

Effectiveness of Assessment Tools Used in Open Distance Learning: Perspective of Faculty Members

Saba Munir¹

Muhammad Zaheer²

Noreen Zahra Ali³

Abstract

Assessment is a significant part of an education system that evaluates students' learning. Assessment tools have been a topic of interest for educationists and academicians since the beginning of the education system, and it is still advancing every day. Therefore, this research explored the perceived effectiveness of assessment tools currently being used in open and distance learning (ODL) institutions. This research has adopted the interpretivist paradigm and used a qualitative approach. Purposive sampling was used to select the participants; the criteria to select a participant was the teacher serving in an ODL institute full-time, with a minimum experience of one year. Data have been collected from 16 faculty members of an ODL institution. A semi-structured interview guide was used to collect the data. The findings of the study highlighted the perceptions of the faculty members regarding the effectiveness of various assessment tools used to evaluate the learning of ODL students. The study's results highlighted the issues associated with the use of multiple assessment tools in ODL settings. It has been recommended that the current AI era has impacted the effectiveness of various assessment tools, and academicians are suggested to adopt more interactive assessments.

Keywords: *Open and distance learning, assessment tool, effective assessment, perception*

¹Virtual University of Pakistan. Email: sabamunir@vu.edu.pk

²Virtual University of Pakistan. Email: mzaheer@vu.edu.pk

³Virtual University of Pakistan. Email: noreenzahra@vu.edu.pk

Introduction

Learning is considered the main objective of an educational institution. Still, the assessment determines if learning took place and whether it has enabled the student to implement that learning through cognitive skills. Assessment tools are mainly used to assess the learning outcomes in the classroom. The evaluation tools should be informative and effective for teachers and students to ensure an accurate assessment. These tools help students know the level of understanding in their learning process (Anamalai & Yatim, 2019). In today's knowledge economy, expertise relies on effective learning through knowledge transfer. It is crucial because the latest information and knowledge are required to solve daily problems. Brown et al. (2014) rightly stated, "without knowledge you don't have the foundation for the higher-level skills of analysis, synthesis, and creative problem solving" (p.18). Assessments play a significant role in enhancing students' knowledge. That is why designing assessment activities significantly impacts the motivation of students and their approach towards learning and enhances their learning experience (Leenknecht et al., 2021; Cooper et al., 2010). Multifaceted, focused and challenging assessment tasks not only present rich context and knowledge to the students but also prepare students for the challenges beyond graduation. The current technology-based era has changed traditional assessment practices to meet the requirements of contemporary society.

Open and Distance learning (ODL) has played a pivotal role in the awareness and adoption of technology-based education. As ODL dynamics differ from conventional education, the assessment of ODL also needs amendments. ODL offers various advantages in assessments like efficient submission, marking and management of assignments, better record keeping of student achievements, and flexibility in the attempt and submission of activities (Okada et al., 2019). On the other hand, online assessment raised some concerns regarding the quality and reliability of the tools (Mishra et al., 2020). According to Martin et al. (2019), designing online assessments requires more time and effort than traditional methods because teachers have to focus more on making them engaging and rigorous. These concerns can be addressed with the help of sophisticated software (Langenfeld, 2020).

Generally, learning management systems are not sophisticated enough to fulfil the needs of ODL teachers to accurately assess students' skills and knowledge, especially in developing countries. Moreover, unlike conventional universities, ODL students have little face-to-face interaction with teachers, which has become a challenge for teachers in assessing the

students (Hodges et al., 2020). These issues have grabbed the attention of researchers towards developing efficient strategies in ODL.

Most of the researchers have studied the assessment systems prevailing in ODL (Chaudhary & Dey, 2013), factors affecting the assessments in ODL (Ahmad et al., 2022), the effect of digital assessment tools on student performance (Figaredo et al., 2022) but most of these studies are conceptual, and literature is scarce on the effectiveness of these tools in ODL institutions. Moreover, the faculty perspective has not been considered, as faculty is the most significant part of a university and can evaluate the effectiveness of an assessment tool in a true sense. Secondly, most studies are conducted in developed countries, where technological awareness and adoption are much higher than in a developing country like Pakistan.

The COVID-19 pandemic has changed the scenario in education as well. Traditional classroom institutes have also started distance education, and the Higher Education Commission (HEC) of Pakistan has announced its first-ever ODL policy. It calls for careful policies, procedures, and methods to impart distance education. Faculty members are at the front end of today's tech-driven distance education and are involved in developing and evaluating student assessments. It is, therefore imperative to take their perspective and valuable insights to know how well currently used assessment tools cater to their needs.

