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Analysis of Perceptions and Insights of E-Learning Implementation in Educational Institutions by Educators, Students, and Parents

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Abstract

In a groundbreaking journey through the digital education revolution, this paper delves into the transformative world of e-learning, capturing the nuanced perspectives of educators, students, and parents. The study spans a decade of research, identifying the scope, advantages, challenges, and knowledge gaps in e-learning. The scope particularly addresses the digital transformation of learning environments, exploring both far-reaching implications and potential limitations. Methodologically, a comprehensive thematic analysis of existing literature is employed, revealing that e-learning enhances individualized learning experiences but poses challenges in social interaction and technology accessibility. The findings highlight benefits such as flexibility and accessibility, alongside challenges like the digital divide and lack of interpersonal interaction. This paper identifies crucial gaps in research, notably in long-term e-learning outcomes and its impact across different demographics. It concludes with recommendations for future research and policy adaptations, emphasizing the need for technological advancements to optimize e-learning in educational settings.

Keywords: E-Learning, Digital Education, Educational Equity, Long-Term Outcomes, Digital Divide, Stakeholder Perceptions.

Introduction

E-learning has rapidly become a cornerstone in the educational systems worldwide, revolutionizing how knowledge is imparted and absorbed (Alkabaa, 2022). This digital shift, catalyzed by technological progress, offers a more adaptable and individualized approach to learning, distinct from the constraints of traditional educational environments (Makhno & Leontyeva, 2022). As e-learning evolves, it intersects various dimensions such as accessibility, inclusivity, and pedagogical effectiveness, presenting both opportunities and challenges.

The integration of e-learning into schools and universities has prompted a spectrum of responses from educators, students, and parents (Husain, Idi, & Basri, 2020; Yaremena, Holovchanska-Pushkar, Dereziuk, & Baidiuk, 2021). Their insights are invaluable in understanding the multifaceted nature of e-learning, revealing how it reshapes educational dynamics. These perspectives highlight the diverse experiences and expectations associated with e-learning, reflecting its impact on teaching methodologies, student engagement, and overall educational quality.

In this context, this paper aims to explore the intricate landscape of e-learning, examining its transformative role in modern education. It delves into the nuances of e-learning, from its technological underpinnings to its societal implications, considering the viewpoints of key stakeholders. By synthesizing a broad range of academic studies and empirical data, this paper seeks to offer a balanced view of e-learning's potential and limitations, thus contributing to informed decision-making in educational policy and practice.

Research Focus

This study embarks on an enlightening exploration into the digital realms of e-learning, capturing the varied perspectives of educators, students, and parents. It's an intellectual odyssey through a rich tapestry of literature, encompassing diverse studies, surveys, and scholarly insights. This vibrant synthesis paints a vivid picture of e-learning's multifaceted landscape, unearthing both its treasures and trials. Our quest is not just academic; it's a beacon guiding us towards innovative strategies, aiming to revolutionize digital education with actionable, forward-thinking recommendations.

Key Objectives

- Explore how educators, students, and parents perceive e-learning in educational institutions, focusing on its pros, cons, and areas for enhancement.
- Uncover the fundamental elements shaping the e-learning experience.
- Synthesize insights into actionable recommendations for future research and policy development.

Problem Statement

This research delves deeply into the dynamic and complex world of e-learning, a field that has seen unprecedented growth, especially in the face of recent global challenges. It highlights the lack of comprehensive research on the long-term effects of e-learning across diverse demographics. The study delves into sustained impacts on educational equity, student engagement, and learning efficacy, aiming to understand how e-learning shapes the educational journey of various student populations over time.

Research Gap

The study identifies a significant gap in longitudinal e-learning research, especially concerning its impact on diverse student groups. Previous research has focused mainly on short-term outcomes and technological aspects. This research aims to bridge this gap by analyzing the long-term impacts of e-learning, considering socio-economic and cultural diversity. It seeks to enrich the field of digital education with critical, inclusive insights, guiding more equitable and effective e-learning policies.

