may see this change as an antidote to boredom, while some see themselves as innovators. The success of a student who can view computer as an important tool of learning, will largely depend on the attitude of teachers, their willingness to embrace technology and to mould themselves as computer literates.

A small scale project study was conducted by students pursuing M.Ed. course in M N R College of Education, Hyderabad, on around 100 secondary school teachers working in different Government and Private schools across Hyderabad city, out of which 47 are male teachers and 53 are female teachers.

The study was conducted in 2 phases. The objective of the study in the 1st phase was to arrive at the information about the number of teachers who had considerable knowledge/experience in the use of computers and who showed a favourable attitude towards the usage of computer for pedagogical practices. Accordingly, preliminary details covered information about type of school, gender, computer knowledge of teachers, significant experience in the usage of computers and whether they had a positive or negative attitude towards the use of computer for the purpose of pedagogical practices.

The outcome of preliminary data analysis is :

- 60% of teachers reported "Nil" knowledge on usage of computers.
- 12% of teachers had significant experience in the usage of computers.
- 28% of teachers integrated computers into teaching.
- 60% of teachers reported resistance to the use of computers. (This reflects a strong negative attitude towards use of computers).
- 12% of teachers reported technical specialisation.
- Government school teachers are more reluctant to use computers for education than their peers working in private schools.
- Female teachers exhibited higher level of reluctance to use computers when compared to their male counterparts.
- The second phase of the study involved collection of data from those teachers who used computers in education regarding pedagogical practices they employed and also the challenges encountered there in.

III. Computer Based Pedagogical Practices

- A combination of projector and computer are used to project the class notes on the screen as notes becomes more legible and is error free. The notes is saved as a record for use in the future.
- Subject information/class notes/summary of class room discussions or group work / time tables and specific announcements are sent to the whole class via e-mail/web page.
- Students are encouraged to create and present Power Point presentations in the classrooms and also share their individual work with the group members or the whole class via e-mail. At times when there is no access to a computer a overhead projector is used for the purpose and students prepare transparencies instead.
- Students are given information about specific related web-sites while a lesson is being taught and are encouraged to use these web-sites either at home or in a computer lab for better understanding and further learning.
- In the absence of a projector, students are given hand-outs that include notes/material presented in slides or screen captures of the pictures displayed on the computer monitor while the lesson is being taught. Students later use these hand-outs as reference material individually in the computer lab for further work-out.
- To assign project works to students, a sample power point presentation is created by the teacher and is presented to the whole class either on computer monitor or projector screen. Also, a printed copy of specific written instructions about their project work along with information about appropriate Web-sites to be visited is provided to the students.
- To ensure collaborative learning, students of mixed abilities are grouped up into teams ensuring that at least one in the team possesses computer knowledge. Assignment worksheet is provided to the team leader that describes the nature of the task to be accomplished along with specific instructions if any. Each team member is made responsible for a specific part of the assignment. After the given time, the team finally present their work to the whole class. The team members change roles for the next assignment.

IV. Challenges

- Room size makes it difficult for all students to be able to see the screen in the absence of a projector.
- Unavailability of Projectors in the school.
- There is no separate computer lab in school.

- There is either no internet connection or for most part of the time is slow / unreliable.
- There is no separate 'help provider' to address functionality issues.
- Use of computers in teaching is time consuming and an extra burden for the teacher.
- Students may falsely present plagiarised work from internet as their own.
- Not all students have access to computers / internet outside school campus.
- Over reliance / inappropriate use of computers as a teaching tool can compromise teaching- learning effectiveness.
- Heavy emphasis on use of computers / internet is a disadvantage to most students.
- Not many teachers are interested or have the knowledge to operate the computer.

V. Remedies / Suggestions

- Use of computers should be viewed by the teachers as a break to the routine duties and which can enhance productivity but not as a burden.
- Teacher training should include instructional applications of computers. Practicals in the same should be made mandatory and should carry weightage.
- In-service teachers should be provided with training in learning and updating computer related skills preferably within the school hours.
- The prime factor that inhibits integration of ICT in most schools is lack of the required infrastructure, hardware, software and technical support. Every individual school where there is almost no basic ICT support, should proceed in their adoption and use of ICT. They should begin with purchase or have had donated computers and other ICT tools.
- Availability of at least one computer with internet facility and a projector in schools should be made mandatory.
- To integrate computers with teaching, there should necessarily be an improvement in awareness, knowledge, necessary skill, competence and confidence among teachers. Every teacher should at first set a goal to use computer in teaching. Later, teachers should put in goal directed efforts to strengthen individual abilities, overcome professional obstacles, constantly keep self motivated and manage stress and time effectively for the positive achievement of the goal. Once done, the satisfaction in experiencing the benefits of integrating computers with teaching and better learning output will automatically persuade colleagues to take up similar tasks. They can also share and spread their 'new' ideas, experiences and successful practices to their peers through online social networking groups.
- For those students who do not have a computer at home, after school or weekend access to computer labs and the school library could be provided. Schools can conduct a 'donate-a-computer' program with local businesses or utilise the services of local computer learning centers.
- Teachers can have their students grouped into teams based on their knowledge and computer skills. The most knowledgeable team can help the teacher to deal with hardware issues, printing problems, working with multimedia, specific software programs, and saving files. Also, can help other teams who are progressing slower or who need assistance through peer- tutoring.
- Teachers can allow 'students led presentations', where students can develop a multimedia presentation for demonstration before the class, incorporating text, charts, graphs, sound effects, and video into their presentations.. This allows students to build their computer skills, share their work with others, exercise their creativity, and develop public speaking skills.
- Internet based simulations keep students active and interested. Simulations are multimedia based internet sites that dynamically demonstrate information and activities. Video/Audio files could be downloaded and saved for future use.

VI. Conclusion

Best practices are an inherent part of a curriculum that exemplifies the connection and relevance identified in educational research. They interject rigor into the curriculum by developing thinking and problem-solving skills through integration and active learning. Relationship between teacher and student is built through opportunities for communication and teamwork. As best practices involving technology are applicable to all grade levels and provide the building blocks for instruction, all the teachers are expected to follow and create innovative ones. Best pedagogical practices motivate, engage and prompt students to learn and achieve and only those students who receive a balanced curriculum and possess the knowledge, skills and abilities to transfer and connect ideas and concepts across disciplines will be successful. Thus, let all administrators, teacher educators, teachers and other stake holders team up to provide and make possible the best technology based pedagogical practices available to the 21st century learners.

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The author is born at Visakhapatnam in Andhra Pradesh, India, in 1977. The author has post graduate degrees in the subjects, Zoology, English and in Education, all of them awarded from Andhra University, Andhra Pradesh. Having finished an M.Phil. in the Education discipline, the author has submitted her thesis for the doctoral degree under the same discipline at Acharya Nagarjuna University, Andhra Pradesh, in 2016. The author is presently working as an Assistant Professor in the faculty for M.Ed. course at MNR College of Education, Hyderabad, India.