

Assessment in Online Teaching and Learning: A Systematic Review

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ABSTRACT

Online teaching and learning have been one of the emerging paradigm shifts in the teaching and learning process. It has developed as an alternative or to some extent supportive of the conventional education system. Assessment is an integral part of the teaching-learning process. Teaching learning cannot be considered complete in the absence of assessment. Assessing students' learning has been a challenge in the conventional mode of teaching and learning so as with online mode also. The purpose of this review is to systematically identify the trends of online assessment strategies, challenges, effectiveness, and implications in teaching and learning. The content analysis method was employed to analyze and synthesize the findings of the data. Finally, the results regarding the study objectives are presented and discussed. The findings of the present review also throw light on the gaps in the literature as well as provide insight into the use of online assessment in education.

Keywords: Assessment, Online assessment, Systematic review, Teaching and Learning

Online teaching and learning have become increasingly prevalent in recent years, especially with the advancements in technology and the widespread availability of the internet have transformed the educational landscape and online teaching and learning have gained prominence across various academic levels. Numerous studies and research have been conducted to explore various aspects of online learning and teaching. Digital learning has influenced educational institutions to a great extent, forcing a shift from traditional modes of learning, and UGC, 2021 has also recommended blended learning under which up to 40 percent of a course can be taught online and the rest through offline mode (Sharma, 2021). Assessments of the learning levels of the students play an important role in the planning of the instructional strategies of the students. The best way to maintain the link between online education and the values of traditional education is by ensuring that online learning is "delivered" by teachers, fully qualified

and interested in teaching online in a web-based environment (Feenberg, 1998).

In the present era, technology has been developing swiftly; therefore, with the progression, it has become an indispensable instructional tool in teaching-learning to facilitate learning outcomes. The National Education Policy 2020 also emphasizes the use and integration of Technology in Education and has identified the key initiative and recommendations for the use of technology in teaching-learning such as online education, online assessment and online examination, etc. In this context, online assessment of learning can create a blend of assignments that cover the multiple dimensions of learning. Negi & Mehta (2021) cited five basic challenges i.e. online assessment, struggle with technical issues, computer

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literacy, time management, and self-motivation while learners are being assessed online.

The Objective of the Study

1. To review the findings of the related literature concerning the assessment process in online teaching and learning.
2. To identify implications based on the reviewed literature on the assessment process in online teaching and learning.

Methodology

This systematic study examines articles published between 2007 to 2023 to determine the assessment process in online teaching and learning. A systematic search for educational resources through various online platforms like Google Scholar, Google Search, Shodhganga, Eric, ResearchGate, Academia, etc. was done using the search keywords such as online assessment, online learning, and assessment, online assessment challenges, Instructional strategies in online assessment, etc. The findings and implications of the study are based on the review of related literature.

Criteria for inclusion of research papers

1. Only the topic of studies relating to the assessment process in online teaching and learning was identified for the study.
2. Research papers with empirical data and access to the full text were included in the study.
3. Accordingly research papers in the period between 2007-2023 were selected.

Selection of research papers

The researchers selected the articles which were relevant to answering the research objectives. In this step, the researchers accept or reject the articles for literature review analysis based on inclusion-exclusion criteria. Some of the conceptual papers in terms of online assessment were cited in the present review.

Data Extraction

The researcher examines the research papers. Initially, 30 research papers were examined based on the objective of the study. After reviewing full

text research paper a total of 13 research studies were selected the details of which are given in Table 1.

The reviews covered the studies that focused on assessment in online teaching and learning. The reviews incorporated in the study involved quantitative, qualitative, and mixed-method research for data collection. The source of information in the review contained 38.46 percent of studies which were analyzed quantitatively the remaining 61.53 percent of data were analyzed using qualitative and mixed-method research design.

Study Review on Assessment in Online Teaching and Learning

Online assessment allows for improving the assessment process, supports flexibility, saves time in the long term, allows quick feedback to learners, creates consistent and standardized assessment, the progress can be monitored, the assessment activity can be documented, it is attractive and learners can be assessed equally.

