ICT Based Assessment Methods in Education.

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Abstract:

Assessment plays a major role in student learning. There are many new approaches to assessment with an emphasis on the process of learning along with the product of learning. Performance based authentic assessment is emphasized world over. In India also there is an emphasis on continuous and comprehensive evaluation of students' learning. Development in information and communication technology has thrown open numerous possibilities for assessing student learning and providing feedback. Information and communication technology (ICT) has become an integral part of the education system round the globe. E-assessment and evaluation have gained the status of the most reliable emerging trends in information and communication technology to get a brief assessment of complex competencies. It is generally believed that ICTs can empower teachers and learners, promote change and foster the development of '21st century skills. The development in the ICT has opened umpteen chances for assessing the learning process of a student and giving back the feedback on their performance. These paper discuses about the roles of ICT based assessment in education.
Keywords: *ICT; assessment; technology-based assessment*

INTRODUCTION

Information Communication Technology (ICT) is a modified term of Information technology (IT). It is modern and dynamic in nature and provides access to information through telecommunication. From the past few decades it has provided society with vast array of communication capabilities and converted society into global village. It stresses the role of intelligent building management system through unified communications and integration of telecommunications, computers, internet, software's, middleware, storage, wireless network, mobile, instant messaging, audio, video conferencing, social networking (Facebook), voice over IP (VoIP) and other communication mediums.
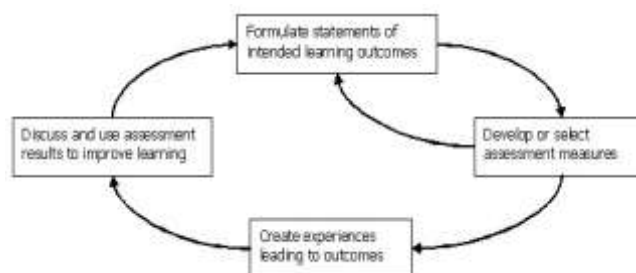
Information and Communication Technology (ICT) in education is the mode of education that use information and communications technology to support, enhance, and optimise the delivery of information. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods.

Role of Information Communication Technology (ICT) in Education: Every nation has a responsibility to provide education to the children. It is their fundamental right. But it does not mean only the right to access education but right to receive quality education through quality teaching. Historically education was known as a socially oriented activity and a process of empowering society. But in the era of globalization it became socio – commercial activity which started empowering society distinctly by applying combination of traditional and modern approach. ICT in education simply means teaching and learning with ICT. It has become indispensable part of the education system.

What Is Assessment?

Various definitions of assessment and the role it plays in teaching and learning:
Assessment involves the use of empirical data on student learning to refine programs and improve student learning. (Assessing Academic Programs in Higher Education by Allen 2004) Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand, and can do with their knowledge as a result of their educational experiences; the process culminates when assessment results are used to improve subsequent learning. (Learner-Centered Assessment on College Campuses: shifting the focus from teaching to learning by Huba and Freed 2000) Assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development. (Assessment Essentials: planning, implementing, and improving assessment in higher education by Palomba and Banta 1999)

Information and communications technology (ICT) is an extensional term for information technology (IT) that stresses the role of unified communicationsand the integration of telecommunications (telephone lines and wireless signals) and computers as per IFGICT, as well as necessary enterprise software, middleware, storage and audiovisual, that enable users to access, store,

transmit, understand and manipulate information as per the international federation of ICT. The concept below gives an overview of how ICT can be used for assessment.

Assessment and its types:
ICT for educational assessment
        Computer adaptive testing
        Using surveys
        Embedded assessments
        Digital assistive devices
        Online assessment tools
        Office applications
        Integrated assessment
        Peer and self assessment
        web 2.0 tools

Types of Assessment
The classification of assessment is done based on va rious approaches and the purpose for which it is being designed. It can be categorized as follows:
Formative: It provides feedback and information during the learning process
Summative: It takes place after the learning process is finished & gives feedback on the teaching and learning.
Diagnostic: It helps in recogizing the learners' current standard of a subject, their skills and abilities. In return it helps the instructor to plan what to teach Authentic: It represents the various forms that reflect learners' learning and their activitiies. It includes tasks for learners and a rubric through which their performance on task will be estimated.
Performance: It asks learners to perform what they have learnt.

Current Trends in Assessment
Conventional multiple choice question based tests have gone under a lot of analysis as of late, yet whatever flaws in it may be, they are a develop innovation that offers some distinct focal points. They will in general be dependable. Likewise, in contrast with some different types of evaluations, they don't require a great deal of time or cost a ton of cash to regulate, and they produce scores that are familiar to teachers. Almost certainly, multiple choice question based tests will keep on being generally utilized for quite a while to come, as proved by the way that a large portion of the placement tests and board examinations keep on including things of this sort in addition to some new types.

The major features of assessment are:
• Fundamental to classroom culture
• Clear learning goals oriented
• Incremental and collaborative
• Giving timely feedback in a specific situation
• Concentrated on the learning process along with the effective outcome
• Usage of various methodologies to broaden the learning aspects and fulfil needs of the heterogeneous groups of students.

