A Systematic Review: Strategies to Assure the Quality of Online Instructional Practices at the Higher Education Level

Journal of Educational Psychology and Pedagogical Sciences (JEPPS)

ISSN:2791-0393 (Print) eISSN: 2791-0407

Vol.5, No. 2, (Jul-Dec, 2025): P. 1-17

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Submitted 12 April 2025

Accepted 27 July 2025

Published 08 Aug 2025

DOI: https://doi.org/10.52587/jepps.v5i2.114

https://jepps.su.edu.pk/article/50

ABSTRACT

As online education has become more widespread at the higher education level, effective quality assurance strategies are essential to ensure the quality of online instructional practices. The focus of the current study was to explore the quality assurance strategies for online instruction in higher education through a comprehensive review of previously conducted studies. The qualitative systematic review method was employed by following the PRISMA guidelines to extract and analyze the previously conducted studies related to the quality indicators for online instruction. In line with PRISMA guidelines, fifty-three (53) studies related to the focused area of the current study were identified via searching various databases, including Google Scholar, Litmaps, Web of Science, ERIC, Science Direct, and Academia. Additionally, themes were generated after systematically reviewing the selected studies. The findings highlighted the key themes such as well-designed instructional resources, fully prepared instructors, creating a sense of online learning community among learners, motivated interaction between learners and instructors, effective implementation of advanced technological tools, incorporation of innovative assessment techniques, and continuous improvement plans for online courses. However, these significant insights can assist online education programs by directing the development and implementation of robust quality assurance frameworks to address the multidimensional aspects of online instruction.

Keywords: Online instructional practices, Quality assurance strategies, Higher education, PRISMA, Quality teaching.

1. Introduction

Quality-based education in higher education is an important issue that forms the students' learning experiences (Kibaru, 2018). However, teaching quality remains a challenge at higher learning institutions, affecting student performance (Liu & Zhang, 2021). The increasing complexity of the higher education sector necessitates maintaining and improving instructional

quality because it requires that academics be outstanding in teaching, research and administration (Yusoff et al., 2018). Wei and Yin (2024) argued that high-quality online teaching is a trend in which higher education is moving towards development. Xie (2024) stated that the task of using the Internet in the teaching process comprises various approaches, flexibility, accessibility and convenience; however, there is no teacher-student interaction and a lack of self-discipline while learners do not control themselves. Zhou and Mou (2022) believed that the real obstacles in online teaching include objective factors (absence of physical contact, lack of school rules, and asynchronous time and space), which can foster pessimistic and even a negative attitude among instructors towards online instructions, especially for those instructors for whom digitization is challenging to develop socializing feeling during online classroom sessions. However, ensuring the quality of instruction is a serious issue in higher education that every higher education institute is facing worldwide (Gracio et al., 2023).

Quality assurance in online teaching has become one of the most frequently debated and hottest issues worldwide especially after the COVID-19 pandemic disease struck the world. Regardless of the technical and adaptability challenges faced in online teaching and learning, quality of instruction is among other major issues of concern in higher education institutions (Rawabdeh et al., 2021). Consequently, this problem has attracted significant attention from faculty members, educational experts, and managers of higher institutions who are striving hard to develop different workable strategies and solutions in line with the quality assurance of online instruction (Naim & Alahmari, 2020). There are many studies on effective instructional practices, yet sustainable solutions for improving both teaching quality and student learning experiences and outcomes still pose a challenge for higher educational institutes (Dawo & Sika, 2021). Despite the extensive research on effective instructional strategies to improve the quality of online teaching, the successful employment of these strategies is still inconsistent at higher education levels (Sokwane & Adekanmbi, 2019).

2. Purpose of the Study

In higher education, the lack of a systematic approach for evaluating and improving the quality of instruction has been identified as one of the main challenges to improving teaching standards (Wieman, 2015). Furthermore, the quality of online instructions is considered important in higher education, but the specific instructional strategies that guarantee the quality of online instructions are still unidentified. This implies a need to systematically explore effective strategies to ensure the quality of online instructions in this context. This study aims to systematically review the existing literature to explore the instructional strategies that can contribute to the quality of teaching at the higher education level.

3. Research Questions

The following research questions guide the current study as:

1. What are the generally adopted instructional strategies to ensure the quality of online instruction at higher education level?
2. How well these adopted instructional strategies support the quality of online instruction by recent studies?