The current study will help improve the quality of education, address unique challenges posed by ODL, enhance faculty preparedness, and promote continuous improvement. Although sufficient literature is available on student assessment, this study bridges the gap between theory and practice by focusing on the lived experiences of the faculty members involved in ODL teaching. The findings of this study may contribute to the broader academic community by adding to the literature on assessment in ODL.

Literature Review

The adoption of Open and Distance Learning (ODL) has accelerated in recent decades, especially after the COVID-19 pandemic globally. Its widespread acceptance has also highlighted the issues and challenges associated with ODL, especially assessments. Ahmad et al. (2022) defined assessment in education as "the wide range of methods or tools used by educators to evaluate, measure, and document students' academic readiness, learning progress, skill acquisition, or educational needs (p.1). Traditionally, assessment is divided into summative and formative assessment. Summative assessment is the assessment of overall learning,

while formative assessment includes the continuous assessment of learning (Stiggins, 2002). However, in Open Distance Learning (ODL) institutions, traditional assessment tools often cannot measure student's learning (Doyle, 2011). Assessments help teachers analyze students' understanding and learning and use this information to enhance their knowledge. Universities pay great attention to outlining the knowledge and skills they want their students to have.

It is evident that the transition to ODL requires a transformation in traditional assessment methods to align with the digital nature of online learning environments (Kebritchi et al., 2017). Faculty plays a critical role in designing and improving the student evaluation process (National Institute for Learning Outcomes Assessment, 2023). Assessment tools like online quizzes, assignments, and discussion boards provide flexibility for students and teachers, allowing asynchronous and synchronous evaluation (Roddy et al., 2017). Moreover, digital platforms offer automated grading systems that can enhance efficiency by providing real-time feedback that helps monitor student perception. (Baleni, 2015). However, the ability of these tools to measure higher-order cognitive skills is questionable.

According to Alruwais et al. (2018), faculty members perceive online assessments as less effective in evaluating critical thinking and problem-solving than traditional methods. Oliver (2015) recommended that in ODL institutions, traditional assessment tools should be exchanged with technology-based methods to meet the current demands of a knowledge-based economy. Chaudhary and Dey (2013) suggested a paradigm shift from content-based assessment toward problem-solving and competency-based assessment.

Moreover, issues like academic dishonesty and lack of appropriate invigilation also challenge the validity and reliability of online assessments (Bawa, 2016). Another challenge identified in the literature is the difficulties in creating assessments for a diverse student population with varying degrees of access to the internet and technologies (Mishra et al., 2020). These barriers can complicate the evaluation process by creating disparities in assessment outcomes.

Assessment Practices in ODL

ODL institutions are currently using multiple assessments to evaluate their students' learning. These assessments include assignments, quizzes, projects, and mid-term and end-term examinations. Chaudhary and Dey (2013) studied the assessment practices of five open and distance-learning universities in different countries. The assessments used in all the universities were a combination of formative and summative assessments.

Under the category of formative assessments, universities generally use assignments, group discussions, quizzes, seminars and workshops, while under summative assessments, all the universities use projects, mid and end-term examinations. The weightage of summative assessment is greater than that of formative assessment in all universities.

Research Objectives

- 1) To explore the faculty members' perceptions regarding the assessment tools used in ODL.
- 2) To examine the key issues and challenges faculty members encounter while developing assessments in Open and Distance Learning (ODL).

Research Questions

- 1) What is the perception of faculty members of Open Distance Learning (ODL) regarding the effectiveness of assessment tools used to evaluate students?
- 2) What are the issues and challenges faculty members face while developing or evaluating the assessments in ODL?

Methodology

This exploratory study aims to gain insights from ODL teachers regarding the perceived effectiveness of the assessment tools employed. Therefore, the philosophical paradigm of this study is interpretivism, and the research methodology applied is qualitative. The approach is inductive interpretivism, which best describes the paradigm for this study (Saunders et al., 2009; Creswell & Poth, 2016).