Role of ICT in Assessment:
Technology has a pivotal task to carry out in compelling and proficient learning assessment. Modern innovations offer teachers an assortment of new tools that can be utilized in the classroom. Technology can enable educators to evaluate their learners' learning as well as their classroom performance. Utilization of ICT in assessment includes the utilization of computerized gadgets to aid the development, conveyance, stockpiling or reporting of student evaluation assignments, answers, feedback or grades.
In the ICT based evaluation there can be involvement of the many electronic devices like a conventional personal computer or a laptop aided with communicative devices which are portable such as smart phones, ipad, presenting the PPTs through the projector etc.., It is carried out in various formats like usage of text documents soft copies and hard copies, multimedia formats like the audio and visual representations. It aids the instructor to manage large heterogeneous classrooms and one can aspire for an effective outcome.
ICT lends a hand to the teachers in designing their evaluation tasks, in delivering these assignments to the learners and in providing the grades and feedback on their work. The evaluation using ICT can be utilised to assess various abilities and skills that are being acquired by the students.
Two conceptually different approaches to assessing Key Competencies using ICT were identified.
1. **Computer-Based Assessment (CBA)**
2. **Embedded assessment**
Computer-Based Assessment (CBA) is going beyond multiple choice question based formats using many different approaches. The wide range of core competencies can be evaluated with this new 'transformative' testing which comprises of questions with more complexity and more authentic problem contexts. A promising path has been offered to the embedded assessment of the complex dimensions of competencies, by the enhanced learning technology environments based on the analytics of learning.

Computer Assisted Assessment (CAA):
Computer-assisted assessment refers to the assessment of the learning progress of the students and their performance using a computer. CAA is a term that covers all forms of assessments, whether it is summative or formative. Both the evaluation processes delivered through online or offline computer and the marked answers using OMR (Optical Mark Reading) are addressed.

CAA is basically a formative type where it aids the learners in discovering their standards of learning, in an effective knowledge acquisition and receiving feedback in the necessary situations etc.., it can also be summative with a feedback which is usually given after the completion of the course. It can also be diagnostic as it also tests the pre-knowledge of the learner.

Advantages

• Computer assisted testing offers high reliability because the test can be marked objectively and is more likely considered as the objective testing.

• The main advantage of it is, the evaluation can be done at a high speed and it is easy.

Disadvantages

• Knowledge and skills are being tested rather than the understanding of the concept, because the

MCQs are frequently used which has the capability of testing only the lower level of understanding.

• It consumes more time for designing a good objective assignment which definitely need good skill and thorough practice.

Computer Adaptive Testing (CAT)

One of the current encroachments in assessment is the usage of computer – adaptive tests and their designing, which are considered as a huge deal in making the process of testing efficient. It is designed in such a way that according to the response for the learner, the difficulty level of the question varies, for example, if the performance of the learner is a bit average, the software automatically gives the easier questions in the test vice versa. Additionally, the designed software can also assess the content from the previous classes and the acquired grades in it which is useful for the quantification of the acquired knowledge and skills

CAT components:

There are five technical components for designing a CAT.

1. Standardized item pool
2. entry level
3. algorithm for the selection of the item
4. Procedure for scoring
5. Criterion for termination

Advantages

• These tests can deliver consistently accurate scores for the most test-takers.

• An adaptive test can be reduced by 50% and can still uphold an effective level of accuracy than a fixed version.

• Usage of CAT saves time for the student who is taking the evaluation test.

• Just like many other CBT Computer Based Tests, the scored grade will be displayed immediately.

Disadvantages

• The standardization of the item pool is the major issue in CAT.

• Even though the exposure is controlled by the CAT algorithms in order to prevent the over usage, often the exposure conditioned regarding skill is not controlled.

Assessment: Digital Tools and Options

LMS based assessment option:

A large variety of ICT tools are there for these kinds of assessment activities. Most of these are available based on LMS learning management systems (LMS) such as Moodle that allows the handling of question banks and the content material all at one place for the effective administration and internet-based test delivery. The evaluation questions which are provided under LMS just as in MOODLE are available in the format of calculations, descriptive essays, match the following, cloze tests, fill in the blanks, multiple choice based questions, short answers, true or false questions, jumbled sentences, multiple selection questions etc.,

Assessment embedded in designing the tools:

Most of the designing software tools gives a provision to the instructors to generate, assemble, manage and score digital tests, including, for e.g., eXelearning, xerte, adapt and Learner Activity Management System (LAMS). All the tools that are mentioned previously are an open access sources and are capable of creating various evaluation tests as discussed in the above topics.

Portfolio

An electronic portfolio which is also known as an e-portfolio, digital portfolio, or online portfolio is a pool of digital proofs gathered and managed by a user online. Such electronic evidence may comprise input text, digital files, pictures, multimedia, blog entries, and hyperlinks. E- portfolios can be utilized to exhibit the user's capabilities and it provides a clear platform to express oneself and can be maintained dynamically when it is online. An e- portfolio can be considered as a record of the learning process which has the collection of actual evidences of the achievements.