4. Research Methodology

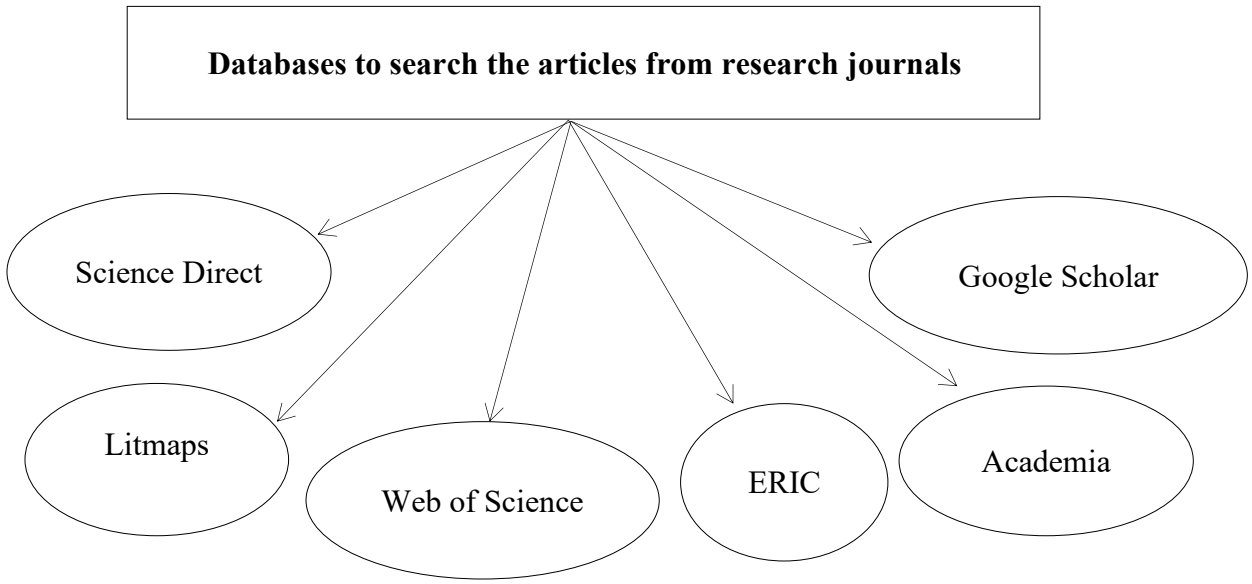
This study employed a systematic literature review approach to synthesize the existing literature on instructional strategies for ensuring the quality teaching in higher education. A comprehensive search of relevant databases was conducted to identify peer-reviewed journal articles, conference papers, and other relevant publications. The search terms used included "higher education," "quality teaching," "instructional strategies," and their variations. The

identified studies were then meticulously reviewed and selected based on their alignment with the research objectives, ensuring that only the most relevant and informative sources were included in the analysis, thereby maintaining a clear focus on the study's objective.

The current systematic review was conducted by following the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach. The following databases were searched because they cover a broad range of research journals:

Figure 1.

