Flexible pedagogies: Challenges and solutions

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ABSTRACT

The concept of flexibility demands a redefinition of the roles played by both teachers and learners, requiring learners to exhibit higher levels of self-initiative, self-motivation, and self-control. The assumption that learners are actively engaged is fundamental. Teachers must transition from traditional instructional roles to take on more prominent positions as consultants, collaborators, instructors, and facilitators. The goal of flexible learning is to provide educational accessibility, personalization, and adaptability to various life situations. Granting learners increased flexibility places greater expectations on teachers, often necessitating additional time and effort. Interaction, perseverance, creativity, and innovation are not explicitly instructed; rather, they are inherent aspects within various teaching methods and methodologies. Ensuring equitable access to technology and resources is essential for bridging the digital divide. By addressing these challenges, educational institutions can foster dynamic and inclusive learning experiences that equip students for the complexities of the modern world.

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Introduction

The current approach to flexible learning is being shaped by advances in technology, new ways of delivering education, and the fast-paced globalization of the field. This has led to the idea of the future university being seen as 'without boundaries,' 'fluid' or 'borderless' (Barnett, 2014). Theoretically, technology use presents an opportunity for more successful active learning. Though, learning technology is still primarily used in accordance with older methodologies (Sitthiworachart et al., 2022). Distance education, hybrid education, work-based learning, accelerated learning, and part-time or full-time studies are the primary forms of flexible learning (Bercasio, 2023). The goal of flexible teaching and learning is to improve student learning by recognising the value of giving students more autonomy and promoting their active participation in their academic journey (Goode et al., 2007). Support for learning development can take many forms, from motivating pupils to improve their writing and research abilities to more individualized learning issues like resilience building (Barnett, 2018). Enhancing learning flexibility and cultivating robust relationships with teachers and school personnel can substantially bolster students' motivation (Du Plessis et al. 2024; Tahir & Jan, 2023). In pedagogical thinking and practice, flexibility can and should be viewed as a quality of both educators and students. It can also be understood as a feature of institutional education strategies. Flexible learning has frequently been viewed primarily in terms of the options and logistics for learning delivery (Ryan & Tilbury, 2013). Flexibility in learning was founded on beliefs and support for students' liberty and self-determination (Barua & Lockee, 2024). Although the internet and technology can play a big role in giving students freedom, the idea of flexible learning encompasses a pedagogical approach that permits flexibility in terms of audience, time, and location (Casey & Wilson, 2005). Flexible learning is a learner-centered strategy that uses digital technology features and instructional design concepts to give students engaging, well-designed learning environments at any time and location (Keele, 2007; Khan, 2007). Gordon (2014) mirrors the statement by arguing that similar to personalized learning, flexible learning places an emphasis on how the content adapts to each student's development. Additionally, it might include flexible-level or adaptive testing, which provides an extra degree of adaptability that is very pertinent to pedagogy.

A method of teaching that gives students greater autonomy regarding where, when, and how they learn is called flexible learning. Butcher and Marr (2020) opined that the diversity and achievement gap in higher education can be considerably reduced by implementing an inclusive strategy that values the knowledge of adult learners and students from underrepresented groups. However, strict systems that prioritize in-person, full-time attendance and high-stakes annual examinations have historically limited traditional educational approaches. According to Gordon (2014), the three main components of flexible learning are mode (e.g., delivery method), place (e.g., classroom, home, mobile, or experiential learning), and pace (e.g., accelerated, part-time, or prior learning credit). By offering choices for learning strategies, pace, and delivery formats, it accommodates the various demands of students and incorporates online learning, blended learning and self-paced learning. Jones and Walters (2015) stated that a fundamental shift away from the dichotomy of full-time and part-time study is required in higher education in order to accommodate flexible teaching and learning.

Literature review

The advent of new technologies and creative use of space are having an increasing impact on teaching and learning methodologies (King et al., 2015). Mirroring the perspective, Du Plessis et al. (2024) noted that in the modern world, where globalization, technological development, and societal changes are changing our way of life and working, flexible pedagogies have grown in significance. In addition to accommodating various learning styles and offering chances for lifelong learning, they enable students to take charge of their education (Collis & Moonen, 2002). According to Elkington (2022), in pedagogy, flexibility refers to modifying instructional strategies and evaluation techniques to accommodate students' unique learning needs as well as curriculum demands. Personalized, dynamic, and integrated learning experiences are made possible by technology, which promotes a more flexible and student-centered teaching methodology (Baer, 2021).