Gaytan and McEwen (2007) emphasized on using a variety of instructional strategies to address students' learning styles, establishing a good rapport and collaboration with students, and using thought-provoking questions in threaded discussions are important in online instruction. Whereas online assessment strategies such as projects, portfolios, self-assessments, peer evaluations, and weekly assignments with immediate feedback to students help in effective assessment.

Arend (2007) reveals that online discussions, exams, written assignments, experimental assignments, problem assignments, quizzes, journals, projects, and presentations are used for assessment. Through these students focused on more complex learning strategies, such as elaboration and critical thinking over rehearsal. Online assessment should be used strategically and feedback should be provided to the students to enhance their learning.

Beebe *et al.* (2010) found that several factors influence the transfer of assessment practices from face-to-face to online environments such as time management, the complexity of content, the structure of the online medium, student responsibility and initiative, and informal assessment. Traditional classroom assessment techniques could be incorporated into

Table 1: Selected studies on Assessment in online teaching and learning

Author & Date	Objective	Method	Sample	Data Source
Arend (2007)	To explore course assessment practices, the use of student learning strategies, and their relation in an online course at the community college level.	Quantitative and qualitative	Students	Questionnaire
Gaytan and McEwen (2007)	To study the instructional and assessment strategies that are most effective in the online learning environment.	Quantitative	Teachers	Questionnaire
Beebe <i>et al.</i> (2010)	To explore the factors influencing online assessment and its transfer from face-to-face to online environments.	Phenomenological approach	Teachers	Interview
Kearns (2012)	To study the challenges and effective practices on student assessment in online learning.	Qualitative	Teachers	FGD and Interview
Khairil & Mokshein (2018)	To explore the effects of Kahoot and game-based online assessment on preschool student teacher performance and motivation in a higher education institution.	Quasi-experimental study	Students	Test
Joshi <i>et al.</i> (2020)	To identify the barriers faced by teachers during online teaching and assessment in different settings in India.	Interpretative phenomenological analysis (IPA)	Teachers	Semi-structured interviews
Davis <i>et al.</i> (2020)	To examine whether changing the number of attempts in quizzes from one to unlimited improves students' performance.	Quantitative	Students	Test
Gopal <i>et al.</i> (2021)	To identify the factors affecting students' satisfaction and performance regarding online classes.	Quantitative	Students	Questionnaire (Google Forms)
Aina & Ogegbo (2021)	To explore teaching methodologies and methods of assessment used by teachers on online platforms during COVID-19 school restrictions.	Content analysis	Teachers	Interview
Wijayati <i>et al.</i> (2022)	To describe the preferences of the online assessment.	Quantitative and qualitative	Students and teachers	Questionnaire
DeCoito & Estaityeh (2022)	To explore assessment practices and the impacts of online teaching on students' outcomes.	Qualitative and quantitative	Teachers and students	Questionnaire
Veugan <i>et al.</i> (2022)	To investigate challenges and opportunities secondary school teachers experienced in online formative assessment.	Mixed methods design	Teachers	Questionnaires, interviews, and webinars
Das & Mishra (2023)	To study the Perception of Teachers and students on the Effectiveness of Online Teaching and assessment during the COVID-19 Pandemic.	Quantitative	Students and teachers	Perception scale

online learning. Continuous and improved learning will enhance the engagement of learners in the online environment.

Kearns (2012) found that communication with students, workload, time management, issues to adapt to the challenges posed by the effects of physical distance between students and instructors, need to collect a variety of assessment data and provide feedback were the major challenges which need to be overcome for effective assessment in online learning.

Khairil & Mokshein (2018) indicated that Kahoot can be used as an online assessment tool that helps teachers to create an active, competitive, engaging fun, and relaxing environment, which can help to improve learner's performance.

Joshi *et al.* (2020) found that lack of basic facilities, external distraction, family interruption, budget for advanced technologies, lack of training and technical support, limited awareness of online teaching platforms, security concerns, attitudinal problems, lack of motivation during teaching and

conducting assessments were major issues in online teaching and assessments.