Databases search for research journals

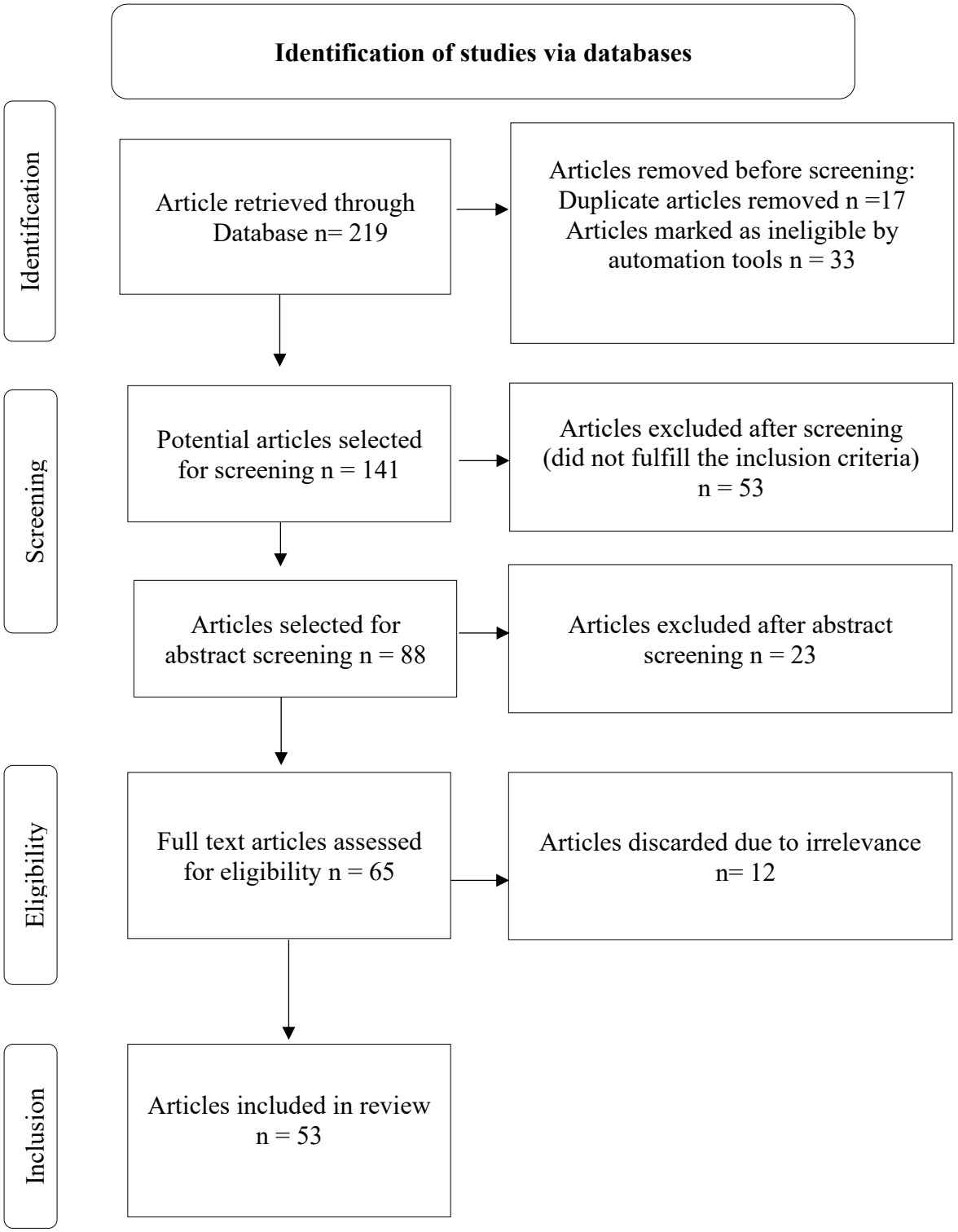


In line with the PRISMA guidelines, the following criteria were decided to select the articles for systematic review:

i. Articles published between 2015 to 2025
ii. Articles published in English language
iii. Articles based on empirical and primary research
iv. Articles exclusively related to online instructions and online education
v. Articles selected based on their alignment with the research objectives

Figure 2.

PRISMA flow diagram of systematic review



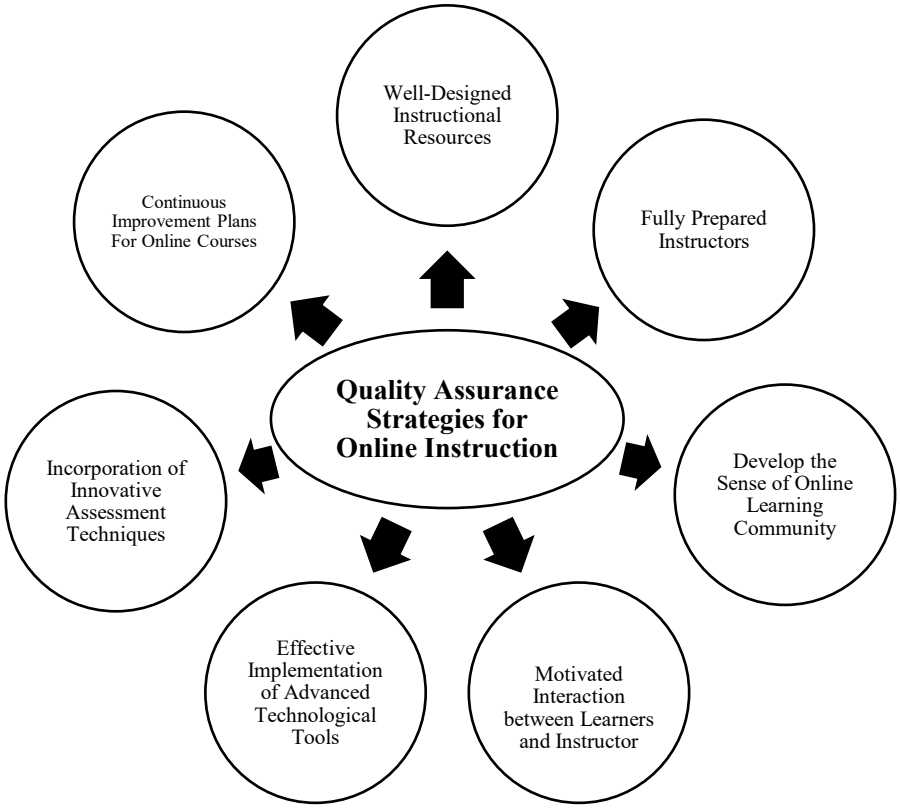
Initially, 219 articles were identified from the database. After an extensive review and screening process total 53 articles were selected based on the predefined selection criteria. These selected articles were studied thoroughly, and meaningful themes or concepts were generated to extract the relevant data. Lastly, the results were synthesized and organized systematically. The following themes/strategies were developed to extract the relevant data from the selected articles.

