Role of ICT in Assessment and Evaluation: Issues and New Technologies

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Abstract

After the outbreak of covid-19 pandemic, the significance of ICT gains its footing stronger than it was ever before. This challenging situation not only brought crisis for public health system, but it has put educational system in shambles, in order to play its pivotal role in maintaining social order which was upset by this global pandemic and thus create a situation where individual from around the global by their creative endeavours are continuously connected, work in collaboration and knowledge generation and dissemination is co-created. Although this pandemic has not given any good memories across the world but has given opportunities for a new type of learning that has taken the physical campus to virtual campus where learning is not confined to traditional classrooms but it can take place anywhere and anytime. Each educational institution has turned an institution with a virtual campus in space. It allows the educational institutions to redesign courses across the disciplines and may implement a flipped model. This model helps the student to read the material in advance before coming in the classroom. This helps the concerned teacher to discuss the content in a dialogical way where students actively participate, which in-turn help teachers lessen the burden and use their time more resourcefully. Thus, with the help of ICT, using new innovative educational resources, renewal of new methods of learning, establishing a more active collaboration of students, and simultaneous acquisition of technological knowledge. The focus of this paper is to identify the role of ICT in assessment and evaluation in the light of the growing use of virtual learning environments. This paper also through some light on the issues concerned in moving towards ICT based assessment like Computer Assisted Assessment or Computer Aided Assessment (CAA); Computer Based Assessment. Furthermore, it can also help to understand advance assessment and evaluation practices and processes.

Keywords: *Assessment, Evaluation, ICT, Issues and Technologies.*

Conceptual Framework

In educational institutions, the insertion of Information and Communication Technology

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(ICT) provides ample gaps and opportunities with potential benefits for enhancing the quality of education. Considering the ICT "as a major tool for building knowledge societies" (UNESCO, 2003) and has become basic component of modern society. In order to develop educational institutions' infrastructure and improve their instructional facilities, much importance should be given to the development of ICT. Availability of ICT tools and the recent pandemic has brought a transforming change in the functioning of educational institutions both at the school level as well as higher education stage. Even the National Educational Policy 2020, unveiled by the Ministry of Human Resource Development has mentioned that one central principle steering the educational system will be the extensive use of technology in teaching and learning. In order to brought quality education to all, ICT ought to be incorporated which provides a way to redesign and rethink the educational system and processes, as this includes electronic technologies and techniques which are used to manage information and knowledge. In teaching and learning process, the Integration of ICT makes both teachers and students learn more skills of teaching and learning. The demands of classroom are fulfilled by using multiple teaching strategies according to the needs and capabilities of the students. "With the ubiquitous availability of information, learning outcomes focusing on transferable skills are increasingly being recognized as important as those focusing on discipline specific knowledge and skills" (Suleman, 2018). However, using several teaching strategies demands multiple forms of assessment. . According to AFT, NCME and NEA, 1990, assessment is "the process of obtaining information that is used to make educational decisions about students, to give feedback to the student about his or her progress, strengths and weaknesses, to judge instructional effectiveness and curricular adequacy and to inform policy" (AFT, NCME and NEA, 1990, p.1).

Importance of ICT in Assessment and Evaluation

ICT plays an important role in assessing achievement of learners and finding out their grades. It also helps to report the student's achievement, drawing inferences, analyzing and synthesizing, predicting, comparing, evaluating student's higher order thinking through electronic reporting systems. Earlier, the environment of class was restricted to having a room with chairs, tables, and a board. Almost all the activities pertaining to the instructions were performed in front of pupils in the class and mostly the process of assessment was made with paper and pencil tests. In addition to these tests use of learning management system (LMS) or virtual learning environment such as Blackboard and Web-CT via websites not only make teaching learning effective but inclusion of various online tests and quizzes proved an effective tool for assessment and evaluation. But the question arises would such a step be feasible? Would ICT support the constructive

alignment process of assessment and evaluation? The opinion, however, goes to support the administration for sophisticated and well designed assessments for students to make them perceive the intended meaning of knowledge and skills through the use of various electronic equipments and gadgets. Making use of ICT in assessment and evaluation process helps in enhancing the accuracy and reliability in marking, speed up the marking process, reducing clerical errors, and possibly lessens the cost. Hence, using ICT in classrooms is having many productive benefits:

Student outcomes

- It increases student's outcome in all subjects particularly with the help of using multiple technologies like video, computer, and telecommunication.
- It also promotes problem solving and divergent thinking.
- It stimulates student's motivation and involvement significantly.
- For evaluating the knowledge of students, it develops higher order thinking in them.
- It fosters co-operative and collaborative learning among the students.