Portfolios are utilized in numerous ways and despite the fact that there are various definitions in the writing; in general a portfolio can be depicted as, "an intentional collection and reflection of one's work, endeavours and advancement". There are diverse kinds of portfolio including evaluation, employment, learning, and instructing portfolios, the format eventually relying upon the reason for which it is designed. Portfolios are considered as a learning and assessment tools. Like a Learning Management System (LMS), e- Portfolios exist on the web and aid learners learning. They vary from Learning Management Systems in two key ways: to be specific, ownership and control.

Types of e-portfolios:

Developmental Portfolios:

- Show the progression and improvement of learner abilities over some undefined time frame.
- Formative portfolios are viewed as works components.
- The basic role is to give correspondence among learners and educators.

Assessment Portfolios:
- Demonstrate learners' ability and expertise for well characterized areas
- These may be end-of-course or program evaluations primarily for assessing the learners' performance.
- The main role is to assess learners' competency as designed by program results and standards.

Showcase Portfolios:
- demonstrate excellent work and learners' abilities.
- This sort of portfolio is desingned at the finish of a program to feature the learners' standard of work.
- Learners commonly demonstrate this portfolio to potential managers to pick up work at the end of a degree program.

Tools for designing an e-portfolio

There are various digital portfolio tools. A simple portfolio can be designed using presentation software like power point. There are many advanced portfolio systems that are available. E-portfolio Tool: Mahara: Mahara is a completely evolved web application to design your digital portfolio. You can design journals, and work together with different clients in groups.

Digital Rubrics

Rubrics is a tool that is used in grading criteria for assessment. In other words, it is a scoring tool that lists the criteria for a piece of work done by students and offers description of levels of performance quality on the criteria. Rubrics can be used for a variety of assignments: research papers, group projects, portfolios and presentations. To define quality of work, rubrics help students and teachers. It will lessen the time and make it easier for the teachers in grading students. It also provides an opportunity to the teachers to explain each individual on the weak areas and where they can improve to get a good grade.

Digital Assessment Alternatives.

Various digital assessment alternatives are available for assessing students' performance. Some of the Web 2.0 tools available can serve as alternative assessment tools. They can engage students as they reflect and share what they are learning. Some of the digital assessment alternatives are considered here.

Web 2.0 tools are Web 2.0 tools are tools of education technology that allow teachers and students alike to create, collaborate, edit and share content on-line that is user-generated. They can include tools for presentation, research, collaboration, audio, video, slideshow, images, music, drawing, writing, organizing, mapping, quiz and test generation, file storage and web pages, and also tools for graphing and conversion. New tools are being developed all the time, so it is important to be informed about the newest trends in education in order to keep up with the technology that surround students.

8 Great Web 2.0 tools to support you in the classroom for kids : Glogster. Kidblog. Linoit. Skype. Storybird , Voice Thread.

Online Assessment: Online assessment is the process used to measure certain aspects of information for a specific purpose where the assessment is delivered via a computer connected to a network. Generally, the assessment is educational. With the emergence of read write web and the development in software as a service (SaaS), it is possible to design and conduct online assessment. There are many online service providers both free and paid for designing and developing online tests and quizzes.

Survey Tools: There are many online survey tools like survey monkey, poll daddy or lime survey. These tools can be used as an assessment tool and also to collect feedback from learners. A survey can be useful for measuring the entire class's grasp of course concepts, since survey answers are aggregated.

Wikis: A wiki is a website that allows users to collaboratively edit and create content. The most

prominent example of a wiki is Wikipedia, a collaboratively created online encyclopaedia. Wikis have become very popular environments for collaborative projects in formal education and training. The learners' contribution in wiki can be assessed by the teachers. This can also be a tool for self and peer assessment.

CONCLUSION:

The discussions of this paper suggest that ICT can be applied to support educational assessment practice in several ways. Computers can help in scoring students' assignments, such as multiple-choice tests and marking reports, essays and projects. The use of an automatic scoring machine to score fill-in-the-bubble testings or a marking system for teachers to mark essays is some examples of using ICT as a marking tool. Digital Rubrics assessment charts are explained in a detailed manner. Digital assessment alternatives usage in system of education. With the emergence of read write web and the development in software as a service (SaaS), it is possible to design and conduct online assessment. There are many online service providers both free and paid for designing and developing online tests and quizzes. Computer can be used as the medium for testing, scoring tests and test score analysis. Computer-Based Testing (CBT) and Computerized-Adaptive Testing (CAT) are two examples of ICT application in assessment practice in which students perform the test in front of a computer. It also assists students to complete their assessment tasks such as the use of electronic portfolios and project-based assessment. Teachers will assess the e-portfolio and project by using a rubric that assesses not only the process and product, but also their students' use of technology. There are many ways of incorporating ICT in assessment practices. Schools and other educational institutions can find the most appropriate method that suits their context. Therefore, it is now essential for schools to encourage themselves to strengthen their commitment to developing a better assessment practice which can support teachers, students and other stakeholders.

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