5. Findings and Discussion

A comprehensive analysis of the selected studies identified the following key instructional strategies that may contribute to ensuring the quality of online instruction across higher education.

Figure 3.

Quality Assurance Strategies for Online Instruction



i. Well-Designed Instructional Resources

A well-designed course is a key component of quality assurance. The well-designed instructional resources are also important to engage learners in that they have instructional resources designed to align with learning objectives (Martin et al., 2019). The quality of online instructional material has been a growing need for better quality content on the internet, so we need to create content that aids our learners to learn effectively and enjoy themselves. The development of teaching and learning materials depends on a suitable instructional design and can be built on various online platforms. Namestovski and Kovari (2022) described that models define the steps of course development, and the models establish the relationship between them. The most common instructional design model is the ADDIE model, which stands for analyzing, designing, developing, implementing and evaluating. In addition, the Dick and Carey model is also employed frequently, whereas the Nexus model is also notable.

According to Hehir et al. (2021), instructors must think and plan the layout and preparation of courses in advance before embarking on online instructions. In line with this, a well-designed course has definite rules through which instructors convey the knowledge or information to learners to complete the course on time effectively. There is more to online education than just uploading material into a repository and using it systematically.

As Gonzalez and Vieyra (2019) endorsed, electronic educational platforms are considered integrated systems and provide a wide range of technological resources per the implemented educational model. In order to perform well, an instructional model should consist of harmonious architecture with respect to ICT, administrative, legal and infrastructure reasons; in other words, this is a holistic approach to achieving optimal performance. These models may be enhanced by other methodological approaches, such as DevOps, used for continuous delivery, thus ensuring that education material is updated regularly. These models serve as a guide instructional design process as well. When designing the learning session for either online or typical face-to-face classroom settings, one has to deploy a well-prepared strategy on how educational materials will be presented to learners during the lesson. There is a need for a well-prepared condition that is smooth for effective lesson development, whether it is just a lesson or a planned activity that is already scheduled. In contrast, Chen (2016) reported that poorly designed online courses frequently confuse learners, distract their focus, and frustrate them. The poorly designed course does not guide learners on where to begin, what to do, how to communicate, and how to learn. Therefore, effective instructional design is more important than ever as virtual classrooms become increasingly popular.

ii. Fully Prepared Instructors

Preparing instructors for online teaching is also an important component of quality assurance. One major approach is that more attention should be paid to enhancing instructors' support, development, and skills. In other words, instructors need to be equipped with training and resources as well as opportunities to advance their teaching skills through integrating effective instructional approaches while at the same time being aware of shifts that occur within higher education (Kibaru (2018). According to the study conducted by Bolliger and Halupa (2022), instructors who were moderately prepared for online instructional tasks were most competent in course communication but needed to be more competent in time management skills. There were significant variances in answers associated with teaching online before the pandemic and the number of years one has experienced online instruction using this mode. In addition, the instructors who were confident about the virtual mode of instruction were better equipped for it as opposed to those who were no confident.

Martin et al. (2019) define online instruction readiness as the ability to successfully deliver the content and handle all the necessary duties in online courses. One way of supporting this is by looking at professional development rather than concentrating exclusively on technical skills and instructional design (Rhode & Krishnamurthi, 2016; Rhode et al., 2017). Besides, a study conducted by Estaura and Cabrejas (2025) confirmed that traditional pedagogies are dominant while noting that contemporary and blended approaches, such as collaborative learning and flipped classrooms, also offer enhanced student engagement; however, they remain underused due to technological and institutional constraints. Instructors were competent in utilizing learning management systems and open educational resources but were largely limited in their variations and applications of artificial intelligence tools. In addition, management skills leadership and communication skills are the most significant predictors of instructional quality. These skills, however, mediated the relationship between teaching practices and technology use on one side and instructional effectiveness on the other.

