

INNOVATIVE STRATEGIES IN ENHANCING EDUCATIONAL ASSESSMENT IN DIGITALIZED ERA; PREPARATION FOR THE 4TH INDUSTRIAL REVOLUTION

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Abstract: The study explores innovative strategies that can be employed in enhancing educational assessment in a digitalized era in readiness to embrace the Fourth Industrial Revolution. The 4th Industrial Revolution requires transformative changes in educational assessment as the traditional methods possess many challenges and inabilities in handling the complexity of the 21st century assessment practices. The study highlights the importance of integrating technology and sustainability principles into assessment methods to foster student engagement, critical thinking, and application of technology in assessment practices for the fourth industrial revolution by leveraging the capabilities of e-assessment through the use of artificial intelligence (AI) blockchain and data analytics. Educators can create more meaningful and effective assessment experiences that support student learning and promote sustainable practices with the help of the novel strategies critically examined by this study.

Keywords: *Innovation, Assessment, e-assessment, Prediction*

Introduction

The 4th Industrial revolution has come to stay with its unprecedented technological advancement and challenges, its impact is already reflecting on many facets of life and education is no exempted. the impact of the 4th Industrial revolution is in no doubt already disrupting the traditional education paradigms hence the nonnegotiable need of embracing the novel practices in education especially adopting educational assessment to measure students readiness for this novel trends to ensure critical thinking, creativity and problem solving skills and efficiency in decision making.

Educational assessment is an integral aspect of any educational system as it performs a vital role in

decision making. In the view of Kola (2022), educational assessment is a systematic process that uses data to evaluate student's knowledge, skills, attitude and more. Similarly, Desiana (2023) defines educational assessment as a systematic process of documenting and using evidence to improve educational programmes, students and learning. From the submission of the above authors, it is crystal clear that assessment is an exercise that must be taken seriously.

Asta (2019) elaborately classified the functions of assessment under six main headings:

- Diagnostic
- Evaluative
- Guidance

- Prediction
- Selection and
- Grading.

A more extensive classification can be made from above classification even though there may be some overlapping between categories. Generally, assessment performs the following functions:

1. Certification and qualification
2. Selection and social control
3. Clear recording and reporting of attainment
4. Prediction
5. Measurement of individual differences (psychometrics)
6. Student-pupil motivation (whether teaching-learning structures are competitive, co-operative or individualistic).
7. Monitoring students' progress and providing effective feedback to students
8. Diagnosing and remediation of individual difficulties
9. Guidance
10. Curriculum evaluation
11. Provision of feedback on teaching and organization effectiveness
12. Teacher motivation and teacher appraisal
13. Provision of evidence for accountability and distribution of resources
14. Curriculum control and
15. Maintaining or raising of standards.

Ojoma (2020) clearly pointed out the following principles that could enhance educational assessment in the digital age:

- Clearly specifying, what is to be assessed: the effectiveness of assessment depends as much on a careful description of what to assess as it does on the technical qualities of the assessment procedures used. Thus, specification of the characteristics to be

measured should precede the selection or development of assessment procedure. When assessing student learning the intended learning goals should be clearly specified before selecting the assessment procedures to use bearing in mind the available technology and eco-friendly environment.

- An assessment procedure should be selected because of its relevance to the characteristics or performance to be measured. It is to be noted that assessment procedures are frequently selected on the basis of their objectivity, accuracy or convenience.

- Comprehensive assessment requires a variety of procedures. It is important to note that no single type of instrument or procedure can assess the vast array of learning and development outcomes emphasized in a school programme. Multi-choice and short-answer tests of achievement are useful for measuring knowledge, understanding and application outcomes, but essay tests and other written projects that require students to formulate problems, accumulate information through library research or collect data (for example, through experimental observations and interviews) are needed to measure certain skills in formulating and solving problems.

- Proper use of assessment procedures requires an awareness of their limitations. Assessment procedures range from very highly developed measuring instruments, for example, achievement tests, to rather crude assessment devices, for example electronic self-report technique. It is important to note even the best educational and psychological measuring instruments yield results that are subject to various types of measurement error.

Carrying out assessment with the application of technology is perceived to be the easiest method of assessment owing to the speed of operations, reduced energy consumption, accuracy, good predictive

indices, flexibility, familiarity, environmentally friendly, Accessibility, Immediacy.