Educator outcomes

- Teaching with technology brings several benefits:
- Moving from traditional direct approach to a student-centered approach
- Increased emphasis on individual programmes of learning
- Greater revision of, and reflection on, curricula and instructional strategies

Role of ICT in Assessment

Assessment during the past times when ICT was not in its significant role, it was the testing of memorization, cramming, recall, and knowledge of factual things without comprehending text.

In order to get the result, students have to wait for several days or even months can take place in case of public examination to get feedback for their said course. But with the advent of ICT this conventional mode of assessment and evaluation has changed the said concept of taking too much time in providing feedback. Thus, ICT has become more beneficial and full of potential alternative assessment method. Many researches reveal that instant feedback provision for students enhance their motivation towards teaching and learning. ICT facilitates and enriches the provision of diagnostic assessment of strengths, weaknesses, achievements, and providing various ways of thinking and learning, whereas traditional assessment frequently took the form of end of course testing i.e. summative. ICT attempts to strengthen the connection between assessment and

learning practices not in terms of speed but also in terms of quality of feedback. Hence, ICT is having a strong formative potential and it has made assessment a learning springboard. "Delivering tests on computers will eventually produce important efficiencies. Yet efficiency is not the end goal. The end goal is to leverage technology to create assessments that help teachers instruct and students learn. Taking such a test should be a learning experience (Bennett, 2002, p. 8). Assessment in, however, one of the potent elements of curriculum design and alignment Assessment is perhaps one of the most important element of curriculum design and alignment, but the effective use of ICT in assessment and evaluation is a challenging task. Any approach to analyze the use of ICTs in assessment and evaluation depends on various types of ICT based assessment tools. Before adoption of any assessment tool, it must be clear in terms of overall development goals and understanding of the role of information to meet those goals. There are mainly two major forms of ICT based assessment. These are:

- Computer-Assisted Assessment or Computer-Aided Assessment (CAA);
- Computer-Based Assessment (CBA);

Computer-Assisted Assessment or Computer-Aided Assessment (CAA)

Computer-assisted assessment (CAA) refers to the use of computers to manage or support the assessment process and evaluate assignments. CAA is mostly used for scoring multiple-choice questions and questions with short-answer responses using optical mark reader (OMR). Under the broad term ICT-based assessment McFarlane, 2001, 2002; Weller, 2002, defined (CAA) as:

● Computer-assisted assessment (CAA) refers to the use of computers to deliver, mark, and analyze assignments or examinations. CAA is normally understood to involve use of multiple choice questions and questions with short-answer responses, both of which can be marked online—i.e. automated. This model is more likely to be used in subject areas with a lot of factual information (e.g., geography, mathematics, engineering, etc.), but there is potential to go much wider than this.

● Multimedia or interactive materials can be used online as the basis for assessment tasks.

● Student responses can be recorded via computer and staff can send feedback online, whether or not the marking is automated.

● Peer assessment and collaborative or group assessment can be conducted online, using chat-rooms and discussion boards.

● Student participation in online discussions can be evaluated from the transcript

Computer-Based Assessment (CBA)

Computer based assessment means the use of digital tools for conducting assessment-related activities. Computer based assessment can be done using laptops, tablets, and even smart phones.