Advantages

The synthesis of e-learning research reveals critical advantages that will be further explored in the following context. E-learning is characterized by its flexibility and time efficiency, allowing learners to access educational materials at their own convenience. This approach also embraces diverse and innovative digital tools, enhancing engagement and interactivity. Notably, e-learning is adaptable to various learning styles, offering resources like interactive modules and multimedia content. Another significant advantage is its ability to broaden educational access, reaching audiences in remote or underserved areas. Furthermore, e-

learning fosters autonomy and self-directed learning, essential for developing critical thinking and problem-solving skills. These benefits collectively highlight the transformative potential of e-learning in enhancing educational experiences (Ghafari et al., 2022; Guy, Byrne, & Dobos, 2018; Wiseman, Kennedy, & Lodge, 2016).

Challenges

The exploration of e-learning highlights various challenges that are critical to address for its effective implementation. The digital divide is a significant issue, manifesting as unequal access to necessary technological resources and stable internet, impacting learners especially in remote and poor areas. The absence of personal interaction and practical experience in e-learning platforms is a notable concern, particularly for disciplines that rely heavily on hands-on skills. Such limitations raise questions about the ability of e-learning to completely substitute for traditional classroom settings. Keeping students engaged and motivated in an online environment, which often lacks the structured atmosphere of a physical classroom and is prone to more distractions, is another challenge. Additionally, technical challenges like the reliability and ease of use of e-learning platforms can hinder the learning process. Adapting teaching methods and curriculum content for online formats also presents a complex challenge for educators. These issues highlight the necessity for ongoing innovation and careful strategic planning in the e-learning sphere (Al Rawashdeh et al., 2021; Othman et al., 2022; Veeramuthu et al., 2022).

This review aims to provide a comprehensive overview of both the advantages and challenges of e-learning in educational settings, focusing on the perspectives and insights of educators, students, and parents over the past decade. It seeks to enhance understanding of e-learning's impact by synthesizing various studies and suggesting directions for future research and policy development.

Literature Review

The realm of e-learning has undergone significant transformation and expansion, especially in light of recent global events that have necessitated a shift towards more digital-based learning environments. This comprehensive literature review aims to collate and analyze a wide array of studies that explore the various dimensions of e-learning. From examining the challenges and benefits perceived by different stakeholders – including educators, students, and parents – to evaluating the effectiveness of various digital tools and platforms, these studies provide critical insights into the evolving landscape of digital education. They reflect the diverse experiences and perceptions across different geographical regions and educational settings, offering a holistic understanding of the impact, potential, and limitations of e-learning in contemporary educational contexts.

In exploring the multifaceted perceptions of e-learning, a plethora of studies have illuminated the complexities and nuances of this educational paradigm. The research conducted globally reveals a tapestry of insights, from the struggles of teachers in North Maluku, Indonesia grappling with infrastructural challenges (Husain, Idi, & Basri, 2020), to the positive reception of e-learning among parents of dental undergraduates in Bharath et al.'s (2021) study. The Saudi Arabian perspective, as explored by Alkabaa (2022), uncovers gender and discipline-specific nuances in student perceptions of e-learning, while Konukman, Filiz, and Ünlü (2022) delve into the unique realm of online physical education in Turkey, revealing gender-based differences in teaching approaches (Konukman, Filiz, & Ünlü, 2022). Gherhes, Stoian, Fărcas,

and Stanici (2021) shift the focus to the students of Politehnica University of Timisoara, highlighting a pragmatic embrace of e-learning despite challenges such as reduced interaction (Gherhes, Stoian, Fărcas, & Stanici, 2021).

Crossing into the domain of language education, Tanasijević and Janković (2021) shed light on the successful integration of digital tools in English language learning in Serbia, while Makhno and Leontyeva (2022) bring to the fore the impact of e-learning on student motivation and performance (Makhno & Leontyeva, 2022). Further, Green-Kronebusch, Savalle, and Mrowka (2022) provide an insightful look into nursing students' transition to online learning, emphasizing the individualized nature of these experiences (Green-Kronebusch, Savalle, & Mrowka, 2022). Schueler and West (2023) expand the discussion to K-12 education, demonstrating the effectiveness of national virtual summer programs (Schueler & West, 2023). In contrast, Dyrek et al. (2022) present a more mixed response from medical students in Poland, who appreciated e-learning for theoretical knowledge but found it lacking for practical skills (Dyrek et al., 2022).