According to Creswell and Poth (2016), there are five approaches to qualitative study; as the current study aims to explore the perceptions of teachers, grounded theory methodology is preferred. According to Glaser and Strauss (2017), grounded theory extracts the categories or themes grounded in data. The latest version of grounded theory, the famous Gioia methodology (Gioia et al., 2013) has been applied. As per (Gioia et al., 2013), from qualitative data gathered by interviews, initially, 1st order concepts are developed; from these concepts, 2nd order themes are extracted, and finally, aggregate dimension is obtained for each category. The whole process is shown diagrammatically and is called data structure.

Data were collected using semi-structured interviews; an interview guide was developed to steer the data collection process. Teachers of two ODL universities were interviewed; at the moment, there are only two

universities/institutes that are solely distance learning universities. These interviews were audio recorded with the teachers' consent. The average duration of the interviews was 25 minutes. Table 1 shows the demographics of the informants. Teachers from diverse fields, like management sciences, computer sciences, humanities, and social sciences, participated in the study; this added to the diversity of the informants as teachers from all available disciplines were included in the data.

Purposive sampling was used to select the participants; the criteria to include an informant was a teacher serving in an ODL institute full-time, with a minimum experience of one year. The sample was diverse in terms of domain, experience, and gender. The sample size of the study was 16 as after 12 interviews, data saturation was achieved, which determines the end of data collection; however, 04 more interviews were conducted to ascertain the data saturation.

Table 01
Demographic Information

Informant	Gender	Teaching Experience in years	Domain
1	Male	10	Computer Science
2	Female	03	Management Science
3	Female	12	Sociology
4	Female	5	Psychology
5	Female	13	Mathematics
6	Male	8	Economics
7	Male	15	Computer Science
8	Male	1	Computer Science
9	Male	2	Sociology
10	Female	9	Sociology
11	Female	5	Psychology
12	Male	11	Computer Science
13	Male	3	Computer Science
14	Male	2	Management Science

15	Male	16	Management Science
16	Female	3	Management Science

Findings

The in-depth interviews helped to identify the perceptions of faculty members of ODL institutions regarding the effectiveness of assessment tools. Various categories were identified, and a data structure was made based on these categories. Different themes were identified after multiple reviews of the interviews. A total of 9 themes were extracted from the transcribed interviews. These nine themes were further grouped under three aggregate dimensions.

Figure 01 represents the data structure of the informants' responses regarding issues affecting ODL assessments. Figure 2 depicts the data structure of the responses regarding the suggestions of quality enhancement strategies while developing assessments in ODL. Faculty members were asked about their perception of the effectiveness of the assessment tools used in their universities. Most of the faculty members were dissatisfied with the results.

Currently, assignments, quizzes, graded discussions, projects, and viva-voce examinations are being used to assess students' academic abilities in ODL institutions. Faculty members showed their concerns regarding their effectiveness. They explained that assignments, discussions, and projects are mostly copied and that we are unable to evaluate students' true knowledge and understanding. Although a quiz is an effective tool but, its percentage in the overall assessment scheme is low. The most effective tool to assess students is through viva of the project, where the student is assessed regarding his work and academic knowledge through multiple questions.

Faculty members were further probed about the factors that are impeding the effectiveness of these tools. The faculty members identified various issues and challenges creating hurdles in achieving effectiveness. These issues and challenges are categorized under the learner's approach and system limitations. Informants have also suggested a few strategies that can help minimize student assessment issues in the context of ODL.