Gregory and Martindale (2016) highlighted some common barriers related to online instruction, which included instructors' judgments about the quality of online instruction and their ability to foster the students' learning in the online learning environment. Likewise, studies indicated that quality in online instruction requires well-prepared and fully supported instructors to ensure the quality of instruction in online settings. However, extensive training combined with different resources and continued faculty support can enhance their expertise to effectively

design, deliver and assess online courses (Dumont et al., 2021). For effective online instruction, instructors need expertise and competencies that differ from conventional face-to-face instruction (Masengu et al., 2023). Corpuz and Tindowen (2025) stated that several key factors serve as both enablers and constraints of instructors' efficacy in online learning, including technology, training, administrative support, stakeholder involvement, and self-motivation. Therefore, higher education institutes should support instructors through comprehensive training initiatives and support programs to equip them with the necessary skills. These initiatives involve training instructors on developing online courses and creating content, facilitation and technical support to utilize technology platforms.

iii. Develop the Sense of Online Learning Community

The systematic review of studies also emphasized the importance of building a sense of learning community and maintaining effective contact between learners and instructors, particularly in online learning. According to Arifeen (2023), efficient online instruction requires a well-established sense of an online learning community. This also involves effective online learning strategies to facilitate learner-to-learner and learner-to-instructor interactions and foster activities that create emotional connections between members on numerous online platforms to develop an interactive learning environment. Oliphant and Branch-Mueller (2016) stated that building a sense online learning community is an important quality assurance measure and encourages motivated interaction between learner and instructor. Since social presence is not natural in online courses, students face interaction and community-building difficulties.

Similarly, Luo et al. (2017) revealed that the dropout rates for online classes also depend on the interaction among learners and the sense of community. As a result, it is requisite for online course developers to pay special attention to supporting the sense of community development while designing online courses to assist instructors in developing persistence and a sense of community among online learners. Over time, learners' involvement is important for building community interaction and peer networking (McClannon et al., 2018). Studies advocate that in the online learning environment, there are several methods through which the sense of community can be promoted, employing a variety of technological features (Luo et al., 2017; Tanis, 2020). Various types of research indicate that learners who interact in an online course tend to have stronger connections with their classmates and, hence, more engagement in the learning process (Mamonov et al., 2016).

Moreover, facilitation interaction through the discussion platforms can promote communication while decreasing participants' feelings of isolation and loneliness (Liu & Zhang, 2021). Due to this reason, online courses must facilitate the learners to help them build and maintain a strong sense of community, so that learners will appreciate, maintain and grow up together emotionally (Jiang & Koo, 2020). According to Bireda (2019), the sense of community building among online learners is linked with group collaboration and emotional support, which are associated with learners' retention and satisfaction levels. Masengu et al. (2023) encouraged interaction in synchronous mode during virtual interaction and group discussions to enhance the social and cognitive presence within online settings. Studies also emphasized the necessity of creating dynamic, online learning environments by facilitating meaningful interaction between instructors and learners that encourage collaborative learning opportunities and emotions among online learning participants.

iv. Motivated Interaction between Learners and Instructor

Motivation is significant in online learning, where learners must practice self-regulated learning. A learner's motivation is thus considered an incentive to engage in the learning activities offered in the course. Highly motivated learners tend to be deeply involved in considerations related to the course content. These learners may even engage with all the

available course materials and activities regularly (Salas-Pilco et al., 2022). Learners' motivation, especially in online courses in higher education, is influenced by several factors, namely access to technology, types of learning environments, communication styles of instructors, and psychological interventions. Nagar (2007) cited Bergdahl (2022) stated that underprivileged learners face several technological challenges such as limiting the access to high-speed internet and limiting access to digital devices not allowing them to attend classes online; these barriers, in fact, reduce motivation for such learners when they realize they are being left out or not being able to engage fully. Thus, issues such as these must be addressed to provide an inclusive environment where all learners can stand on equal grounds to succeed.

Park and Yun (2017) highlighted the influence of motivational regulation strategies on online learners' cognitive, emotional, and behavioural engagements. The motivational factors differ significantly according to academic levels in predicting various aspects of engagement among learners. Thus, online instructors should focus on personalized motivational assistance for each learner to promote efficient learning outcomes. Judi Randi and Corno (2022) stated that well-designed online learning includes motivational tactics and self-regulation skills that effectively prepare learners for academic and professional challenges. This mindset encourages learners to achieve their goals in the online learning environment. According to Fuentes Hernández (2020), online learning modalities effectively motivate students by providing real-time interaction and prompt feedback. Online education enables learners to respond immediately via personal interaction with instructors for necessary guidance and feedback on their assignments when needed. Instructors have argued the learners' motivation in establishing how they perceive learning. The two things matter here: first instructor's role in content delivery while maintaining students' interest, and second, in facilitating learners' interaction with peers and instructors with disabilities.