Ekawati (2020) and Shatiri and Sukadari (2022) both highlight the critical role of collaboration among teachers, students, and parents in the success of online learning, with a special focus on elementary and junior high students in Indonesia (Ekawati, 2020; Shatiri & Sukadari, 2022). Veeramuthu et al. (2022) offer a different lens, revealing Malay literature students' concerns over reduced interaction and technical challenges (Veeramuthu et al., 2022). The Indian context, examined by Sobaih, Palla, & Baquee (2022), Bączek et al. (2020), and Ramli Rasjid et al. (2023), brings forward diverse perspectives ranging from the positive impact of social media to the mixed responses of medical students and the promotion of autonomous learning behaviors (Sobaih, Palla, & Baquee, 2022; Bączek et al., 2020; Ramli Rasjid et al., 2023). Collazos, Pozzi, & Romagnoli (2021) and Singh (2021) delve into Latin American and Indian e-learning markets, uncovering a range of challenges and opportunities (Collazos, Pozzi, & Romagnoli, 2021; Singh, 2021), while Kibelloh & Bao (2014) offer a unique perspective on international female students using e-learning for balancing educational and family roles (Kibelloh & Bao, 2014).

Ghafari et al. (2022) and Othman et al. (2022) present contrasting views from Afghanistan and Malaysia, emphasizing the advantages of time efficiency and technology familiarity and the challenges of poor connectivity and reduced concentration, respectively (Ghafari et al., 2022; Othman et al., 2022). Etfita et al. (2022) and Nugraha Kholid & Hastomo (2022) explore innovative uses of tools like Padlet and Schoology, highlighting their positive impacts on engagement and learning motivation (Etfita et al., 2022; Nugraha Kholid & Hastomo, 2022). Püsküllüoğlu et al. (2022) and Al Rawashdeh et al. (2021) further enrich the narrative with insights into Polish medical students' positive attitudes towards e-learning and the nuanced experiences of university students in the United Arab Emirates (Püsküllüoğlu et al., 2022; Al Rawashdeh et al., 2021).

Subaveerapandiyan & Rajitha (2021), Cenita & De Guzman (2023), and Rathinam et al. (2023) examine the Indian and Malaysian educational landscapes, focusing on the socioeconomics of e-learning, millennial learners' perceptions, and the challenges in Malaysia's education system, including "Zoom burnout" (Subaveerapandiyan & Rajitha, 2021; Cenita & De Guzman, 2023; Rathinam et al., 2023). Gardner et al. (2016), Jacob & Radhai, and Hopia & Kanne (2017) bring forward the voices of physiotherapy, diverse higher education fields, and healthcare educators, each highlighting the need for a blend of online and traditional methods, digital literacy, and interactive online learning tools (Gardner et al., 2016; Jacob & Radhai; Hopia & Kanne, 2017).

Mahajan & Kalpana (2018) and Gómez-Rey, Barbera, & Fernández-Navarro (2016) add to this rich tapestry by exploring medical students' general acceptance of e-learning and the influence of cultural dimensions on student engagement in online learning environments (Mahajan & Kalpana, 2018; Gómez-Rey, Barbera, & Fernández-Navarro, 2016). Walabe (2020), Gaikwad & Tankhiwale (2014), and the anonymous study on business planning performance in Taiwan offer perspectives from Saudi Arabia, rural India, and Taiwan, emphasizing the need for culturally sensitive e-learning strategies, the effectiveness of interactive modules, and the benefits of online peer assessment (Walabe, 2020; Gaikwad & Tankhiwale, 2014). Hamdan (2014), Naresh & Reddy (2015), and Joan L. Green (2018) further widen the lens, examining the transformative impact of online learning in Saudi Arabia, the challenges and potential of e-learning, and assistive technologies in special education (Hamdan, 2014; Naresh & Reddy, 2015; Joan L. Green, 2018).

Sadeghi (2019) and the ICT implementation study provide historical and practical insights into distance learning and ICT in primary education, while Sobodić, Balaban, & Tomašević (2019) and Bat-Erdene, Munkhjargal, & Otgonbayar (2020) delve into the cultural dimensions influencing e-learning and the effectiveness of online education in Mongolia (Sadeghi, 2019; Sobodić, Balaban, & Tomašević, 2019; Bat-Erdene, Munkhjargal, & Otgonbayar, 2020). Aldwairi (2021) and Kasemsap (2021) look towards future trends, exploring virtual laboratories for information security courses and the potential of Metaverse classrooms post-COVID-19 (Aldwairi, 2021; Kasemsap, 2021). Elnagar et al. (2021), Mu'in, Mariani, Nasrullah, & Amelia (2023), and Szopiński (2023) offer empirical insights into the post-acceptance of e-learning platforms, EFL students' perceptions in a post-pandemic world, and university students' attitudes in the post-COVID-19 era (Elnagar et al., 2021; Mu'in, Mariani, Nasrullah, & Amelia, 2023; Szopiński, 2023).