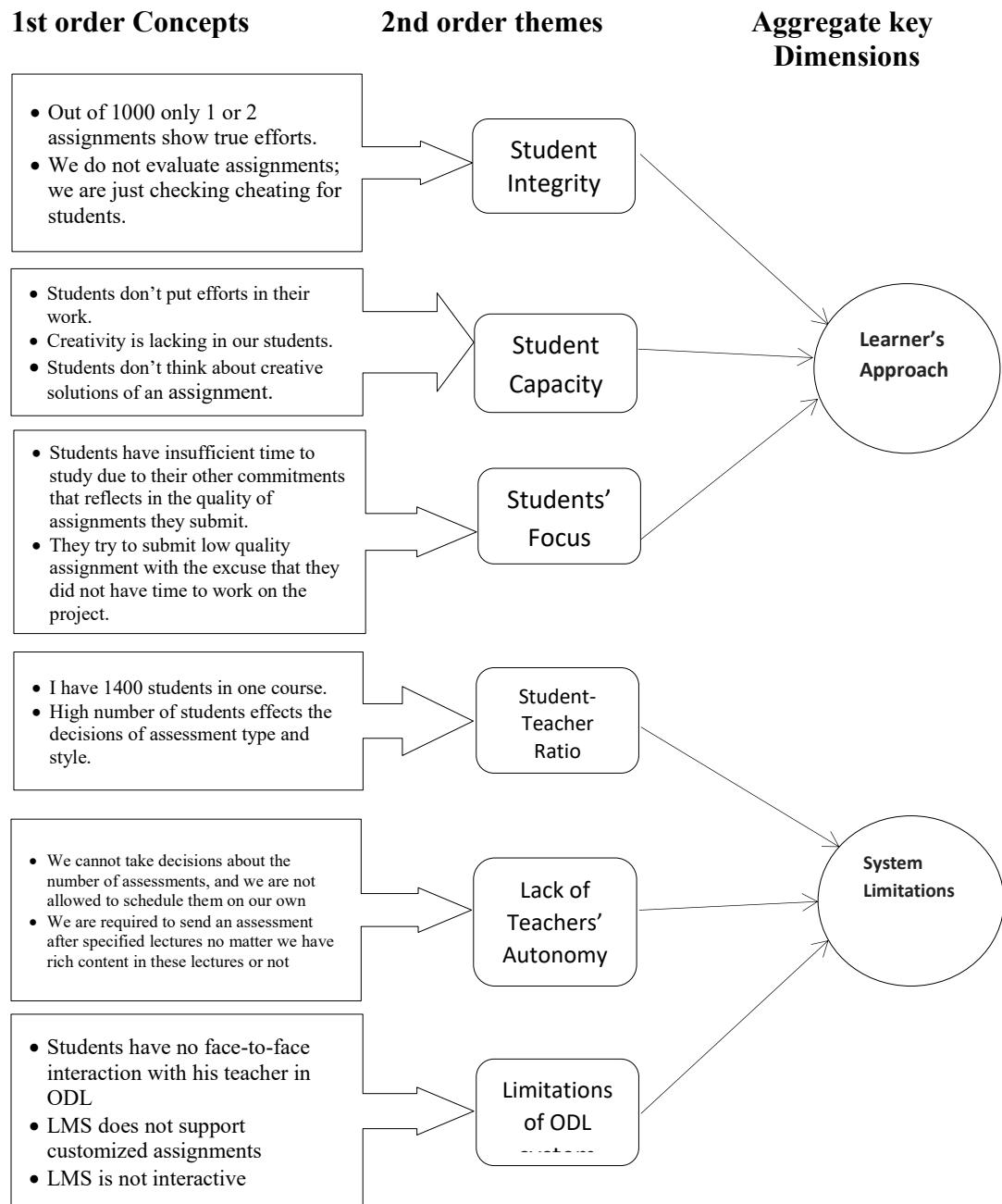


Figure 01. Issues and challenges

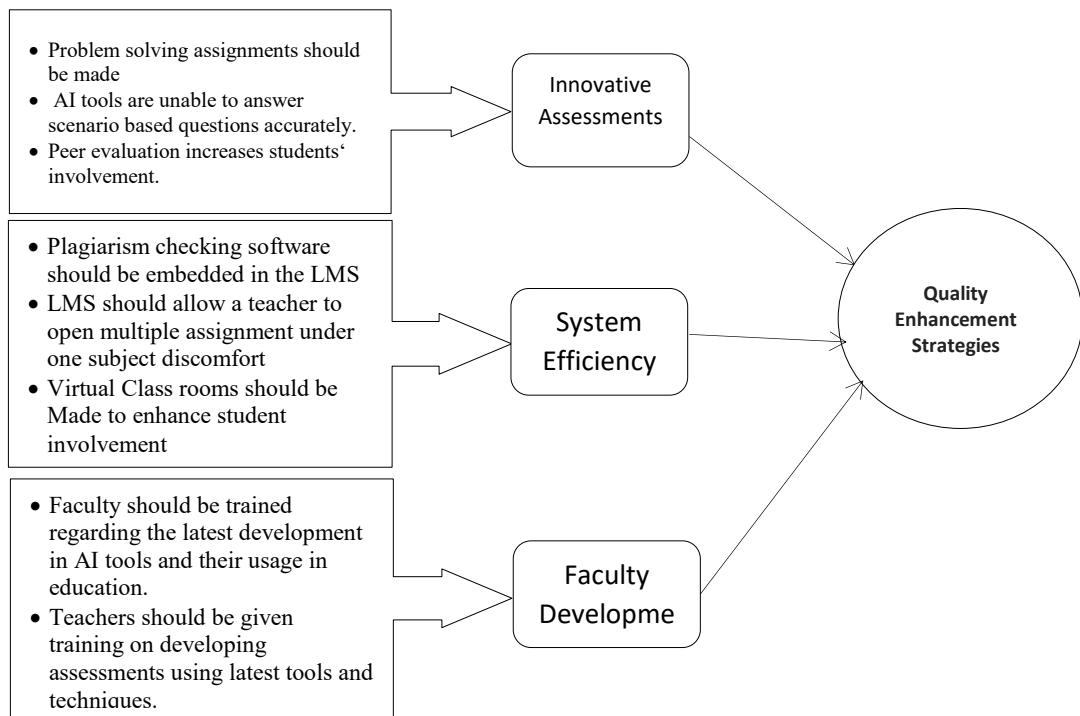


Figure 02. Quality enhancement strategies

This section will discuss the themes and dimensions extracted from the data. Two aggregated dimensions were extracted for issues and challenges faced by the faculty of ODL institutions, namely, learner's approach and system limitations.

(1)Learner's Approach

In these particular universities, quizzes, assignments and graded discussions are generally used to assess students during the semester, while projects, internships, and mid and final terms are used to evaluate students at the end of a term or a semester. 90% of the faculty members believed assignments and discussions were ineffective tools in the ODL settings. As quoted by one of the faculty members:

"Assignment is not an effective tool as out of 100 only 1 or 2 assignments show true efforts, same is the case with graded discussions."

While 60% considered quizzes an effective tool for measuring student's learning.

Faculty members were further probed as to why these tools (assignment and discussion) have become ineffective in the current settings. Based on their responses, the following themes have emerged.

1.1 Student Integrity

The first theme that emerged from the informants' interviews was the lack of student integrity. One of the informants said:

"Ironically, we do not evaluate assignments; we are just checking cheating for students as they are not working or putting any effort; they are just copying from various sources."

One informant stated,

"Despite multiple announcements, clear instructions on plagiarism policy, and deduction of marks, students are still submitting plagiarized work."

A faculty member highlighted that the availability of cheating opportunities has affected the integrity of our students. He said, *"Many blogs, YouTube channels and websites offer free solutions to assignments, making cheating an easier task for students."*

This behavior of students has affected the quality of learning and the morale of faculty members.

1.2 Student Capacity

Moreover, the availability of AI tools like ChatGPT, Bing, or Gemini AI has worsened the situation. Students do not try to exert any effort; they just use these AI tools to help them submit their assignments or GDBs. As one informant stated, *"Students don't put effort into their work."*

