ROLE OF ICT IN ASSESSMENT

Technology has a vital role to play in effective and efficient assessment of learning. Modern technology offers educators a variety of new tools that can be used in the classroom. Technology can help teachers assess their students' learning as well as their performance in the classroom. Use of ICT in assessment involves the use of digital devices to assist in the construction, delivery, storage or reporting of student assessment tasks, responses, grades or feedback.

Teachers can use computers to construct their assessment tasks, to deliver these tasks to relevant students and to record and provide feedback and grades to these students. Computers can also be used to analyse students' responses, both to provide feedback to the student on the quality and relevance of their response, as well as to provide feedback to the teacher on whether the task can differentiate between students with different abilities. ICT based assessment can be used to test many different capabilities and skills that are developed by students. There are only a few tasks that might not be suitable for completing and recording electronically, but the number of such tasks is rapidly diminishing as technology becomes more sophisticated and widespread. In many disciplines laboratory equipment can be manipulated remotely and students can undertake real time physical performances that are able to be recorded and used for assessment purposes. We are quickly approaching the stage where our imaginations will be the limiting factor in designing e-assessment tasks.

Christine, R. (2013) identified two conceptually different approaches to assessing Key Competencies using ICT. On the one hand, Computer-Based Assessment (CBA) approaches have been employed for more than two decades and now go beyond simple multiple choice test formats. With this new "Generation Re-Invention" or "transformative" testing, questions are increasingly integrated into more complex and authentic problem contexts, so that the full range of Key Competencies can be assessed. Additionally, due to technological advances, a wider range of answer formats, including free text and speech, can be automatically scored.

On the other hand, technology-enhanced learning environments offer a promising avenue for embedded assessment of the more complex and behavioral dimensions of Key Competencies, based on Learning Analytics. Many of the currently available technology-enhanced learning environments, tools and systems recreate learning situations which require complex thinking, problem-solving and collaboration strategies and thus allow for the development of generic skills. Some of these environments allow learners and teachers to assess performance, understand mistakes and learn from them.

Computer Assisted Assessment (CAA): Computer-assisted assessment refers to the use of computers to assess students learning and performance. Computer-assisted assessment is a term that covers all forms of assessments, whether summative or formative, delivered with the help of computers. This covers both assessments delivered on computer, either online or offline, and those that are marked with the aid of computers, such as those using Optical Mark Reading (OMR).

Computer assisted assessment can be very costly to implement. The computing hardware is just one element and includes everything from the actual computer to the servers and printers that are also associated with the process. The networking involved and ongoing maintenance can also be a difficult hurdle for constrained teacher resources. Correlating the testing material with lesson plans can be expensive to customize. Using a standardized software package can also be far too generic and would ultimately not add the level of value to be effective.

There are also many elements of the computer assisted assessments that can actually save time and even money. Assessment software is available that will provide direct feedback to students regarding study skills and curriculum topics that need further development before being considered as complete. Often an additional options are available that provide teacher worksheets that align with student worksheets. This can help to drive overall consistency with the lesson plans.

1. Automated marking of paper forms, using optical mark reader (OMR) e.g., CAT test for management courses, and

2. Computerized marking in which questions are presented and responses assessed entirely by the computer software, with no paper involved e.g., the online test and Quizzies.

Advantages

• Computer assisted testing is more likely to be objective testing; testing that can be marked objectively and thus offers high reliability

• The benefit is that the tests can be marked quickly and easily, and adapted to meet a wide range of learning outcom

Disadvantages

• Construction of good objective tests requires skill and practice and so is initially time consuming;
• Hardware and software must be carefully monitored to avoid failure during examinations;
• Students require adequate IT skills and experience of the assessment type.

Computer Adaptive Testing

One of the recent advancements in assessment is the design and use of computer-adaptive tests, which add a great deal of efficiency to the testing process. Depending on the student's responses, the software will automatically adjust the level of difficulty of the questions it poses (after a number of correct answers, it will move on to harder items; too many incorrect responses, and it will move back to easier ones), quickly zeroing in on student's level of mastery of the given material.

CAT successively selects questions for the purpose of maximizing the precision of the exam based on what is known about the examinee from previous questions. From the examinee's perspective, the difficulty of the exam seems to tailor itself to their level of ability. For example, if an examinee performs well on an item of intermediate difficulty, they will then be presented with a more difficult question. Or, if they performed poorly, they would be presented with a simpler question. Compared to static multiple choices tests that nearly everyone has experienced, with a fixed set of items administered to all examinees, computer-adaptive tests require fewer test items to arrive at equally accurate scores. (Of course, there is nothing about the CAT methodology that requires the items to be multiple-choice; but just as most exams are multiple-choice, most CAT exams also use this format.)

There are five technical components in building a CAT.

1. Calibrated item pool
2. Starting point or entry level
3. Item selection algorithm
4. Scoring procedure
5. Termination criterion

Advantages

• Adaptive tests can provide uniformly precise scores for most test-takers.
• An adaptive test can typically be shortened by 50% and still maintain a higher level of precision than a fixed version.
• This translates into a time savings for the test-taker.

• Test-takers do not waste their time attempting items that are too hard or trivially easy.
• Like any computer-based test, adaptive tests may show results immediately after testing.

Disadvantages
• The first issue encountered in CAT is the calibration of the item pool.
• Although adaptive tests have exposure control algorithms to prevent overuse of a few items, the exposure conditioned upon ability is often not controlled