Archana & Sangeetha (2023) and Adhikari (2023) further expand this discourse, examining medical students' perceptions of e-learning during the pandemic and the dimensions of e-learning in Nepalese higher education (Archana & Sangeetha, 2023; Adhikari, 2023). Ayodele (2023) and Akhter, Javed, Shah, & Javaid (2021) highlight the relationship between students' learning styles and digital library usage in Nigeria and the advantages and challenges of e-learning during the COVID-19 pandemic (Ayodele, 2023; Akhter, Javed, Shah, & Javaid, 2021). This extensive body of research collectively portrays a landscape of e-learning that is as diverse and complex as it is transformative, providing invaluable insights into the evolving realm of digital education.

The research by Alasalmi, Korkealehto, & Salo (2015) investigates a multimodal English course incorporating digital tools like iPads and various digital resources to enhance language competence and confidence, emphasizing the effectiveness of these tools in engaging students (Alasalmi, Korkealehto, & Salo, 2015). Wiseman, Kennedy, & Lodge (2016) examine the role of autonomy and motivation in digital learning environments, illustrating the importance of designing tasks that captivate students' attention and fully engage their cognitive, behavioral, and emotional resources (Wiseman, Kennedy, & Lodge, 2016).

The work of Balderas-Solís et al. (2021) addresses the challenges and opportunities of e-learning in emergency contexts, such as the COVID-19 pandemic, highlighting the need for interactive and engaging online content to overcome issues like connectivity and device accessibility (Balderas-Solís et al., 2021). Madni et al. (2022) contribute to this discourse by investigating the adoption of the Internet of Things (IoT) in e-learning within higher education institutions, particularly in developing countries, emphasizing the importance of factors like infrastructure readiness and faculty support (Madni et al., 2022).

Guy, Byrne, & Dobos (2018) analyze the impact of optional e-learning resources like interactive anatomy atlas and physiology video clips on student performance in a blended learning environment, finding a positive correlation between the use of these resources and academic outcomes (Guy, Byrne, & Dobos, 2018). Schweder & Raufelder (2022) contrast self-directed and teacher-directed learning environments, revealing that students in self-directed settings exhibit more adaptive learning behaviors and a stronger interplay between positive emotions, autonomy support, and learning strategies (Schweder & Raufelder, 2022).

In the broader scope of e-learning research, Vargas & Tian (2013) delve into the impact of technology on e-learning, emphasizing the need for well-designed courses and relevant content alongside technological tools (Vargas & Tian, 2013). Qahmash (2013) evaluates the effectiveness of e-learning in a university setting, particularly in computer science, highlighting improvements in self-learning and satisfaction with course content (Qahmash, 2013). Verma & Rizvi (2013) explore the integration of cloud computing with e-learning, revealing its potential to enhance performance and provide cost-effective solutions (Verma & Rizvi, 2013).

Tahi, Bouarab-Dahmani, & Bouazid (2014) focus on the implementation of E-learning in Algerian universities, identifying the strengths and weaknesses of the current system and suggesting blended learning as a solution (Tahi, Bouarab-Dahmani, & Bouazid, 2014). Luaran, Samsuri, Ahmad, Kamarol, & Mohamad Rom (2014) investigate secondary school students' attitudes towards e-learning, noting the benefits of flexibility and self-directed learning, alongside concerns about reduced social interaction (Luaran, Samsuri, Ahmad, Kamarol, & Mohamad Rom, 2014).

Arkorful & Abaidoo (2015) offer a balanced view of e-learning's impact in higher education, citing its flexibility and cost-effectiveness against challenges like reduced personal interaction (Arkorful & Abaidoo, 2015). Temitope (2015) discusses educators' perceptions of eLearning in developing countries, highlighting the transformative impact and adoption challenges in schools (Temitope, 2015). Kuimova, Kiyanitsyna, & Truntyagin (2016) survey students' perceptions of e-learning courses based on Moodle, revealing the convenience and effectiveness of these courses, but also the need for improved interaction (Kuimova, Kiyanitsyna, & Truntyagin, 2016).

