

# ICT Based Teaching- Learning Resources and Platforms

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## *ABSTRACT*

The ICT enabled Programme shall help the teachers to offer quality e-content; for both - educational classroom situation and to a large number of populations in a structured, interactive, blended, flipped and open way. These approaches can make higher order thinking skills, provide creative and individualized options for students to express their understandings and leave students better to prepared to deal with ongoing technological change in society and work-place. Over the past many years, the ICT in Education Programme has put together a collection of free educational resources to encourage ICT supported teaching and learning to cater to the needs and infrastructure readiness of the marginalized populations (GLBT • Senior citizens • Racial/Cultural minorities • Military Combat Veterans). All application has been thoroughly tested and verified by a team from the ICT in Education Programme to ensure its effectiveness and safety. All tools have also been checked to make sure that they do not include any viruses, adware, malware or spyware. In the period of time of Knowledge-based society and technical education has assumed an indisputable significant role. The new developments in IT have an opened-up fresh perspectives in teaching -learning.

**Keywords: ICT Tools, Teaching & Learning, Technology Issues & Challenges, Education**

## **Introduction:**

Digital culture and digital literacy: Computer technologies and other aspects of digital culture have changed the ways people live, work, play, and learn, impacting the construction and distribution of knowledge and power around the world. Graduates who are less familiar with digital culture are increasingly at a disadvantage in the national and global economy. Digital literacy—the skills of searching for, discerning, and producing information, as well as the critical use of new media for full participation in society—has thus become an important consideration for curriculum frameworks. ICT and Teacher Professional Development: Teachers need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualized instruction, accessing online resources, and for fostering student interaction and collaboration. Such training in ICT should positively impact teachers' general attitudes towards ICT in the classroom, but it should also provide specific guidance on ICT teaching and learning within each discipline. Without this support, teachers tend to use ICT for skill-based applications, limiting student

academic thinking. To support teachers as they change their teaching, it is also essential for education managers, supervisors, teacher educators, and decision makers to be trained in ICT use.

E-Learning is the practice of using technology to support student engagement, self direction and learning, anywhere at anytime. It is a reasonably new educational behavior and is part of the growing idea of “21st Century” learning. This practice takes advantage of personally owned student technology devices, ubiquitous internet access and creative teaching approaches. An e-Learning tool provides the digital environment within which students accept work from the teachers, discuss, share and submit evidence of learning. Some systems are sophisticated and complex while others offer fewer features but are easier to use.

Digital resources for education There are three general and complementary categories of ICT art facts to be used in teaching:

1. The first category is stand-alone digital components to be used to support learning inside a course for didactic and/or assessment purposes. Called also Digital Learning Material (DLM) or

Learning Objects (DLO) , 2006), it include video clips (e.g., a YouTube fragment), illustrations (e.g., photos and drawings), simulations (e.g., simulation of an organizational process or an electronic circuit), and interactive assessment resources.

2. The second category includes general tools for communication and information diffusion such as RSS (Really Simple Syndication), blogs, chat and voice over IP, peer to peer file sharing, Wikis, web conferencing and social networks. These tools were not specifically designed for teaching; however, they can support teaching purpose by providing communication facilities in pedagogical scenarios.

3. The third category resembles software systems to run a course. Called also Learning (or Course) Management System (LMS or CMS), these complex tools are educational software packages for online course administration and delivery (Morgan, 2003). Their main functions include course content organization and presentation, students recording and tracking, class activities management, teachers and learners' communication, student assessment tools and grade books tools. Other terms used to denote such systems are Web-Based Learning Systems (WBLS), Virtual Learning Environments (VLE) or, more simply, learning platforms. Blackboard and Moodle are common examples of learning platforms in higher education.

### **Teachers and ICT:**

Teachers are critical change agents at the academic work floor; they are the instrument by which changes in education will become true. In an extensive literature review, Mumtaz summarized what influence teachers' attitude towards technology use in school: available and easy to use digital resources, incentives to change and support from colleagues and school managers, clear and understandable school and national policies, and background in formal computer training. A worldwide educational survey at primary and secondary education confirmed these early indications. Pelgrum assessed ICT integration in teaching and ranked three factors as most significant barriers:

- (i) Computers insufficiently available,
- (ii) Teachers' lacking of ICT knowledge and skills,
- (iii) Difficulties in integrating ICT in instruction in a relevant manner.