Apart from development costs and limitations of computer-based assessment systems, Baird, 2001; Bennett, 2002b highlighted some important points of (CBA):

● Dependability of hardware and software—interruptions to high-stake testing activities could have significant effects on student performance;

● Security—control of access to both questions and student data (although these are

problems with paper-based examinations, too, we have well-understood systems to

manage them);

● Measurement issues—aspects such as familiarity with screen-based work, and

variations in speed of Internet connections will affect student performance;

● Limitations of question types which are readily available and/or easy to use; and

● Equity issues in access to, and familiarity with, computers.

Issues Involved in Moving towards ICT Based Assessment

Pedagogic Issues: Problems related to paucity of qualified teachers, lack of proper knowledge about various computer skills (hardware and software), electricity, and poor project implementation strategies lead to pedagogic issues. The evaluation by Bull indicated that staff will adopt CAA if they are convinced of the pedagogical benefits. The best methods of embedding CAA were (Bull, 2000, p. 8)":

1. Emphasizing the pedagogical benefits of a range of assessment methods.

2. Explaining the potential for enhancing student feedback and motivation.

3. Providing academics with practical examples of materials in their own discipline.

4. Explaining the range of technical solutions in non-technical language.

5. Emphasizing educational effectiveness rather than the technological developments.

Implementation issues:

Insufficient and inappropriate technology, tools, and strategies put various challenges to implement authentic assessment. Evaluators have to use numerous instruments which are regarded more complicated for assessment procedures and hinder reporting of the results. For effective implementation of ICT in assessment and evaluation, the following should be adopted:

1. Automated formative assessment computer provides immediate feedback that supports better performance and improved learning.
2. In order to enhance summative assessment, automated scoring with computer based concept mapping should be used to develop critical and creative thinking about complex relationships.
3. Encouragement should be provided to the students through online peer and collaborative assessment.
4. Frequent feedback should be provided while using test material from the computer; this will increase motivation and improve performance of the student in the same test material.
5. With the help of ICT, teachers can store and record information about students regarding understanding of new material and can diagnose about what they have had learnt and on the basis of this teachers can provide corrective feedback to the students.

Future Possibilities

Bennett, one of the key researchers in computer-based assessment in the USA, argues that the use of technology for assessment is in its infancy:

"If all we do is put multiple-choice tests on computer, we will not have done enough to align

assessment of how technology is coming to be used for classroom instruction. Sadly, our

progress in using the computer to improve assessment has been limited. Almost a decade

ago, we moved the first large educational tests to computer, fully intending to use technology

to introduce new measurement approaches. These efforts got as far as adaptivity and

then due to cost, technical complexity, the need to maintain scale, and sufficiency of multiple-

choice for summative decision-making, moved no farther". (Bennett, 2002a, p. 11)

Given the fact that ICT based assessment provides the opportunity for both teacher and student to get quick feedback of strengths and weaknesses of teaching and tutoring. It is essential that

ICT based results from several assessments, entrance tests, courses, or modules can be collated quickly, easily, and accurately so that students' experience with computers and attitude towards them can influence computer-based test performance. It is also recommended that ICT resources should be easily available and how to use it in the process of assessment and evaluation should be explored through various web based training programmes. Various e-assessment tools, i.e., edmodo, kahoot, gnowlege, hotpotatoes, are some digital evaluation systems that are used for assessing objective and subjective types of questions. Furthermore, sound research validated frameworks for best practices should be incorporated to ensure maximum benefits for all those involved.

It is however pertinent to mention how recent pandemic shows the importance of ICT in teaching and learning where all conventional methods get defanged. The assessment and evaluation of students during pandemic was impossible without the inclusion of ICT in teaching and learning. All the stake holders including parents, teachers, students, and the society have been visualized to be exposed to the use of ICT for teaching, learning, and assessment. The parents and teachers who were dubbed as technology illiterates have been compelled to use technology for exposing their wards to teaching/learning. It is difficult to imagine if the conventional culture of face to face classroom will ever be back again. However, whatever the circumstances would be, there is a dire need of incorporation of ICT in teaching, learning, and assessment. One thing we learn from this pandemic, we cannot always rely on conventional methods. If we want prosperity of students as a whole, it is possible only when we bridge this gap through inclusion and dissemination of ICT in all spheres of life.

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