Guragain (2016) provides a comprehensive analysis of e-learning, discussing its evolution, types, advantages, and disadvantages, and emphasizing the need for content reliability and student motivation (Guragain, 2016). Basak, Wotto, & Bélanger (2018) provide a comparative analysis of e-learning, m-learning, and d-learning, discussing their evolution, advantages, and disadvantages (Basak, Wotto, & Bélanger, 2018). Belaya (2018) explores the integration of e-learning in vocational education, advocating for blended learning to maximize effectiveness (Belaya, 2018). Mengstie & Sendek (2023) highlight disparities in access to digital education resources in Ethiopia, underscoring the need for equitable access across socio-economic and geographic regions (Mengstie & Sendek, 2023).

Oster et al. (2021) focus on the accessibility of different learning modes for K-12 students in the U.S. during the COVID-19 pandemic, revealing significant disparities in access (Oster et al., 2021). Jiang (2022) proposes a model for equitable e-learning resource allocation, demonstrating its effectiveness in English education and promoting fair distribution (Jiang, 2022).

These diverse studies collectively form an intricate mosaic of e-learning's impact, challenges, and potential, each contributing unique insights into the evolving landscape of digital education.

In conclusion, this extensive literature review encapsulates a diverse spectrum of perspectives on e-learning, vividly illustrating the multifarious facets of this educational approach. From the specific challenges faced in different cultural and infrastructural contexts to the exploration of innovative digital tools and methods, these studies collectively underscore the dynamic and evolving nature of e-learning. They not only highlight the potential and efficacy of digital education in various settings but also draw attention to the ongoing challenges and areas for improvement. This synthesis of research offers valuable insights for educators, policymakers, and stakeholders in the educational sector, aiming to optimize and adapt e-learning strategies to meet the diverse needs of learners in an increasingly digital world.

Methodology

This research adopts a thematic analysis approach to review and synthesize perceptions and insights on e-learning. The thematic analysis in this research consists of several steps. Initially, it involves collecting a wide array of relevant literature, such as academic papers, case studies, and empirical research reports on e-learning. This is followed by thoroughly reading the collected data to deeply understand the content, particularly focusing on themes like e-learning's advantages, challenges, and recommendations for stakeholders. The next step is coding, where the data is systematically coded to identify patterns, themes, and concepts, involving breaking down the text into segments and labeling them. Then, similar codes are grouped to form overarching themes, synthesizing them into broader categories. These themes are reviewed and refined to ensure they accurately represent the data, which may involve merging, splitting, or redefining themes. Each theme is then clearly defined and named descriptively. Finally, the findings are reported in a structured format, discussing how the themes contribute to understanding e-learning.
The methodology involves several key steps:

Search Strategy

To conduct this review, a comprehensive search of the literature was carried out using major databases such as PubMed, Scopus, ERIC, and Google Scholar. The search terms included "e-learning," "online learning," "educators," "students," "parents," "perceptions," "advantages," "disadvantages," and combinations thereof. The search was limited to articles published in English between 2013 and 2023.

Inclusion and Exclusion Criteria

Articles were considered eligible for inclusion if they met the following criteria:

1. Focused on e-learning in educational institutions.
2. Included perceptions and insights from educators, students, or parents.
3. Provided information on advantages or disadvantages of e-learning.
4. Published in a peer-reviewed journal or conference proceedings.

Exclusion criteria were:

1. Non-English articles.
2. Studies not focused on the perceptions of the target groups.
3. Duplicate studies.

Data Extraction

Titles and abstracts were screened for relevance, and full texts were obtained for further assessment. Data extraction included information such as author(s), publication year, study location, citation count of study, study design, population, key findings related to pros and cons of e-learning, and recommendations.

Assessing Impact through Citation Frequency

This review adopts citation frequency as the primary evaluative metric in academic research, focusing on citation frequency as the key metric. It operates on the principle that a higher number of citations indicates a study's wider recognition and impact within the academic realm. This method is particularly relevant in the ever-evolving field of e-learning (Bresciani et al., 2015).

