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TECHNO-PEDAGOGICAL SKILL; AN INDISPENSABLE SKILL FOR A 21ST CENTURY CLASSROOM TEACHER

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Abstract: In this ever evolving world, change is the only constant. Progress is impossible without adapting to the changing circumstances. As a result of advancements in Science and Technology there is a paradigm shift in teaching-learning process and one should adapt to these changes to be lucrative. The impact of technology on education sector is palpable and considered as a god in disguise as it is assisting in clearing the impediments that prevail in the process of instruction at all levels of education. It has made the job of a teacher effective, task of learning easier and transaction of content interesting. Technology can promote universal access to education, render quality education, encourage the teaching fraternity towards their professional development, capable of addressing various needs of all types of learners and many more. In this regard, the impact of technology on teaching and learning is immeasurable. Teachers need to understand the importance of integration of technology with pedagogy as the present education revolves around technology enhanced learning. There are various challenges faced by the classroom teacher to successfully integrate technology and pedagogy where as successful integration of technology and pedagogy has countless benefits. Hence it is imperative on the part of the teacher to overcome these barriers and strive hard to develop techno-pedagogical skills as he or she has the power to transform the students in to most productive citizens.

Key words **– Techno-pedagogical skill, teaching, 21st century skill.**

I. INTRODUCTION

Education has become the basic need for an individual just like food, water, and shelter. Earlier education was perceived as a stature, later it was deemed as a tool for making living whereas now it has been adjudged as a way of living. Education is no more considered as a one-shot program but is regarded as a lifelong process. Education is defined as the systematic process of obtaining ability and knowledge through formal and informal exposure to information, ideas and experiences[1].

Nelson Mandela has rightly said that "education is the most powerful weapon you can use to change the world". The world today is in grave need of augmented changes that can be brought through Education. Education without effective teaching is a futile effort. Hence teaching plays a vital role in the process of education as it is an integral part of it. Teaching is not a mere transaction of content to the concerned class of students[2]. Teaching is an art and science. Teaching requires not only the knowledge of content but also the knowledge about psychology, philosophy, and sociology of education. Teaching is regarded as science as it is highly logical, sequential, practical, experimental and systematic[3].

As the process of learning is being revolutionized in the 21st century and teaching is customizable, it is obligatory on the part of the teacher to possess certain skills which are termed as 21st century teaching skills. In simple terms, 21st Century Skills refer to the skills that are required to enable an individual to face the challenges of the 21st century world that is globally-active, digitally transforming, collaboratively moving forward, creatively progressing, seeking competent human-resource and quick in adopting changes[4].

Technology literacy is regarded as one of the 21st century skill. Teachers should possess sound knowledge about the usage of information and communication technology as the learners of current generations have grown with an unprecedented amount of technological exposure. Rabindra Nath Tagore has rightly said, "A teacher can never truly teach unless he is still learning himself. A lamp can never light another lamp unless it continues to burn over its own name". A teacher should be a constant learner to be adept enough to tackle the students with immense technology influence. He or she should have mastery over the skills to use technology strategically so it benefits both the teacher and the taught. Effective technology integration in classroom learning demands an understanding of how ICT tools are related to the content area and pedagogy part. So along with content and pedagogy knowledge, a 21st-century teacher must possess ICT knowledge as well.

Building upon Shulman's (1986) Groundbreaking conceptualizations of pedagogical content knowledge (PCK) or knowledge needed to teach effectively within different curriculum areas, educational technology researchers have embraced Techno Pedagogical Content Knowledge (Mishra & Koehler, 2006). Technological pedagogical content knowledge is abbreviated as TPCK (Thompson and Mishra, 2008) TPCK is the knowledge required to integrate technology, pedagogy, and content in order to teach effectively[5]. As a class room teacher is competent enough in content area the focus should be on skills to integrate technology and pedagogy, termed as Techno-pedagogical Skill.

