



## TECHNOLOGY ENHANCED LEARNING (TEL) IN HIGHER EDUCATION

*Ms. Achala V. Bhor*

*Assistant. Professor, Pillai College of Education and Research, Chembur*

### Introduction

*“If we teach today’s students as we taught yesterday’s, we rob them of tomorrow.”*

These words by John Dewey stress upon the need for continuous evolution of the content and tools used in the teaching learning process. Technology Enhanced Learning (TEL) is a term that refers to the application of technology to improve the teaching and learning experience. Although it can be used to describe both analog and digital technologies, of late, TEL is used more often to describe the use of digital technology in the form of different types of educational software. The growing need to maximize access to higher education and situations such as the COVID-19 pandemic have underlined the critical need for TEL and also provided a thrust to its widespread adoption. The increase in prevalence of education applications, software for teachers, and e-learning services point towards the fact that technology is not just an additional resource but a critical tool for improving the process and outcomes of teaching and learning. Further, the digital format of TEL offers the scope for sustaining and improving the teaching learning process based on the evolving educational needs.

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### Need of TEL

Traditional methods of teaching and learning have several limitations such as the absence of flexibility in terms of time allocated for learning and the location of the centres of learning, inability to provide customized learning in order to cater to needs of different types of learners, constraints of educational formats. Other drawbacks of traditional methods include lack of a) student focused learning, lack of emphasis on critical thinking as well as lack of process-oriented learning. Thus, there is a need for implementing Technology Enhanced Learning as it overcomes the limitations of traditional learning.

### Importance of TEL

TEL includes a variety of teaching learning formats including use of visual media such as PowerPoint presentations, animations, videos, etc. for teaching helps the students for enhanced understanding of the concepts and their retention for a longer time. Another important feature of TEL is to enable students to learn at their own pace, thus catering to the needs of both slow and gifted learners. It also provides flexibility to undertake remote learning and thereby eliminates the limitations of geographical location and widens the reach and access to learning resources. Use of technology also helps in enhancement of student engagement due to their familiarity with technology.

### Tools for TEL

Technology provides numerous tools that teachers can use in and out of the classroom to enhance student



learning. There are also numerous on-line resources about using technology to enhance teaching in a number of different ways. TEL incorporates numerous emerging and streamline technologies including Learning Management Systems, Mobile Learning applications, Virtual and Augmented Reality interventions, cloud learning services, social networking applications for learning, video learning, robotics, etc. The aim of these tools is to bring greater variety and flexibility to the teaching style.

Following are some of the examples of tools used in TEL

- 1) *Presentation Software* which helps to provide visual aids to complement teaching, stimulate discussion, or enable remote teaching.
- 2) *Online Projects and Collaboration Tools* can support student collaboration on creating new knowledge, reflecting on what they are learning, or working together to achieve a deeper understanding of course material.
- 3) *Information Visualization Tools* can also clarify and stimulate thought through transforming words into pictures.
- 4) *Podcasts* can be a resource for students that conveys information students need for learning or review.

#### **Advantages of TEL**

There are many advantages of technology in the classroom. Technology has transformed the classroom and brought enormous benefits. The prime among these being the increased engagement of students. TEL makes students more engaged and helps them retain information. It accommodates students with multiple learning styles such as auditory, visual and tactile learners. TEL encourages collaboration through the internet, promoting sharing of ideas and opinions digitally. Students can share their experiences on various digital platforms including social media. It helps in bringing technology into the classroom leading to greater participation and promote collaboration among students from one class, an entire school or country, or even different cities from around the world. Thus TEL can not only foster collaboration but also encourage teamwork. Further, TEL educators can provide a variety of learning formats by using various resources such as video, audio, and interactive learning thus allowing the teachers to find and implement creative ways to teach their students in an engaging way. TEL also enables the use of a plethora of tools which help stimulate real-time teacher interaction with students. It increases efficiency by creating new and importing existing lessons that can be reused time and time again. TEL tools such as augmented reality, virtual reality, gamification, and 3D printers are useful to create multi-sensory, immersive learning experiences. Using TEL tools, teachers can create and run assessments, and export results, quickly and easily with the ability to mark and collate responses at the moment of learning, in real-time thus reducing the assessment burdens

#### **Challenges in the practice of TEL**

TEL can undoubtedly widen the choices and opportunities to learn, to teach more effectively and thereby contribute towards the process of knowledge building. However, at the same time, its effective implementation can also pose challenges due to (a) limited computer literacy of teachers and students as well as their lack of training in the domain of technology (b) Psychological factors such as fear or discomfort in the use of new technology leading to resistance in widespread acceptance (c) lack of adequate infrastructure such as high speed



internet connection, computers etc. (d) limited availability of educational content, especially for higher education in languages other than English (e) difficulties encountered in the use of technology by certain categories of learners such as those who are differently abled.

### **Effective solutions towards overcoming the challenges in the practice of TEL**

TEL has significant advantages over traditional methods and hence its implementation can result in a variety of benefits and enhance the overall process and outcomes of learning. However, this would require effective solutions that need to be widely adopted. Some of these could be (a) increased budgetary allocation by the government to boost infrastructure such as availability of electricity and internet connection in remote locations, provision of computers and other gadgets for practise of TEL to individuals, publicly funded schools, colleges and other educational institutes (b) increased development of educational content in regional languages as well as for different types of learners including those who are differently abled (c) provision of adequate training in the use of technology to both teachers and students with limited or no knowledge of these tools.

### **Conclusion**

There is an urgent need to support the development of the digital competence of various stakeholders in the teaching learning process to ensure sustainable higher education, as it is one of most significant challenge in the transformative processes of higher education systems all around the world. It is essential to undertake efforts to develop and strengthen human resources through appropriate training for the improvement of digital competency in addition to investing financial resources to expand infrastructures. Sincere efforts towards the above will help in true realization of the core benefits of TEL i.e., scalability, flexibility and improvement in quality of education. It is believed that the progress of technologies will result in enhancement of learning through improvements in the process of accessing concepts and ideas, assimilating these through practice as well as demonstration of the acquired knowledge.

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