According to another faculty member,

"Creativity is lacking in our students; they just copy and submit without learning anything."

One of the informants shared that "*an assignment was given to the students where they were required to design a chip, but no students came up with a creative solution. They just copied from Google and submitted the assignment*".

1.3 Students' Focus

Another issue highlighted by the faculty was the students' approach. Many university students are job holders who want to attain a degree for their promotion or growth at their workplace. Their primary focus is to earn the degree; learning is not their priority. That is why the response is very ordinary, no matter how creative assessment is given.

One of the informants quoted:

"Students have insufficient time to study due to their other commitments that reflect the quality of assignments they submit."

This issue has been highlighted by the faculty members who are especially dealing with the courses of projects. According to a faculty member:

"We generally have more interaction with students who are enrolled in projects, and it has been observed that at each step, they try to submit a low-quality assignment with the excuse that they did not have time to work on the project and expect the supervisor to accept their assignments".

Another informant quoted:

"Learning is not their priority; degree attainment is."

The above-mentioned themes relate to the learners, but some system-related issues hinder designing a practical assessment for ODL students.

The informants were asked to discuss the challenges they faced while developing and evaluating assessments. Based on their responses, the following themes have been identified.

(2) System Limitations

2.1 Student-Teacher Ratio

Almost all the informants highlighted that a higher number of students limits the teachers while experimenting with assessment. One of the informants stated:

"Student-teacher ratio is too high; I have many students in one course".

Another informant said:

"I gave a practical assignment to my students in a graduate level course where the number of students was less, but the same assignment cannot be offered in a course where student enrollment is more than 100."