Davis *et al.* (2020) in their study examining the impact of multiple practice quiz attempts on student's exam performance found that unlimited practice on quizzes significantly affects student's performance also significant improvement was found in the unlimited quiz group on a first and fourth exam.

Aina & Ogegbo (2021) found that teachers were able to manage the teaching and assessment processes during the COVID-19 school restrictions, using a combination of platforms such as Blackboard-collaborate, WhatsApp, Kahoot, and Google Classroom. The findings also revealed that a wide variety of teaching and assessment methodologies, including small group work, collaborative learning, case methods, discussion posts, multiple choice quizzes, chats, game activities, open-ended questions, and essays were utilized on these platforms. Although the methodologies used for teaching and assessing on these platforms require additional preparation time, they also help increase interaction between students and enable immediate grading and student feedback. Further findings revealed that online assessment is highly susceptible to test/examination malpractices.

Gopal *et al.* (2021) conducted a study on the impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. The results showed that four independent factors used in the study viz. quality of instructor, course design, prompt feedback, and expectation of students impact their satisfaction and further student's satisfaction positively impacts their performance.

DeCoito & Estaiteyeh (2022) found that teachers used a variety of platforms, and the choice of platform was mainly due to user-friendliness and interactivity, or administrative decision-making. Teaching strategies included pre-recorded videos and self-directed learning in which teachers assigned specific tasks for students to perform independently. Assessment techniques employed were viewed by teachers as unauthentic and generally ineffective. Moreover, teachers reported difficulties addressing student needs and abilities, resulting in challenges in providing equitable and inclusive online teaching.

Wijayati *et al.* (2022) revealed that the platforms preferred by students and teachers for German Language learning assessment were WhatsApp Group, LMS, Google Classroom, Edmodo, E-mail, Google Drive, Padlet, and Zoom. The forms of assignments and tests applied for online assessment such as papers, presentations, multiple choice and true-false questions, essays and short answers, instructional video making, portfolios, projects, discussions, case studies, self-assessment, simulations or practicums, observations, and interviews were preferred by both students and lecturers.

Veugan *et al.* (2022) found that many teachers implemented new formative assessment strategies and adopted them more often than in their face-to-face practice, all five phases i.e. clarifying expectations, eliciting student responses, analyzing student responses, communicating with students about responses, and taking follow-up actions of the formative assessment process in an aligned manner in online formative assessment. Teachers indicated opportunities in stimulating student engagement and guiding and monitoring student learning more at an individual level in the online formative assessment process, but also experienced challenges, due to lack of interaction in online classes.

Das and Mishra (2023) found that there is no significant difference in perception towards the effectiveness of online teaching and assessment in relation to gender and academic streams among students and teachers. Teachers and students have a favorable perception towards effectiveness of online teaching and assessment.

Analysis, Discussion, and Findings

Online teaching and learning have gained wide consideration from researchers over the last decades and many studies have been conducted in this area. There has been a paradigm shift in the teaching-learning process. Technology plays a pivotal role in today's teaching and learning as also in assessment. The reviews were then systematically examined and analyzed based on the content analysis method for drawing out the conclusion. The researcher has analyzed research papers included in the review and presented the findings from the selected studies in an online assessment.

On reviewing the literature, the entire review can be classified based on the findings of the research. These are Online assessment platforms, Online assessment methodology, Effectiveness of online assessment, and Challenges of online assessment. The findings and details of these are discussed below.

Online Assessment Platforms: The literature review suggests that online assessment can be as effective, and in some cases even more effective, than conventional classroom assessment. Factors such as instructional design, learner motivation, and interaction opportunities play crucial roles in the success of online learning. Some of the most commonly used platforms for online assessment identified through review were WhatsApp Group, LMS, Google Classroom, Edmodo, E-mail, Google Drive, Padlet, and Zoom. Blackboard-collaborate, Kahoot. These platforms were used by the teachers in online assessment with the notion of their ease to use for online assessment in teaching and learning.