II. NEED FOR INTEGRATION OF TECHNOLOGY AND PEDAGOGY

Due to the rapid revolution in the field of information and communication technology there is a paradigm shift in teaching-learning process. Teachers are changing their teaching styles so as to accommodate technology in to their regular classroom teaching. The use of ICT in education improves the quality of education and brings about desirable changes both qualitatively and quantitatively. ICT is a potentially powerful tool that can offer unprecedented opportunities to revolutionize ways of teaching and learning and shift the process from being teacher-centered to learner centered. The effective and efficient use of ICT depends on technically competent teachers hence it is high time to embrace the fact that in order to bring decisive changes with respect to quality education; teachers must be equipped with knowledge about integration of technology and pedagogy. Technology used for teaching and learning should be considered an integral part of instruction and not as an object exclusive to itself. Viewing technology integration from a wide perspective will provide teachers with the necessary foundation to implement technology into the classroom more successfully[6].

Technology integration is complex and is made up of processes of interconnected activities[7]. The activities include planning the lesson, instructional objectives, selection of appropriate instructional materials, learning styles of the students, pace of learning, assessment and evaluation of the whole process of instruction. However, integrating technology into teaching cannot be achieved overnight[8]. Teachers need to understand that a range of tools exists for a particular task, the ability to choose a tool based on its fitness, strategies for using the tool's affordances, and knowledge of pedagogical strategies and the ability to apply those strategies for use of technologies[3].In broader sense technology integration with pedagogy is essential to facilitate learning, fill learning gaps, address learning difficulties, asses learning outcomes, evaluate leaning process.

III. IMPORTANCE OF TECHNO-PEDAGOGICAL SKILL FOR A CLASSROOM TEACHER

Technology promotes effective instruction that is user-centered, inter-disciplinary, self-paced, and real time. It caters to the needs of individual learner and can be adapted to all the learning styles. As a result of this it is widely used in the educational sector for the purpose of instruction. In doing so, it encourages the development of higher order thinking skills like analyzing, synthesizing, applying and creating among students, which are very essential in today's competitive world.

For a teacher of present generation, it is imperative to have the knowledge about ICT and its usage in the process of instruction. They should know to successfully integrate right kind of ICT into their subject matter while planning the lesson as well as while providing learning experiences. The selected technological resource should complement the knowledge of the teacher and assist the learner in construction of knowledge[7]. The techno-pedagogical skill helps a classroom teacher to teach the subject matter more effectively by addressing individual needs. This in turn helps the learner to understand the concepts thoroughly with better retention of the learned concepts.

Acquiring techno-pedagogical proficiency will make teaching and learning a pleasurable exercise as it would lessen the pressure on the teachers, and enable the students to plunge deeper into knowledge acquisition process [9]. It helps a teacher to guide the students towards self-learning, an important skill to be possessed by all the learners of present generation. There are innumerable e-learning resources and a teacher with sound knowledge of techno-pedagogical skill can motivate and assist his or her students to opt for extensive reading by making use of e-resources. Teachers can also encourage the students to continue their education through distance mode of e-learning who are not able to pursue their education due to some obvious or personal reasons.

Hence, in light of all these points we can say that the Teachers need to update themselves towards techno-pedagogical skills to fulfill the needs of the learners of present generation, to nurture the technological competencies among them, thereby creating productive as well as self-reliant citizens. Preethibala and imlikokila(2018) has rightly said that Teachers are those who have courageously chosen the path towards selflessly working for the mankind[10]. Teachers have the power to transform the students in to most productive citizens. And as the present education revolves around technology enhanced learning, techno-pedagogical skill helps the teacher to choose right method of teaching along with the adequate teaching learning materials which is to be used for effective teaching. It also help a teacher in his or her career development, to take up research related activities in the area of techno-pedagogy, to be open minded towards usage of technology in education and embark on the journey of enriching their techno-pedagogical skills.