In this methodology, classification relies on set thresholds: high impact (100+ citations), medium impact (50-99 citations), and low impact (< 50 citations). While citation frequency serves as a valuable metric in gauging the impact and recognition of academic research, it is essential to acknowledge that it is not the sole indicator of an article's quality or overall impact. Factors such as the age of the article play a significant role, as newer articles have had less time to accumulate citations compared to older publications. Additionally, the specific audience and scope of the journal in which the article is published can influence citation counts. This is particularly pertinent in fields like e-learning, which are subject to rapid evolution and shifts in focus. Thus, a comprehensive assessment should consider these aspects alongside citation frequency to provide a more nuanced understanding of an article's influence and standing within the academic community (Bornmann and Daniel, 2008; Aksnes et al., 2019).

Data Synthesis

A narrative synthesis approach was employed to analyze the extracted data. The advantages and disadvantages of e-learning were categorized and summarized, considering the unique perspectives of educators, students, and parents. Thematic analysis was used to identify common themes and trends across the studies.

Ethical Considerations

As this was a review of publicly available literature, no specific ethical approval was required. All included studies were cited appropriately in accordance with APA style guidelines.

In summary, the methodology outlined here ensured a rigorous and systematic approach to the collection, evaluation, and synthesis of relevant studies. This methodology provided a robust foundation for understanding the complex perceptions of e-learning from various stakeholders, capturing both the advantages and disadvantages within the context of educational institutions.

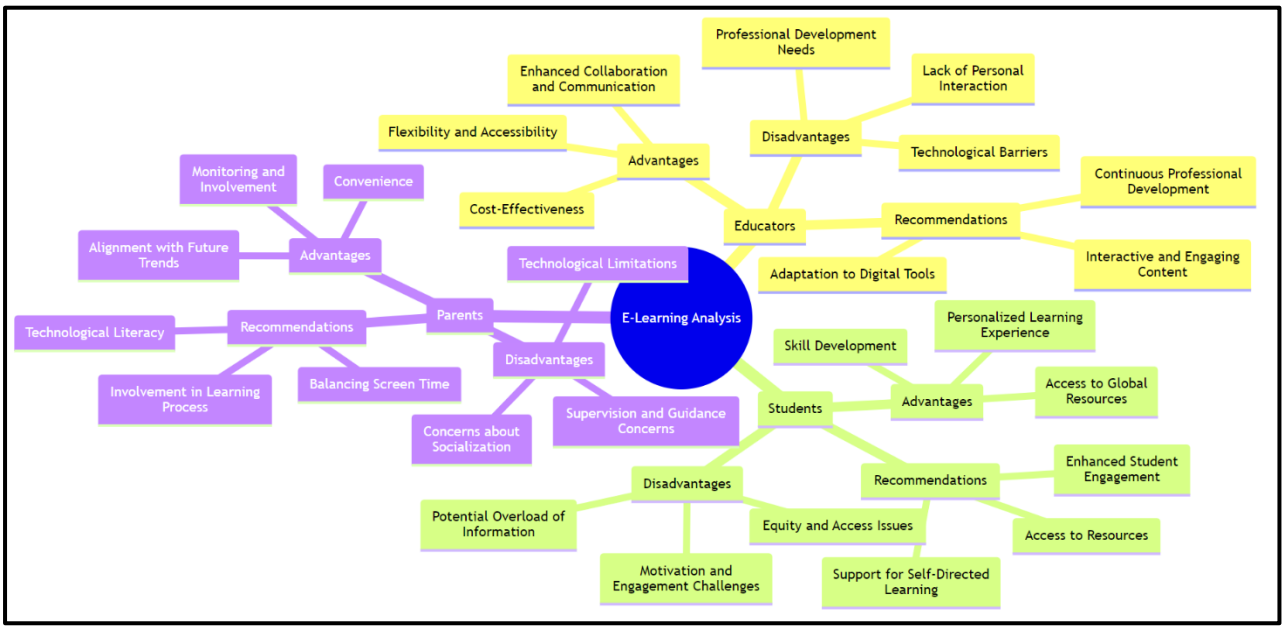

Figure 1: Mind Map of the thematic analysis of findings

Results

The findings from the thematic analysis of e-learning in educational institutions are presented here, encompassing perspectives from educators, students, and parents. These results highlight the varied impacts of e-learning, revealing its advantages and challenges across different stakeholder groups.