The value of flexible pedagogies is found in their capacity to meet the demands of contemporary education, including the requirement for digital literacy, individualized instruction, and resilience in unpredictable times (Ryan & Cotton, 2013; Swan & Fox, 2009). Dimitrova et al. (2004) concluded that, to effectively accommodate the varied learning styles of an increasingly diverse student body, e-learning environments must be supported by flexible pedagogical frameworks. Flexible pedagogies guarantee that education stays relevant and available to everyone, irrespective of social, economic, or geographic barriers, by utilizing resources like competency-based assessments, blended learning models, and online learning platforms (Slaughter, 2008). Flexible pedagogies prepare students to accept change, handle complexity, and flourish in a variety of contexts in a world where knowledge and skills must continuously advance (Andrade, 2023). As such, they are essential to creating fair, long-lasting, and future-ready educational systems-not just a trend. Benade (2019) opined that teachers can transition from traditional front-of-room, single-teacher presentations to interactive, facilitative, or dispersed teaching approaches with the use of flexible learning environments. These methods frequently call for collaboration, enabling several teachers to interact with students in shared, interactive learning settings.

Importance of flexibility in pedagogy

In the modern age, the demand for new pedagogies underscores the importance of understanding, flexibility, particularly perspective-taking, in preparing teachers for culturally sensitive practice, while an adaptable and evolving knowledge base enables them to integrate technology and sustain inclusive, culturally responsive teaching (Tahir, 2025). In a study on teacher and student responsibilities in mathematics classrooms, Munaji et al. (2025), emphasized the need of cultivating adaptive abilities in order to prepare students for an unpredictable future, with creativity regarded as a fundamental competence and flexibility as an essential component of creativity. The study conducted by Torell Palmquist et al. (2025), reported that traditional riding lessons are unsuitable for young children, as teaching this group requires greater flexibility, creativity, and patience. It maintained that activities must be engaging, playful, and varied to maintain their interest. The growing need for sophisticated technical skills and new learning methodologies poses substantial challenges to future education, whereas academic accomplishment measures how well students, instructors, and institutions fulfil learning objectives (Tahir, 2024). According to El Galad et al. (2024), flexibility may play an important role in changing higher education, serving as a key component in building more inclusive, supportive, and successful learning environments for both students and instructors. Barua & Lockee (2024) stated that flexible pedagogical techniques provide compassionate learning settings that recognize adult learners' varied situations, allowing them to manage challenges and accomplish academic and professional goals. Building on this argument, Grannäs et al. (2025) highlighted that the effectiveness of flexible pedagogy stems from its comprehensive capacity to adjust learning settings to varied teaching methodologies and learner demands, therefore matching educational spaces with student-centered pedagogical objectives.

Method

This paper adopts an exploratory literature review approach, selectively reviewing relevant sources to develop a well-rounded and clear understanding of the flexible pedagogies, key challenges and solutions, without strictly adhering to a formal systematic review process. This approach has been also used in the study undertaken by Barua and Lockee (2024). Peer-reviewed papers, official reports, and studies released in the recent several years were prioritized in the source selection criterion. Data (secondary data from published research papers) were obtained from well-known academic databases such as Scopus, Web of Science, ERIC, and Google Scholar to guarantee thorough coverage of peer-reviewed literature. The search was carried out using a mix of keywords such as "flexible pedagogy," "flexible learning," "innovative pedagogies," "technology-enabled learning," "student-centered learning," and "higher education," individually and in Boolean combinations (AND/OR).