Furthermore, teachers tend to ignore the full potential of ICT to power learning environment. For example, in the Netherlands, a survey in the highest grade primary schools found that 60 to 80% of teachers in the sample never used CD-ROM encyclopedias and information search on the Web. In another survey, in higher educational institutions, 51% of teachers considered that the quality of students' learning in their course did not improve using Internet; and 27% think that e-learning environments have no added value for their course. Nonetheless, teachers' adoption of ICT use in teaching cannot be restricted to merely technology-related factors: "integration of educational computer use in professional competencies of teachers implies a more complex approach". Beyond factors related to technology resource and education management, teachers' beliefs about teaching and learning with ICT are essential and need to be fully taken into account. Teachers' beliefs are understandings, premises, or propositions felt to be true about education purpose and educational process. They are rooted in teachers' perception of their role and mission as knowledge owners and knowledge transmitters. Established typologies distinguish between "traditionalistic" or behaviorist, teacher-centred, and more "progressive" or constructivist, student-centred beliefs. These two types are not exclusive; research in the last decades on the dimensionality of educational beliefs as acknowledged a multidimensional vision of the beliefs system. For example, found that most frequent adoption of all types of computer uses is amid teachers with relatively high constructivist beliefs and also high traditionalist beliefs. To make teachers adopt a more constructivist perspective, they primarily need to gain a broader and deeper understanding of what is expected from ICT integration in class. They also need to acquire higher self confidence through improving their ICT self-efficacy and their awareness of ICT potential. Furthermore, encouraging teachers' experimental behavior and training them with pedagogy-oriented ICT skills can be strong determinants of ICT adoption in teaching. In fact, the knowledge and skills that teachers need to acquire will differ depending on the content that is taught and the pedagogical goal. This can vary from improving learning effectiveness in school subjects to promoting the development of specific skills such as lifelong learning and learning to learn.

### **A Framework For Teacher Knowledge:**

The Technology, Pedagogy, and Content Knowledge (TPACK) framework is a proposal to develop teacher knowledge in the ICT based education era. It is intended to help teachers successfully integrate technology into their teaching practice. It is based on a recurring observation: “different disciplines have differing organizational frameworks, established practices, ways of acknowledging evidence and proof, and approaches for developing knowledge. It claims that it is insufficient to expose teachers to particular technological tools and resources and their possible curriculum-based educational use. There are complex relationships among content, pedagogy, technology, and context that teachers need to understand and conceptualize in order to put these technological resources into practice. The TPACK framework emphasizes “the connections among technologies, curriculum content, and specific pedagogical approaches”; it is expected to demonstrate “how teachers’ understandings of technology, pedagogy, and content can interact with one another to produce effective discipline-based teaching with educational technologies”.

### **Learners and ICT:**

Learner acceptance is a key issue when using ICT in education. It will depend on two sets of intertwined factors: the first concerns ICT role in the educational process and how it contributes –directly or indirectly –to better performance, the second relates to learner’s own experience while using ICT for educational purposes. For example, when instructors make available to students recorded lectures as audio and video podcasts to download, learners’ attitudes and opinions will depend primarily on the extent to which this facility can contribute to successful grading in the course. In turn, this will depend on podcasts’ content, and how it complements –or supplements–face to face lectures. Beyond traditional lectures, availability as podcasts of short revision summaries were, for example, highly appreciated by students. On the other hand, learners’ attitudes will also depend on their experience in downloading, storing and using the audio and video digital files. File size, file format, text size and video resolution play then a key role; in addition, the ease of use and flexibility of podcasts will contribute to learner satisfaction.

### **The Use of ICTs Help Prepare Individuals for The Workplace:**

One of the most commonly cited reasons for using ICTs in the classroom has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the Internet, and related technologies, are becoming more and more ubiquitous. Technological literacy, or the ability to use ICTs effectively and efficiently, is thus seen as representing a competitive edge in an increasingly globalizing job market. Technological literacy, however, is not the only skill well-paying jobs in the new global economy will require. EnGauge of the North Central Regional Educational Laboratory (U.S.) has identified what it calls “21st Century Skills,” which includes digital age literacy (consisting of functional literacy, visual literacy, scientific literacy, technological literacy, information literacy, cultural literacy, and global awareness), inventive thinking, higher-order thinking, and sound reasoning, effective communication, and high productivity.<sup>1</sup> (See Table for a brief explanation of each skill.) The potential of ICTs to promote the acquisition of these skills is tied to its use as a tool for raising educational quality, including promoting the shift to a learner-centered environment.

Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centred environment.

### **Motivating to Learn:**

ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students to listen and become involved in the lessons being delivered. More so than any other type of ICT, networked computers with Internet connectivity can increase learner motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events.

### **Facilitating the Acquisition of Basic skills:**

The transmission of basic skills and concepts that are the foundation of higher order thinking skills and creativity can be facilitated by ICTs through drill and practice. Educational television programs such as Sesame Street use repetition and reinforcement to teach the alphabet, numbers, colours, shapes and other basic concepts. Most of the early uses of computers were for computer-based learning (also called computer-assisted instruction) that focused on mastery of skills and content through repetition and reinforcement. (See section below on Computer-Based Learning.)

### **Enhancing Teacher Training:**

ICTs have also been used to improve access to and the quality of teacher training. For example, institutions like the Cyber Teacher Training Center (CTTC) in South Korea are taking advantage of the Internet to provide better teacher professional development opportunities to in-service teachers. The government-funded CTTC, established in 1997, offers self-directed, self-paced Web-based courses for primary and secondary school teachers. Courses include “Computers in the Information Society, Education Reform,” and “Future Society and Education.”