Creative assessments need the teacher's attention and time. Still, as the number of students increases, it is not possible for the teachers to provide extensive feedback to the students due to time limitations.

One of the faculty members explained that she experimented in her course by taking group presentations when the number of students was around 50. She further stated:

"As the number of allocated students increased, I had to withdraw this activity because it was not possible to schedule presentations of 500 students along with other semester activities in a limited time span."

2.2 Lack of teachers' Autonomy

According to the faculty members, teachers' autonomy is an important factor that restricts them from experimenting with their assessment techniques. As quoted by a faculty member:

"We cannot make decisions about the number of assessments, and we are not allowed to schedule them independently."

The study shows that every department has a consolidated semester calendar, and every course instructor is bound to follow it. Faculty members have no discretion in this matter.

"We are required to send an assessment after specified lectures no matter whether we have rich content in these lectures or not; it limits the quality and creativity of an assessment."

2.3 Limitations of the ODL system

Open distance Learning has some limitations that hinder effective assessment. One of the major limitations is the lack of face-to-face interaction.

"Students have no face-to-face interaction with their teacher because of that student-teacher bond is not developed; as a result, teachers are unable to know the students' capabilities and ultimately are unable to identify if the assessment reflects student's true efforts or not."

Most of the time, teachers cannot experiment because the Learning Management System (LMS) cannot support them.

"Our LMS is not interactive and cannot grab students' interest."

Another informant stated,

"We cannot upload customized assignments for our students; one assignment for all the programs also causes low-quality solutions from students."

Faculty members were asked how the assessments can be improved in ODL. Multiple themes emerged from their responses, which are discussed below.

(3) Quality Enhancement Strategies

3.1 Innovative Assessments

Faculty members were of the opinion that the quality of assessment tools can be increased by bringing creativity to the assignment or quizzes.

"I try to make scenario-based or problem-solving assignments where students have to think and come up with innovative solutions. Moreover, AI tools are unable to answer scenario-based questions accurately, leading towards less plagiarism."

Research-based and practical assignments also provide excellent learning experiences for students. One of the informants shared his experience of giving a practical assignment and said:

"Students were required to invest in the stock exchange with virtual money. Students attempted this assignment with great interest, and full participation was observed."

One of the faculty members included peer evaluation in group presentations.

"Peer evaluation increased students' involvement in the presentation of their classmates and increased their learning."

3.2 System support

Technology plays a crucial role in open distance learning as the system ensures flexibility and convenience. This theme discussed the faculty perspective regarding the support of the IT team in increasing the effectiveness of assessment tools.

The most highlighted issue in this study was the copied assignments. All the faculty suggested that the LMS should be smart enough to identify the plagiarism first so that the time wastage can be minimized and assessment evaluation can become more efficient. As suggested by a faculty member Plagiarism-checking software should be embedded in the LMS and should show the percentage of copied material.

Faculty members also highlighted that students from various programs are enrolled under one subject. A computer science student might have a different understanding of the course from a management science student compared to a business studies student. Evaluating them based on similar assignments affects the quality of submitted works. As explained by a faculty member:

LMS should allow a teacher to open multiple assignments under one subject for students of different programs simultaneously.

Another informant suggested,
"Virtual Classrooms should be developed to give a classroom environment to the students at their convenience."

3.3 Faculty Development and Autonomy

Faculty plays a pivotal role in the progress and growth of any institution. It is essential to develop them to stay up-to-date with the latest trends in education.

"Faculty should be trained regarding AI tools' latest development and usage in education."

These trainings will not only bring efficiency in various teaching tasks but also help them use innovative assessment techniques.

"We will not be able to respond to the changing dynamics of ODL unless we learn and adopt the new trends and implement them."

Another informant said:

“Teachers should be given training on developing assessments using the latest tools and techniques.”

Discussion

Assessment is considered an important element in the academic world because it helps evaluate student learning, his understanding of a concept and also has a positive or negative impact on his motivation towards learning (Leenknecht et al., 2021). The current study has highlighted the perceptions of the faculty members of Open and distance learning institutions regarding the effectiveness of the prevailing assessment tools.

The study's findings highlighted that assignments and discussions are not as effective as they should be because of easy access to plagiarism sources for the students and the student's lack of focus on learning. This issue has been aggravated after the introduction of generative AI tools like Chat GPT. Duah and McGivern, (2024) also found that faculty members are concerned about the usage of generative AI tools by the students. Considering the ever-increasing usage of AI tools, there is a need in academics to train students regarding the ethical usage of such services to enhance the effectiveness of assessment tools and to mitigate the tendency of copied submissions from students (Richards et al., 2024).