Chullam (2023), Barrett (2022) and Asata (2022) identified the following novel types of assessment in readiness to improve educational assessment for the 4th Industrial Revolution: authentic assessment; collaborative assessment; data analytic for personalized feedback; blockchain based assessment; virtual and augmented reality assessment; competency based assessment; artificial based intelligence and game based assessment.

Authentic assessment is the measurement of intellectual accomplishments that are worthwhile, significant, and meaningful. Authentic assessment can be devised by the teacher, or in collaboration with the student by engaging student voice. When applying authentic assessment to student learning and achievement, a teacher applies criteria related to construction of knowledge, disciplined inquiry, and the value of achievement beyond the school.

Authentic assessment tends to focus on contextualized tasks, enabling students to demonstrate their competency in a more authentic' setting. According to Asata (2022), Authentic learning mirrors the tasks and problem solving that are required in the reality outside of school.

Collaborative assessments, is the system of assessment in which pairs or small groups of students work together, allow learners to benefit from their peers' knowledge and teacher feedback in the same activity. Successful collaboration can boost student understanding by encouraging them to defend their thoughts, thus building their metacognition skills, and can expose students to other perspectives and ideas. Learning to work collaboratively can be a challenge, but it builds valuable interpersonal skills that can help students transition into their careers.

The Data Analyst Test evaluates a candidate's ability to work with data and extract valuable insights. It evaluates essential skills such as statistical knowledge, proficiency in programming languages, and expertise in data visualization tools.

The assessment comprises a standardized check of the Blockchain solution at process level regarding operation, development and further development as well as at technical level regarding business logic, special hardware and Distributed Ledger Technology. Virtual assessment is an immersive VR experience that captures data from an individual user and runs it through a predictive model that helps to indicate future performance. Virtual Reality is the technology that provides almost real and/or believable experiences in a synthetic or virtual way, while Augmented Reality enhances the real world by superimposing computer-generated information on top of it.

Competency-based assessment is an approach to evaluating an individual's knowledge, skills, and abilities based on specific competencies or job requirements. It focuses on measuring an individual's ability to perform a task or function and their potential for success in a particular role.

AI-based assessments use artificial intelligence (AI) to automate grading, provide feedback, and personalize learning experiences. AI-based assessments can be used in education, recruitment, and other areas. AI-based assessments can help teachers by speeding up grading, reducing administrative work, and providing insights into student performance. AI can also personalize learning by adapting course content and assessments to each student's strengths, weaknesses, and learning style.

Game-based assessment is an evaluation method that employs elements and techniques similar to those

found in games to evaluate an individual's skills, knowledge and capabilities. Features of game based assessment are: systems for scoring; mechanisms for providing feedback; constraints on time and levels of difficulty.

This assessment benefit both the individuals being assessed and the evaluator as it introduces dynamic elements and methodologies derived from gaming, which have been studied and scientifically refined to provide a more effective assessment process. Example of games that can be developed in this respect are: cognitive games, behavioral games, emotional intelligence game, situational judgment and simulation games respectively.

Challenges of innovative assessment in the digital era: As new trend of operation, the educational system might be saddled with the following challenges such as: availability and capacity to procure needed technological facilities for effective taking off; training programmes and managerial support; availability of needed infrastructure and resource constraints; data security and hacker; balancing technology with human judgement.

Methods: To explore the innovative strategies in enhancing educational assessment in digitalized era; preparation for the 4th industrial revolution, literature review was conducted to identify key principles and best practices in assessment and sustainability education. The study also involved interviews with educators and students who have experience in digital manipulation to gather insights on their perspectives

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and experiences with assessment in these innovative learning spaces. Based on the findings from the literature reviewed and interviews, the study developed a set of recommendations for enhancing assessment practices in smart green classrooms.

Results: The study found that integrating technology and sustainability principles into assessment methods can enhance student engagement, critical thinking, and environmental awareness in the 4th Industrial revolution. By incorporating digital tools, such as online quizzes, interactive simulations, assessment games and virtual labs, educators can create more interactive, and personalized assessment experiences for students.

Recommendations: Based on the findings, the study recommends government intervention in subsidizing ICT facilities in schools; Teachers training and support programmes should also be encouraged by schools; the schools should work hard in establishing data security and privacy; schools should develop technologies that support e-assessment.

Conclusion

Conclusively, the traditional method of assessment has in no doubt been overtaken by the novel trends and realities on ground, innovative educational assessment is therefore crucial in preparing students for the 4th Industrial Revolution by embracing technologies and reshaping the traditional method for effective and efficient student centered assessment system

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