The research followed three stages; Planning, conducting, and reporting (Kitchenham & Charters, 2007; Xiao & Watson, 2017). Planning: This stage involves defining the research objectives and identifying key themes or areas to explore. Conducting: Unlike systematic review this step allows for more adaptable approach to selecting sources based on their relevance and contribution to a balanced understanding of the topic. Reporting: The reporting step aims to provide a coherent and comprehensive overview that offers a balanced perspective on the topic, contributing to a deeper understanding of the subject matter.
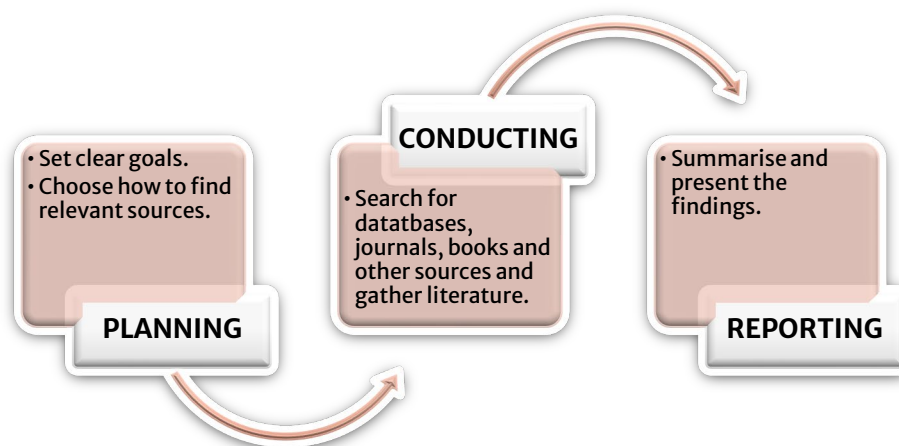

Figure1. Showing The Stages Involved in the Review Process

Table 1. Presents the key challenges and solutions related to flexible pedagogies identified through the literature review

Key Challenges	Solutions
Diverse Learner Needs	Professional Development
Technology Access and Proficiency	Equitable Access to Technology
Instructor Training	Inclusive Curriculum Design
Assessment Strategies	Flexible Assessment Practices
Quality Assurance	
Resource Allocation	

Analytical justification for flexible pedagogies

The term "flexible pedagogies" describes instructional techniques and approaches that adjust to the various demands of students, enabling more customization and responsiveness in the learning process (Bennington et al., 2013). In the digital age, flexible pedagogies are necessary for several reasons. First, students today have a variety of backgrounds and differ in their preferred methods, styles, and speeds of learning. With flexible pedagogies, teachers can modify their methods to account for these variations and guarantee that every student can interact with the material in a meaningful way. According to Barua and Lockee (2024), flexible course design and delivery are crucial and unavoidable in a time of quickly changing student demographics, swiftly evolving technologies, and growing emphasis on accessibility and inclusiveness. Furthermore, chances to improve learning experiences through interactive and easily accessible digital tools are presented by the quick improvements in technology. Voogt and Pareja Roblin (2012) reported that in addition to conventional content, learning objectives now incorporate 21st-century skills that are necessary for both present and future employment. Flexible pedagogies facilitate inclusive learning settings that foster intercultural understanding and cooperation among students from different geographical locations as education becomes more globally integrated. Furthermore, today's society places

a strong emphasis on lifelong learning, which calls for flexible pedagogies that encourage continuous education and give students access to materials at any place and time to assist in their professional and personal growth. Tahir (2024) stated that the development of 21st-century capabilities must be deliberately fostered by pedagogies if they are to be purposeful rather than accidental. Flexible pedagogies assist students in developing the critical thinking, problem-solving, and teamwork abilities necessary for success in a dynamic work environment. The changing job market necessitates flexible skill sets. Teachers may design effective, inclusive, and responsive learning experiences that equip students for the demands of the digital age by implementing flexible pedagogies. In the opinion of Broodryk (2015), a flexible learning environment (FLE) emphasizes contemporary teaching strategies that increase student and teacher engagement and promote a shift in mindset. Flexible teaching approaches connect interaction patterns to learning outcomes by defining desired results, guiding assessment, and structuring learning experiences (Johnson-Eilola & Selber, 2021). While open spaces encourage collaboration and the exchange of best practices, instructors encourage active engagement. By promoting shared questioning and reflection, theses environments also aid inquiry-based learning, which promotes ongoing learning development. Adopting flexible teaching strategies can improve overall educational outcomes, encourage active engagement, and better accommodate a variety of learning styles. This strategy ensures every student the chance to thrive in a quickly evolving educational environment.
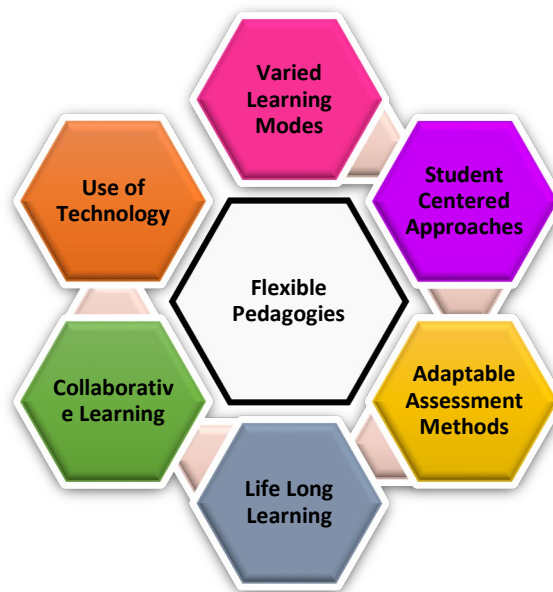