### **ICTs Help Transform The learning Environment into one That is Learner-Centered:**

When used appropriately, ICTs—especially computers and Internet technologies—enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning are underpinned by constructivist theories of learning and constitute a shift from a teacher-centred pedagogy—in its worst form characterized by memorization and rote learning—to one that is learner-centred. (See Table 2 for a comparison of a traditional pedagogy and an emerging pedagogy enabled by ICTs.)

**Active learning:** ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner’s life situation. In this way, and in contrast to memorization-based or rote learning, ICT-enhanced learning promotes increased learner

engagement. ICT-enhanced learning is also “just-in-time” learning in which learners can choose what to learn when they need to learn it.

### **Collaborative learning:**

ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners’ teaming and communicative skills as well as their global awareness. It models learning done throughout the learner’s lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields.

**Creative Learning:** ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information.

### **Integrative learning:**

ICT-enhanced learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.

### **Evaluative learning:**

ICT-enhanced learning is student-directed and diagnostic. Unlike static, text- or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember.

### **Benefits of Using ICT in Education:**

In our previous blog article we already talked about the clear benefits of e-learning platforms for education. However, this time we will focus on the advantages of ICT in general. It has been proven that the use of ICT in the classroom increases the motivation of the students, showing more interest and becoming more involved in the areas they study. ICT enables the use of innovative educational resources and the renewal of learning methods, establishing a more active collaboration of students and the simultaneous acquisition of technological knowledge.

**Furthermore, ICTs are of great help in developing discernment:** Being able to **search for various sources** and contrast them, as well as to **structure information** are some of the most notable skills that students develop thanks to the use of ICT. But there are more advantages:

- 1. Their interest in learning grows:** The use of resources as varied as videos, websites, graphics, and games make traditional subjects more interesting. Multimedia content is a very useful tool to bring different subjects closer to students in a complete and entertaining way.
- 2. Interactivity:** The use of ICT in the classroom promotes the student's active and participatory attitude, which is involved in learning and is positioned as the protagonist.
- 3. Collaboration between students:** Collaboration between students is clearly enhanced thanks to various digital tools. It is much easier for them to create team projects, cooperate and learn from each other.
- 4. They enhance creativity:** ICT tools stimulate the development of the imagination, as well as the initiative of all class members.
- 5. Increased communication:** close communication between students and teachers is encouraged through various channels, in a more spontaneous and less formal way.
- 6. Personalization and content up-to-date:** digital environments allow real-time updating of all information and resources. In addition, it is possible to adjust the tools and content to local and nearby realities.

### **Conclusion:**

Hence, it depends upon the teacher to use the appropriate tool based on the method of teaching - learning. It is also important to understand that a teacher can also choose ICT/ media resources based on the purpose like introducing, explaining, summarizing etc. Thus it is very important to understand the potential of each method and the way it demands ICT to be used as a tools for better comprehension. By analysing the potentials of a particular method and its demand for ICT, a teacher will be able to make a selection of ICT tools/ media appropriately. Several innovative methods/

approaches like flipped class, blended learning, collaborative learning etc. are being used to widely improve the learning experiences. CT integration with content and pedagogy depends on the competencies of teachers. Most of the classes may not be a complete ICT based session rather it will be a blended approach where ICT based activities are blended with the traditional teaching/ learning experiences.

### **References:**

1. Chi, Michelene T.H.; Siler, Stephanie A.; Jeong, Heisawn; Yamauchi, Takashi; Hausmann, Robert G. (July 2001). "[Learning from human tutoring](#)". *Cognitive Science*. 25 (4): 471–533.
2. Day, R; Payne, L (1987). "Computer-managed instruction: an alternative teaching strategy". *J Nurs Educ*. 26 (1): 30–6. [PMID 3029349](#).
3. Holstein, Kenneth; McLaren, Bruce M.; Alevin, Vincent (2018), "Student Learning Benefits of a Mixed-Reality Teacher Awareness Tool in AI-Enhanced Classrooms", *Lecture Notes in Computer Science*, Springer International Publishing, pp. 154–168
4. Hwang, G. J. (2014). Definition, framework and research issues of smart learning environments-a context-aware ubiquitous learning perspective. *Smart Learning Environments*, 1(1), 1-14.
5. K. J. Mathai, 'Mobile Learning in Higher Education through SWAYAM- Indian Context', *International Academic Conference on Teaching, Learning and E-learning (IAC-TLEI 2018)*, March 16 - 17, 2018 at Budapest, Hungary.
6. Kurbel, Karl: *Virtuality on the Students' and on the Teachers' sides: A Multimedia and Internet based International Master Program*; ICEF Berlin GmbH (Eds.), *Proceedings on the 7th International Conference on Technology Supported Learning and Training – Online Educa*; Berlin, Germany; November 2001, pp. 133–136
7. Suppes, P.; Jerman, M.; Groen, G. (1966). "Arithmetic drills and review on a computer-based teletype"(PDF). *The Arithmetic Teacher*. 13 (4): 303–309.
8. Mathai K. James et al., 'Training of Polytechnic Teachers through Blended Technologies: AVIEW and MOODLE Web-Based Technologies in the Western Zone of India', *Sixth Conference of Learning*.