Quizzes and projects were considered more effective as quizzes' chances of plagiarism were low. Quizzes are considered an effective tool to assess student learning in ODL settings. By giving a time-limited quiz, plagiarism can be controlled, and its effectiveness can be enhanced (Cantiello & Geschke, 2024). In contrast, projects are followed by a viva, demonstrating students' efforts and capabilities, and the grades are based on the students' true performance. However, the effectiveness of each tool may vary from course to course.

The most prominent issues faculty members face in assessment development and evaluation are plagiarized work and a lack of creativity in students (Jiang & Huang, 2022). It has also been identified that students are more interested in getting a degree than learning. The student-teacher ratio is a big challenge for teachers as it limits their assessment options and impedes their creativity and experimentation. Some system limitations also pose challenges for faculty members, like a lack of face-to-face student interaction.

To minimize the issues mentioned above, teachers should focus on developing creative assignments, i.e., problem-solving assignments research-based or peer evaluation group assignments (Fons & Torres, 2021), where students have fewer chances of plagiarism and learning is

enhanced. It has been suggested that LMS should be made interactive for students and provide autonomy to the teachers so that they may customize the LMS of their courses as per their requirements. Lastly, teachers should be provided with training on the latest trends in the education sector and involved while making any changes in the system or developing new policies.

The issues of plagiarism and copying the work are not unique to ODL; the same practice is found in conventional classroom institutions. As one of the authors has experience in classroom teaching, the teachers face similar issues. ODL is a unique education system that features flexibility and convenience. It enhances the digital literacy of the students along with the learning. It is high time to focus on improving its effectiveness through the collective efforts of ICT, students, and faculty.

Conclusion

A qualitative study has been conducted using the grounded theory methodology to explore ODL teachers' perceptions of the effectiveness of student assessment. It was found that teachers have serious concerns about students' submissions in formative assessments. Students use AI tools to prepare their assignments, which impedes their cognitive skills. To overcome such issues, it is recommended that teachers should use scenario-based creative assessments that AI tools find difficult to solve. Furthermore, teachers should be provided with the latest AI tools and training to use these effectively. Institutions should strengthen their Learning Management Systems to cater to the needs of the modern AI era.

Firstly, this study was carried out in the specific context of ODL universities in Pakistan. Although this context has helped to analyze the challenges more closely, it also poses the concern of generalization. The researchers can replicate this study in other universities for more generalized results. Secondly, this study has been conducted in a developing country. Although technology acceptance is high in Pakistan, the technological infrastructure still needs improvements as compared to developed countries. Future researchers can replicate this study in developed countries to see the cultural or technological differences that might affect the assessments in ODL institutions. Lastly, Open and Distance Learning is an under-explored area in education so, this study opted for a qualitative study. Future studies can use quantitative methods to check the reliability of the current findings.

References

Ahmad, S., Bhatti, R. U., & Ismail, M. (2022). Factors affecting assessment practices in open and distance learning (ODL) system: a case study of allama iqbal open university (AIOU). *International Journal of Distance Education and E-learning*, 8(1), 109-127.

Alruwais, N., Wills, G., & Wald, M. (2018). Advantages and challenges of using e-assessment. *International Journal of Information and Education Technology*, 8(1), 34-37.

Anamalai, T. R., & Yatim, M. M. (2019). A comparative study of formative assessment tools. *Journal of Information System and Technology Management*, 4(14), 61-71.

Baleni, Z. G. (2015). Online formative assessment in higher education: Its pros and cons. *The Electronic Journal of e-Learning*, 13(4), 228-236.

Bawa, P. (2016). Retention in online courses: Exploring issues and solutions- A literature review. *SAGE Open*, 6(1), 2158244015621777.

Brown, P.C., Roediger, H.L., & McDaniel, M.A. (2014). *Learning is misunderstood. In make it stick* (pp. 1-22). Cambridge, MA: Belknap.

Cantiello, J., & Geschke, R. H. (2024). Preventing Academic Dishonesty in Online Courses: Best Practices to Discourage Cheating. *Journal of Health Administration Education*, 40(2), 205-230.

Chaudhary, S., & Dey, N. (2013). Assessment in open and distance learning system (ODL): A challenge. *Open Praxis*, 5(3), 207-216.