Furthermore, Cents-Boonstra et al. (2021) highlighted the role of course design and quality feedback in fueling intrinsic motivation, beyond the issue of technological access. Through explicit goals and regular feedback, a well-structured course encourages motivation and engagement among learners. Additionally, feedback whether positive or constructive supports learners on their journey, providing validation and a sense of accomplishment regarding their progress. Instructor communication also needs to be emphasized, particularly in situations where empathy is required to motivate learners. When an empathetic instructor creates an emotionally supportive environment, learners are more likely to participate extensively and engage deeply with the course content, thereby enhancing their motivation (Zheng, 2022).

Motivation itself is closely related to the maintenance of one's well-being, especially in the case of online learners. Nuryana et al. (2023) highlighted the importance of the mental aspect, arguing that stress and anxiety adversely affect the writer's motivation and academic performances. To address these challenges, counseling and peer support group forums are provided so that learners can receive emotional support to stay motivated. Therefore, one way to sustain motivation is by bridging academic support with emotional support, as this enables learners to confront challenges and remain motivated (Nuryana et al., 2023). Finally, a sense of community within online courses greatly contributes to motivation. Social interaction, even in a virtual setting, helps build support networks that encourage learners to remain active. Collaborative teaching in the form of group projects or peer discussions tends to foster a sense of community among learners and helps to reduce the feeling of being isolated. Interacting from one peer to another increases intrinsic motivation in the learners for inclusion during the learning process, whereby they put in much effort in interactions with the course and take an active role in their learning processes (Northey et al., 2015).

Likewise, at the higher education level, effective communication is essential, fostering inspiring learning experiences, motivating the learner, and building bonds between instructors and learners from various backgrounds. Communication is a significant factor that instills confidence in learners to actively engage and participate in class. This plays a pivotal role; it allows instructors to know the learners' needs and accordingly provide support depending on individual challenges. Communication between instructors and learners includes both verbal and nonverbal forms within the classroom setting. When instructors engage in direct communication, students are encouraged to work diligently during class, which helps sustain their motivation both during and after instructional periods. It also contributes to building the learner motivation necessary for academic success. Furthermore, learners can enhance their skills through effective communication with their peers (Alzahrani et al., 2019). When learners develop positive relationships with motivated peers, they can inspire and support one another in striving toward new academic heights.

According to Plakhotnik et al. (2021), Because of the sudden shift to online teaching, instructors needed to seek educational tools that promote communication, motivation, and engagement. These instructors resorted to digital tools, gamification in particular, to increase student participation in the classes, provide immediate feedback, and promote teamwork (Cheung & Ng, 2021). Asynchronous learning types have become popular over the years; examples include peer discussion forums, pre-recorded video lectures, and emails between students and instructors. Presently, however, such pre-recorded lectures and study materials have been made permanent resources for students. They allow learners to repeat and reach content whenever they wish to go over the lesson, thereby enriching the learning experience (Le, 2022). Further, Deep et al. (2024), in their evaluation of engagement and motivation of higher education students, found live-streamed video sessions to be more engaging and motivating than pre-recorded videos and voice sessions or emails/texts. In comprehension, these results suggest that while synchronous learning enjoys better engagement support in the online classroom, asynchronous modes can also promote motivation if given proper attention.

Handel et al. (2022) reported that learners who are not proficient in technology may still feel demotivated; merely seeing the instructor does not alleviate their sense of demotivation in online classes unless they possess adequate technological skills. As a result, such learners may perceive that they are learning less. There is a clear recommendation for higher education institutions to ensure the provision of sufficient technical assistance to learners, particularly when they encounter difficulties. Institutions can address this need through regular workshops and video tutorials that guide learners on how to effectively use educational applications and websites. Encouraging learners to connect with a 24/7 help desk can further support their understanding of the online learning environment and enhance their ability to navigate it successfully (Broadbent & Lodge, 2021).