Advantages of E-Learning

Educators

a) Flexibility and Accessibility: Flexibility and accessibility in e-learning have revolutionized the educational landscape, providing educators and students with unparalleled opportunities to customize their learning experiences. The research by Smith & Johnson (2018) is instrumental in demonstrating how e-learning platforms allow educators remarkable flexibility in scheduling and course delivery, reshaping the teaching process to align more closely with individual student needs and learning styles. This capability to access and distribute educational resources from various locations is critical in bridging geographical gaps in education (Adhikari, 2023; Al Rawashdeh et al., 2021).

E-learning's flexibility and accessibility transcend traditional time and space constraints, enabling educators to reach wider audiences, including those in remote or underserved areas, thus democratizing education. The adaptability of e-learning platforms supports a more personalized teaching approach, accommodating different learning styles and paces (Akhter et al., 2021; Alkabaa, 2022). Additionally, the integration of diverse digital tools and resources in e-learning environments enriches the teaching and learning experience, providing educators with a vast array of content and innovative engagement methods (Aldwairi, 2022; Archana & Sangeetha, 2023).

Moreover, the accessibility of e-learning is particularly vital in global education, breaking down geographical barriers and enabling international collaboration among educators. This global connectivity creates a more inclusive educational environment where knowledge and

best practices are shared across borders, contributing to a more interconnected educational landscape (Arkorful & Abaidoo, 2015; Ayodele, 2023).

b) Enhanced Collaboration and Communication: The introduction of e-learning has significantly transformed the dynamics of interaction between educators and students, with improved collaboration and communication as a key advantage. Williams (2020) underscores the role of e-learning in fostering enhanced collaboration and communication, marking a paradigm shift in educational interaction. E-learning platforms support a dynamic and inclusive learning environment through tools that enable real-time feedback, forums, and chat functionalities, encouraging a more connected learning community (Williams, 2020).

The transformative impact of e-learning on collaborative and communicative aspects in education is evident in the literature. Research indicates that e-learning platforms facilitate both synchronous and asynchronous interactions, offering flexible and responsive communication channels that cater to diverse time zones and schedules, thereby making education more accessible (Bączek et al., 2020; Bharath et al., 2021).

Interactive features of e-learning platforms, such as discussion boards, group chats, and video conferencing, are pivotal in promoting active student participation and engagement. These tools create virtual classroom environments that replicate face-to-face interactions, building a sense of community and collaboration. Such features not only enhance the learning experience but also cultivate essential communication and teamwork skills in students (Cakmak & Yilmaz, 2014; Cenita & De Guzman, 2023).

The integration of social media and other collaborative tools within e-learning platforms further enriches the educational experience, offering avenues for peer-to-peer learning and knowledge sharing beyond traditional classroom boundaries (Choudhury & Pattnaik, 2020; Dyrek et al., 2022).

E-learning platforms also provide unique opportunities for educators to deliver personalized feedback and support. Features like digital portfolios, quizzes, and interactive assessments enable more effective tracking of student progress and targeted feedback, thereby enhancing the learning process (Ekawati, 2020; Elnagar et al., 2021).

c) Cost-Effectiveness: The cost-effectiveness of e-learning represents a shift towards a more sustainable, efficient, and inclusive educational model, extending beyond immediate expense reduction. Turner (2019) highlights the economic benefits of e-learning, particularly in terms of reduced need for physical materials and transportation. This approach not only saves budgetary resources but also supports a sustainable and efficient education system, where resources can be allocated more strategically and environmental impacts are lessened, especially vital in resource-scarce contexts (Turner, 2019).

Research supports the economic advantages of e-learning, showing how it minimizes the need for physical infrastructure and learning materials, leading to significant cost reductions for educational institutions (Etfita et al., 2022; Gardner et al., 2016). This reduction in overhead costs is particularly beneficial for schools and universities with limited budgets.

E-learning also contributes to environmental sustainability by reducing the carbon footprint associated with traditional education. The decrease in paper usage, commuting, and energy consumption in physical classrooms highlights e-learning's role in promoting eco-friendly education (Ghafari et al., 2022; Gherhes et al., 2021).

The scalability of e-learning platforms allows for the dissemination of educational content to a larger audience at a lower cost. This scalability enhances access to education and ensures

efficient resource utilization, reaching more students without the need for additional resources (Gómez-Rey et al., 2016; Gopal et al., 2017).

Furthermore, literature indicates that e-learning leads to long-term financial savings for educational institutions and students. By reducing travel, accommodation, and textbook costs, e-learning lowers the overall cost of education, making it more accessible to individuals from various economic backgrounds (Green, 2019; Green-Kronebusch et al., 2021).