Online Assessment Methodologies: Online assessment provides flexibility and accessibility, allowing learners to develop an insight into their learning. Major Assessment Methodologies identified were Online discussion, Self-assessments, Peer evaluations, Weekly assignments Exams, Written assignments, Experimental assignments, Problem assignments, Quizzes, Journals, Projects, Group work, Collaborative learning, Case methods, Discussion posts, and Presentations. These online assessment methods are used by the teacher in the teaching-learning process. These methods not only engage students in active learning but keeps them motivated in the teaching-learning process. The students have constructively engaged in the learning process vis a vis student become familiar with online assessment methods and tools.

Effectiveness of Online Assessment: The effectiveness of online assessment as compared to conventional mode cannot be undermined. Factors such as instructional design, learner motivation, and interaction opportunities play crucial roles in the success of online assessment. Research reviews present both positive and negative views about the effectiveness of online assessment. Quality of instructor, course design, prompt feedback, the expectation of students, and interaction between teachers and students, enable immediate feedback

to motivate students to exhibit a positive impact on online assessment whereas some perceive it as unauthentic and ineffective, susceptible to malpractices, etc., exhibits negative impact.

Challenges of Online Assessment: Effective online teaching requires instructors to adapt their roles and develop specific skills. Major challenges of online assessment identified were the inclusion of every student, preparation time for teachers, lack of face-to-face interaction, communication gap between teachers and students, providing constructive feedback, infrastructural facilities, and technological support. While online assessment proves to be effective, it also presents unique challenges. Teachers and students may face difficulties with self-regulation, time management, and technical issues. Teachers should also be provided with infrastructural facilities, support from management, and training to overcome challenges. Research emphasizes the importance of providing adequate support mechanisms, clear instructions, technical support, and timely feedback to help students overcome these challenges and succeed in online learning environments.

Research Gaps: Although the research review highlights online assessment mode, strategies, methods, challenges, effectiveness, and feedback there is still extensive research area in the field of online assessment that has remained unexplored some of the gaps which can direct future research could focus on emerging technologies, long-term impact on learning outcomes, teacher and student perspectives, and policy implications, etc in terms of the online assessment.

Implications

Technology is being used effectively in teaching and learning and is becoming popular in the education system. It allows teachers to plan a teaching-learning process where students can accommodate themselves in the class at ease. In conventional classrooms also, teachers are adopting an online assessment process to make assessments more authentic and effective. The online mode also provides an effective platform for the stakeholders and the practitioners so that instructions regarding teaching and assessment can be easily conveyed to the learners. In this context, blended classrooms are thought to be the future of the education

system. Applications like learning management systems and online classroom platforms enable learners to track their learning. E-Portfolios and Google Classroom are effectively used for online assessment trailing learner's project work, and assignments, and also help in providing feedback to the students regarding the subject area where need for improvement is required. As immediate feedback is provided in online assessment it helps student regulate their learning. It also provides an opportunity for teachers to know whether the learning objectives have been attained and plan the teaching-learning process accordingly. Peer feedback and formative assessment can be effectively implemented through online assessment which helps learners evaluate their performance. This will help the students to reflect on their learning, behavior, skills, performance, etc. Although there are some pitfalls of online assessment overall it provides an effective method of assessment.

CONCLUSION

Online learning provides flexibility and accessibility, allowing learners to access educational resources and participate in courses from anywhere and at any time. This flexibility accommodates diverse learner needs, including working professionals, students with disabilities, or those residing in remote areas. The literature suggests that online teaching and learning can enhance access to education and promote lifelong learning opportunities. In this context, online assessment is an important element of it. The review also highlights the importance of instructors facilitating and guiding learning, fostering online communication and collaboration, and providing timely and constructive feedback during the assessment. It is worth mentioning that the field of online teaching and learning is continuously evolving, and new research are conducted to explore emerging trends, technologies, and best practices. This review of the literature highlights the benefits, challenges, and considerations associated with online assessment but research still needs to be executed to explore solutions for complexities, and challenges and to enhance the potential of online teaching and learning. Thus, this review aims to contribute to the ongoing development and improvement of online assessment.

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