Moreover, Akargol et al. (2024) reported that the process of designing online courses directly affects the learners' engagement and motivation. If a course is cleverly designed and equipped with an easy-to-use interface, it will lessen the cognitive load, allowing the learners to absorb the lesson instead of battling with the platform. With intuitive interfaces and collaborative features, tools such as Google Classroom and Microsoft Teams create and nurture engaging learning experiences (Akargol et al., 2024). These platforms contribute to communication and organization, which, in turn, help learners in accessing resources, interacting with one another, and keeping tabs on their coursework. The multimedia integration of videos, infographics, and animations further enhances the experience, providing a compelling and engaging way to attract the attention of learners and increase understanding. According to Belt and Lowenthal (2023), multimedia contents hold the attention and increase participation in

synchronous learning, providing a range of stimulating learning experiences. Meanwhile, Bergdahl (2022) underscores accessibility as another important aspect. In other words, an accessible course design allows learners to interact equally with instructional materials independent of background and ability. Closed captioning, font adjustment facilities, and compatibility for screen readers promote inclusiveness, particularly for visually and hearing-disabled persons.

v. Effective Implementation of Advanced Technological Tools

A critical factor that makes online instruction effective is the rapid advancement of educational technologies. Teaching quality can be improved by using these novel tech tools and platforms, which enrich the learning process, ease communication and are efficient in course management (Pinatil & Ramos, 2023). However, correctly implementing these advanced educational technologies is the most important aspect of ensuring quality online teaching. These innovative designing tools are effective in easily accessible resources, platforms and materials and facilitate all learners' learning beyond any disability (Gonzalez & Vieyra, 2019).

According to Brower and Vlachopoulos (2018), instructors should understand the potential of digital technology in their daily instructional practices and use it well. For many institutes, the use of Information and Communication Technology (ICT) is a common phenomenon in classrooms, but technology tools change greatly with time, while the instructional practices of instructors are similar by much so far. Wu (2024) debated that it is essential to focus on instructors' technical training or capacity building while functioning within online learning to enhance their skills and quality of education as they work on this teaching mode. Although instructors acknowledge the importance of digital leadership, they face moderate to very high challenges when confronted with adopting new technologies, making effective use of digital tools, and engaging their students within digital environments. Institutional challenges negatively impact the development of digital leadership, including insufficient support, limited resources, and inadequate infrastructure. Other factors impeding the development of digital leadership include some instructors' self-professed lack of confidence or training to direct their peers or implement innovative digital strategies. It has been recommended that universities introduce structured digital leadership training to develop a digital infrastructure that is well-constructed and develop incentive schemes to encourage faculty participation in digital innovation to improve instructional efficiency. These solutions will enable educators to apply technology for effective teaching and learning outcomes for students in the digital era (Yi & Gat-eb, 2025).

Similarly, a study conducted by Sari and Keser (2021) in COVID -19 revealed that the managing process of online instruction was difficult for instructors since the software (Zoom, Kahoot, and Nearpod, etc.) was in foreign languages aside from Turkish, contained some programming terms (start, end, stop share, share screen, etc.), and during browsing for materials, activities, and assessment tool online, they met some technical words i.e. downloading, uploading, and sign in. According to Pathak (2016), online educational models have been specifically developed to cater to the unique demands of online instruction. He highlights three key challenges: enhancing learning efficiency, providing customized instructions, and ensuring credibility. The importance of providing customized instructions that cater to individual learning styles and abilities stresses the crucial role that instructors play in online education. This can be achieved through the thoughtful design of content and the use of appropriate technological resources.

vi. Incorporation of Innovative Assessment Techniques

Another aspect of ensuring the quality of instruction in online education is the use of appropriate assessment techniques. Quality online instruction requires assessment methods

which are robust and innovative as Masengu et al. (2023) claimed that the use of biometrics and plagiarism software matters a lot to assure the assessment process's integrity and legitimacy. According to Johnson and Barr (2021), traditional assessment methods are insufficient to assess the quality of online learning. It is endorsed by Gamage et al. (2019) that institutes need to apply innovative assessment strategies that are aligned with the unique characteristics to assess online learning, including authentic assessments, portfolio-based assessment, and utilization of learning analytics to assess the learners 'progress and recognize the improvement areas within online education.