Figure 2. Key Characteristics of Flexible Pedagogies

Key challenges in implementing flexible pedagogies

1) **Diverse Learner Needs:** Diversity has emerged as a vital component of modern society, and educational institutions all around the world are seeing an increase in its presence. Nonetheless, it is still very difficult to manage diversity in educational environments (Kilag et al., 2024). Lesson planning and instructional delivery become more challenging when a wide range of learning preferences and backgrounds are taken into account.

2) **Technology Access and Proficiency:** Artificial intelligence (AI) in education has the potential increase already-existing inequalities in access to high-quality education and technology. There is a chance that the digital divide will grow, which presents an equity issue because students from low-income families could not have access to the necessary technology (Familoni & Onyebuchi, 2024; Tahir, 2024). Learning inequalities result from disparities in students' access to technology and their differing degrees of technological competency.

3) **Instructor Training**: Educators may need additional training to effectively implement flexible teaching methods and utilize technology in the classroom. To support the provision of an effective educational experience for students in educational institutions, teacher recruitment and training are essential (Glover & Stewart, 2024).

4) **Assessment Strategies:** Developing fair and effective assessment methods that accommodate various learning modes can be challenging. In a flexible setting, students may have different learning requirements and styles, which traditional assessment techniques could not adequately reflect.

Furthermore, creating assessments that are equitable and tailored can be difficult and take a lot of time and work from teachers.

5) **Quality Assurance**: Maintaining academic standards and the quality of education in diverse learning contexts can pose significant challenges. In the context of flexible pedagogies, quality assurance refers to making sure that educational programs uphold high standards of teaching and learning while accommodating a range of student demands.

6) **Resource Allocation**: Implementing flexible pedagogies often requires additional resources, such as technology and support services, which may be limited. There may be difficulties in addressing student access inequities and striking a balance between funding for traditional and new teaching methods.

In addition to focusing on teachers' professional growth and their teaching methods, the difficulties in preserving pedagogical effectiveness in a constantly shifting educational environment also highlight pre-service teachers' training and skill development in order to implement instructional flexibility and mobility with an emphasis on context-consciousness (Du Plessis, 2023). Students' self-drive, regulation, and management of time as well as scheduling are the main obstacles to flexible learning (Brekke et al., 2024).

Solutions

The goal of flexible teaching and learning is to improve student learning by recognising the value of giving students more autonomy and promoting their active participation in their academic journey (Goode et al., 2007). Interaction, perseverance, creativity, and innovation are not explicitly instructed; rather, they are inherent aspects within various teaching methods and methodologies (Tahir, 2024).

1) **Professional Development**: While globalization has resulted in classrooms that are increasingly varied, with students from an eclectic mix of cultures, backgrounds, and races, teachers are currently training pupils for occupations that have not yet been invented. As a result, teachers need to modify their teaching methods to create inclusive, culturally aware settings (Du Plessis et al., 2024). Teachers must get continual training and assistance in flexible teaching techniques and technology use in order to improve the adoption of flexible pedagogies. Peer mentoring, webinars, and workshops are useful tools for promoting this professional growth.

2) **Equitable Access to Technology**: Teachers must stay up to date with the latest developments in mobile technologies to harness their potential for creating and delivering instruction (Ally et al., 2014). For students to succeed, equitable access to technology is essential, guaranteeing that all students have the tools and resources they need. It facilitates participation in individualized and adaptable pedagogies, promotes inclusivity, and closes the digital gap.

3) **Inclusive Curriculum Design**: The varied requirements and features of students must be taken into account while designing educational programs and systems. knowledge the dynamics that affect classroom experiences and learning outcomes is essential to inclusive teaching since students have varying perspectives and levels of knowledge of the material that is taught (Hector-Alexander, 2019).