Cooper, L., Orrell, J., & Bowden, M. (2010). *Work integrated learning: A guide to effective practice*. London: Routledge.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage publications.

Doyle, T. (2011). *Learner-centered teaching: Putting the research on learning into practice*. Sterling: Stylus.

Duah, J. E., & McGivern, P. (2024). How generative artificial intelligence has blurred notions of authorial identity and academic norms in higher education, necessitating clear university usage policies. *The International Journal of Information and Learning Technology*, 41(2), 180-193. <https://doi.org/10.1108/IJILT-11-2023-0213>

Figaredo, D. D., Jaurena, I. G., & Encina, J. M. (2022). The impact of rapid adoption of online assessment on students' performance and perceptions: Evidence from a distance learning university. *Electronic Journal of e-Learning*, 20(3), 224-241.

Fons, I. T., & Torres, C. G. J. R. B. R. (2021). Rethinking academic tasks as a way to fight against cyber-plagiarism in higher education. *Journal of New Approaches in Educational Research*, 10(1), 110-124.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.

Glaser, B. G., & Strauss, A. L. (2017). *Discovery of grounded theory: Strategies for qualitative research*. New York, NY: Routledge.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). *The difference between emergency remote teaching and online learning*. Educause Review. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>

Jiang, Z., & Huang, J. (2022). Effective and Efficient Strategies and Their Technological Implementations to Reduce Plagiarism and Collusion in Nonproctored Online Exams. *IEEE Transactions on Learning Technologies*, 15(1), 107-118. <https://doi.org/10.1109/TLT.2022.3153948>

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. *Journal of Educational Technology Systems*, 46(1), 4-29. <https://doi.org/10.1177/0047239516661713>

Langenfeld, T., (2020). Internet-based proctored assessment: Security and fairness issues. *Educational Measurement: Issues and Practice*, 39(3), 24-27. <https://doi.org/10.1111/emip.12359>

Leenknecht, M., Wijnia, L., Köhlen, M., Fryer, L., Rikers, R., & Loyens, S. (2021). Formative assessment as practice: the role of students' motivation. *Assessment & Evaluation in Higher Education*, 46(2), 236-255. <https://doi.org/10.1080/02602938.2020.1765228>

Martin, F., Ritzhaupt, A., Kumar, S., & Budhrani, K. (2019). Award-winning faculty online teaching practices: Roles and competencies. *Online Learning*, 23(1), 184-205. <https://doi.org/10.24059/olj.v23i1.1329>

Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic.

International Journal of Educational Research Open, 1, Article 100012.
<https://doi.org/10.1016/j.ijedro.2020.100012>

National Institute for Learning Outcomes Assessment (NILOA). (2023). *Faculty roles in student assessment*. Learning Outcomes Assessment Brief. <https://www.learningoutcomesassessment.org>

Okada, A., Noguera, I., Alexieva, L., Rozeva, A., Kocdar, S., Brouns, F., Ladonlahti, T., Whitelock, D. and Guerrero-Roldán, A.E. (2019). Pedagogical approaches for e-assessment with authentication and authorship verification in Higher Education. *British Journal of Educational Technology*, 50(6), 3264–3282. <https://doi.org/10.1111/bjet.12733>

Oliver, E. (2015). *Alternative assessment for effective open distance education* [Doctoral dissertation]. University of South Africa, Pretoria, South Africa.

Richards, M., Waugh, K., Slaymaker, M., Petre, M., Woodthorpe, J., & Gooch, D. (2024). Bob or Bot: Exploring ChatGPT's answers to university Computer Science assessment. *ACM Transactions on Computing Education*, 24(1), Article 5. <https://doi.org/10.1145/3633287>

Roddy, C., Amiet, D. L., Chung, J., Holt, C., Shaw, L., McKenzie, S., & Mundy, M. E. (2017). Applying best practice online learning, teaching, and support to intensive online environments: An integrative review. *Frontiers in Education*, 2, 59. doi: 10.3389/feduc.2017.00059

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Harlow, England: Pearson education.

Stiggins, R.J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, 83(10), 75-65.

Cite this article:

Munir, S., Zaheer, M. & Ali, N. Z. (2024). Effectiveness of assessment tools used in open distance learning: Perspective of faculty members. *Pakistan Journal of Distance and Online Learning*, 10(2), 1-19.