According to Mudhol (2024), innovative assessment techniques (e-portfolios) allow learners to create a comprehensive digital repository of their academic achievements, abilities, and experiences by providing learners with self-assessment tools. Therefore, there was a need to introduce peer and self-assessment strategies to make the learners more responsible and reflective and to come up with ways of doing so effectively. Another concept that supports the innovative assessment techniques is simulation-based assessment approaches used in medicine, engineering and other areas because In formative assessments like "Think-Pair-Share, online discussion boards and gamified quizzes, learners are engaged throughout the process, therefore promoting active learning since they provide instant feedback that is essential for adaptability in teaching methods. Likewise, open-book exams and take-home tests are replacing more rigid and traditional approaches that favor rote learning and do not emphasize problem-solving and critical thinking approaches. The applications of Artificial Intelligence (AI) incorporated in assessment tools have made it possible for these instruments to automatically customize exams according to the understanding level of each learner. These new ways need to measure understanding in terms of how much is known about certain contents, and other abilities, like cognitive and emotional skills are equally important in learning alongside social competencies relevant to that learner's future (Mudhol, 2024).

The key to enhancing the quality of online assessment practice lies in the use of emerging innovative technological E-assessment tools. In recent years, a multitude of online and mobile-based peer assessment tools have been launched, providing effective platforms for instructors and learners to provide feedback on group projects (Podsiad & Havard, 2020). Harvard et al. (2023) argue that online group projects provide learners' collaborative learning opportunities and engage them in higher-order thinking skills. Park et al. (2021) highlight the role of new technology-based trends in teaching and assessment methods, including computer-aided instructions, virtual patients, augmented reality, human patient simulations, and virtual reality for assessing learners' competency levels. The integration of digital technological tools into education is already in practice, with tools such as Google Forms for collecting learners' responses and assignments, YouTube's live streaming service, Google Arts & Culture (an online museum dedicated to paintings), and a story-telling technique called choose-your-own-adventure.

vii. Continuous Improvement Plans For Online Courses

Literature stressed the need to foster a culture of continuous improvement of online courses to assure the quality of instruction, in which higher education institutes and instructors receive feedback and engage in continuing professional development to improve the quality of their instructional practices. Kibaru (2018) found two important components to ensure the quality of teaching: the use of strategic data and the fostering of a continuous improvement culture in online courses. Baranova et al. (2021) investigated and highlighted the advantages of digital technologies in updating professional knowledge and abilities. The findings indicate that distance learning and digital formats provide opportunities for learners and instructors to assessable and update their digital competencies. The effective implementation of these

strategies can contribute to assure the quality of online instruction in higher education globally. Ultimately, the effective implementation of discussed instructional strategies will lead to improve the general effectiveness and access of online education in modern world as well.

Conclusion

The online modality of instruction in higher education has become increasingly popular, and the quality of online courses is critical for learners' success and the credibility of higher education institutes. This systematic review, in line with PRISMA guidelines, identified several crucial instructional strategies that can play a vital role in ensuring the quality of instruction in online education at the higher education level. The identified key strategies to achieve the goal of quality assurance in online instruction include focusing on well-designed instructional resources, fully prepared instructors, building a strong sense of online learning community, motivated interaction between learners and instructors, effective implementation of advanced technological tools to analyze, design, and effectively deliver the content to learners, incorporation of innovative assessment techniques, and continuous improvement plans for online courses. In conclusion, addressing these key strategies can help ensure the success and quality of online programs across higher education and, ultimately, improve the learning experiences and outcomes.

Recommendations

Keeping in view the findings and conclusion of the study, the following recommendations are made to guide the policy makers, administrative representatives of higher educational institutes, and instructors in ensuring the quality and effectiveness of online instructional practices:

i. Higher education institutes may take initiatives for the structured faculty development to build technical proficiency and pedagogical effectiveness in online instructional process.
ii. Online instructors may adapt constructive approaches to promote authentic engagement and motivation of learners, such as implementing learner centered approach in online education process.
iii. Universities should establish quality assurance mechanism with standard operating procedures for the design, delivery, and evaluation of online courses.
iv. By bridging the digital divide, higher educational institutes must facilitate equitable access to technology, and provide support services on an inclusive basis.
v. Policy makers need to design a holistic online education model to deal with psycho emotional and mental health needs for both instructors and learners.
vi. Fundamental policy level reforms are essential to embed into the institutional mission so that online education ensures sustainability and ownership among stakeholders.
vii. Universities must nurture an environment of innovation and research in online education to respond to emerging trends and challenges.

DECLARATION STATEMENTS

Conflict of Interest

The authors declare no actual or perceived conflicts of interest. They also confirm that no external funding was received for this study, beyond the allocation of academic time at their respective university.

Data Availability Statement

The data used in this study will be provided by the corresponding author on request.

Authors' Contribution

HK: write-up, selected database, Review, formatting. FA: Methodology, Data collection, Review and formatting. EG: Review, logic structure, text re-articulation.

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