4) **Flexible Assessment Practices**: Many Western higher education sectors now have flexible learning firmly ingrained in their curricula, policies, and methods of instruction (Morgan & Bird, 2007). In situations of individualized learning, flexible assessments might offer a way to better match assessment and learning. By encouraging student autonomy, flexible assessments may boost motivation among learners (Kessels et al., 2024). Increasing students' feedback, voice, and control over their education and evaluation is more important for empowering them than improving their grades (Wanner et al., 2024).

Theoretically, technology use presents an opportunity for more successful active learning. Though, learning technology is still primarily used in accordance with older methodologies (Sitthiworachart et al., 2022). The development of transdisciplinary competencies, such as media literacy, critical thinking, creativity, interpersonal skills, and global citizenship, that are necessary for prospering in the modern world depends heavily on technology. Teaching and learning must be redesigned in light of this change. Teachers continue to play a crucial role in the way that technology is changing education (Torrato et al., 2020). Teachers must accommodate a varied range of student engagement when implementing flexible learning designs, which presents sustainability problems. To assist teachers in successfully incorporating flexible techniques into their classes, institutions should place a high priority on long-term resource allocation and maintenance of infrastructure while providing continuing assistance and professional development opportunities (Dikilitas & Fructuoso, 2023).

Discussion

The perception of flexible learning has traditionally centered on the method of delivering education. Nevertheless, within pedagogical theory and practice, it is imperative to recognize flexibility as a trait applicable to both learners and educators. Furthermore, it can be construed as a characteristic inherent in institutional strategies for education (Ryan & Tilbury, 2013). For the benefit of future generations, the economic success and growth are facilitated by equitable access to high-quality education. However, the importance of grades, degrees, and job placements frequently overshadows the focus on knowledge, competencies, and abilities (Chakrabarty, 2020; Tahir, 2024). As education in alternative and flexible settings broadens the horizons for social futures, it serves as a compelling reminder of the potential that conventional schools have yet to fully realize. Conversely, when learning and teaching in these non-traditional settings impose restrictions on the social futures of young individuals, they underscore that our efforts to enhance the educational journey for youth are still a work in progress (Vadeboncoeur & Padilla-Petry, 2017). The growing use of emerging Information and Communication Technologies (ICTs) as pedagogical tools may lead to the overshadowing of traditional academic values (Rafferty et al., 2013). Incorporating flexible pedagogies while making sure self-regulated learning modalities are adequately supported is a challenge. Furthermore, it is critical to value the crucial role that teachers play as creators of the educational process while addressing today's digital issues in a fair and equal manner (Pérez-Garcias et al., 2024). Tahir and Jan (2024) posited that life has become more complicated and faster in the modern age than it was in the past. People are influenced in many ways by a variety of variables these days. As a result, the educational system has changed to meet the needs of this technologically advanced society. Students must therefore be more observant, adaptable, and able to multitask while maintaining vigilance. According to Glover and Stewart (2024) flexible pedagogies can cater to diverse backgrounds, introduce fresh perspectives, and assist students in acquiring critical skills for a changing labour market, as demonstrated by the interest of career changers in these teaching approaches. Wanner et al. (2024) highlighted that the advantages of flexible and personalized assessments, such as improving student engagement, encouraging ownership of learning, and offering insightful data for individualized instruction, outweigh the difficulties in making decisions for students and a higher workload for teachers.

Conclusion

Implementing flexible pedagogies in this modern era presents both challenges and opportunities in modern education system (Yesil & Aras, 2024). While barriers such as resistance to change, diverse learner needs, assessment strategies, resource limitations, quality assurance and technological constraints hinder adoption, solutions like professional development, equitable access to technology, institutional support, inclusive curriculum, flexible assessment practices and innovative digital tools can bridge the gap (Silva et al., 2024). As highlighted by Bitar and Davidovich (2024), effective digital learning demands major adaptations in teaching strategies and course design, since a standardized approach is unlikely to succeed; therefore, institutions should enable educators to customize digital tools to suit their disciplinary and pedagogical requirements. By embracing flexibility in pace, place, and mode of learning, teachers can create more inclusive and adaptive learning environments. To improve and expand flexible pedagogies across a range of educational contexts, more research and policy activities are required in the future.

Limitations

As with literature-based research, this review has limitations. It is also possible that publication biases or search settings excluded some relevant studies.

Disclosure statement

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