IV. CHALLENGES TO USE TECHNO-PEDAGOGY IN TEACHING

Successful integration of technology and pedagogy has countless benefits. It can be acknowledged that techno-pedagogy enhances better education rather than simple education but there are numerous challenges[11]

1. Lack of training

   Todays'teacher education program fails to provide practical exposure towards technology integration in to teaching. In-service teachers also lack techno-pedagogical skill as they have not been trained to integrate technology with pedagogy.
2. Lack of knowledge about ICT

   This becomes a biggest impediment in developing techno-pedagogical skill as this is the pre requisite for effectively integrating fruits of technology to ones class room teaching. Some teachers possess negative attitude towards usage of ICT in teaching. Researchers have determined that there are negative beliefs that affect teachers' or pre-service teachers' effective implementation of technology integration in terms of techno-pedagogical skill[12].
3. Lack of infrastructural facilities

   Even though a teacher has sound knowledge of technology and ways to integrate it with pedagogy, lack of proper facilities like computers, projectors, screens will become a hurdle to discharge tech-based instructions.
4. Lack of technical assistance

   A single teacher may not be competent in handling both hardware as well as software part while integrating technology in teaching-learning process. He or she might need some technical assistance from someone who is technically competent. All the educational institutions may not have this facility. In such a scenario teacher becomes reluctant to use technology in teaching.
5. Lack of support and co-ordination

   There will be lots of friction between teachers with techno-pedagogical skill and teachers without them. Such friction leads to conflicts among departments and administrators. Not every management allows teachers to experiment with their students. In such situations teachers feel demotivated and discouraged.
6. Power issues and connectivity problems:

   The power outages and fluctuations dampen the potential impact for the use of techno-pedagogical skill. It became the reason for damage of working computer and other equipments which support the Techno-pedagogical frame[11]. Internet connectivity is the biggest challenge of present day. Even though the network providers are working around the clock to fix this cliché still it prevails as a challenge for discharging technology based education.

V. SUGGESTIONS TO ENHANCE TECHNO-PEDAGOGICAL SKILL AMONG TEACHERS

The challenges faced by the teachers to successfully integrate technology and pedagogy thereby enhancing their techno-pedagogical skill can be exterminated by adopting following suggestions.

1) Proper training facilities

   Both pre-service as well as in-service training has to be provided to the teachers to develop techno-pedagogical skills. There is an immediate need of identification of Techno-Pedagogic Skills and training the pupil teachers on these skills at various levels of teacher education[11]. Workshops, seminars, conferences, webinars has to be arranged solely to encourage the teachers to become techno pedagogues rather than just pedagogues.
2) Positive attitude towards technology

   The attitude of teachers is a major enabling/disabling factor in the adoption of the technology. The teachers with positive attitudes towards the technology feel more comfortable while using it and they usually incorporate it into their teaching activities[8]. Hence teachers must change their views and should be emotionally and mentally ready to accept the fact that techno-pedagogical skill is highly necessary.
3) Enhance ICT skills

   Having sound knowledge about Information and communication technology is very essential to develop techno-pedagogical skill. It includes knowledge about both hardware as well as software components and skills to use them[13]. ICT professional development is a continuous lifelong process of personal growth[14].
4) Provision of technical assistance

   Educational institutions should make provision for technical assistance to teachers. Institutions can appoint a full time or part time worker who is technically sound, capable of orienting the teachers time to time and provide assistance when ever required.
5) Support and coordination

   There should be proper understanding between all the teaching staffs and head of the institution. The management should promote technology based education and allow teachers to experiment with technology by providing all the resources that is required which in turn strengthens teacher's techno-pedagogical skill.
6) Addressing connectivity and power issues

   Institutions should have facilities of inverters or UPS so as to provide uninterrupted power supply in the campus. There should be Wi-Fi facility in the institution and speed of internet should be in acceptable range.

VI. CONCLUSION

Today, a classroom without technology is unconceivable due to the fact that the learners of this generation are Digital natives (born after the widespread adoption of digital technology). Hence a teacher should be highly competent enough to disseminate technology based teaching in his/her class room. As Gloria and Benjamin (2018) have rightly said, "In this modern scenario the teacher who uses technology in teaching-learning process plays a vital role. Technology improves learning and makes the teaching-learning process more interesting". When teacher integrates technology and pedagogy, it makes him or her a techno pedagogue. There is a grave need of techno pedagogues in present scenario. Even though there are lots of challenges to nurture the techno-pedagogical skills of teachers a combined effort has to be made by all the stake holders.

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