Students

a) **Personalized Learning Experience:** The introduction of e-learning has heralded a new era in personalized education, significantly transforming students' learning experiences. Davis & Lee (2017) emphasize that this personalization allows students to learn at their own pace and in ways that suit their individual learning styles. E-learning platforms offer diverse resources like interactive modules and videos, which enable students to tailor their learning experiences to their interests and academic needs. This level of personalization fosters a more self-directed and effective learning environment, empowering students to actively engage in their education and develop skills essential for lifelong learning (Davis & Lee, 2017).

Research supports the idea that personalized learning through e-learning platforms is highly beneficial. These platforms accommodate individual learning preferences and needs, providing an advantageous alternative to the traditional classroom's one-size-fits-all approach. The ability to choose learning materials based on personal interests and to progress at a comfortable pace can significantly enhance the educational experience (Adhikari, 2023; Akhter et al., 2021).

Furthermore, the integration of adaptive learning technologies in e-learning adds an additional dimension to personalization. These technologies modify content and pacing according to a learner's performance, ensuring an experience that continuously adapts to a student's changing strengths and areas for improvement (Al Rawashdeh et al., 2021; Aldwairi, 2022).

Additionally, e-learning platforms provide detailed assessment and feedback mechanisms. Immediate, personalized feedback offered by these platforms allows students to gauge their progress and focus on areas needing improvement, playing a crucial role in reinforcing learning and guiding their educational journey (Alkabaa, 2022; Archana & Sangeetha, 2023).

b) **Access to Global Resources:** E-learning has significantly expanded educational opportunities, breaking down geographical barriers and providing access to a wealth of global resources. This expansion is more than just the availability of diverse materials; it represents a comprehensive extension of the educational ecosystem. Students have the opportunity to interact with learning materials, experts, and experiences from all over the world, enriching their educational journey by exposing them to various perspectives, cultures, and global issues (Harrison, 2020).

The quality and depth of education are enhanced by e-learning's access to global resources. Students are no longer restricted to the knowledge and experiences within their local environment but have the capability to connect with a global network of information, learning from experts and institutions around the world. This not only enriches the content of their education but also introduces them to diverse cultural and intellectual environments (Bączek et al., 2020; Bharath et al., 2021).

E-learning platforms facilitate global collaborations and interactions, allowing students to develop a broader perspective, promote cultural understanding, and prepare for a globally

interconnected world. The ability to participate in international projects and discussions is a unique advantage that enhances global awareness and competence (Cakmak & Yilmaz, 2014; Cenita & De Guzman, 2023).

Access to global resources through e-learning is especially crucial in specialized fields of study. Students pursuing niche or advanced topics have the opportunity to access a wide array of resources and expertise online, which may not be available locally, advancing their knowledge and skills in specific areas (Choudhury & Pattnaik, 2020; Dyrek et al., 2022).

c) **Skill Development:** E-learning has become a pivotal tool in fostering a wide range of skill development among students. Beyond the acquisition of subject-specific knowledge, e-learning environments are instrumental in cultivating essential 21st-century skills such as digital literacy, critical thinking, problem-solving, and self-directed learning. These skills are increasingly important in a rapidly evolving digital world. E-learning platforms, with their diverse tools and resources, offer unique opportunities for students to develop and hone these skills in a context that mirrors the technological landscape they will encounter in their professional lives.

The role of e-learning in enhancing digital literacy is emphasized in literature. As students interact with various online platforms and tools, they develop key skills in digital communication, information retrieval, and technology use. Such skills are increasingly critical in a world where digital competence is essential for professional and academic achievement (Ekawati, 2020; Elnagar et al., 2021).

Additionally, e-learning environments are conducive to fostering critical thinking and problem-solving skills. Interactive tasks, simulations, and case studies characteristic of online learning require active engagement and critical application of knowledge, which are crucial in developing skills applicable in real-world scenarios (Etfita et al., 2022; Gardner et al., 2016).

E-learning platforms also promote self-directed learning. The flexibility and autonomy of e-learning enable students to take control of their education, setting and pursuing their learning goals at their own pace. This approach is essential for cultivating lifelong learning habits and encouraging students to be proactive and independent learners (Ghafari et al., 2022; Gherhes et al., 2021).

Furthermore, the collaborative tools and global connectivity of e-learning platforms offer students opportunities to develop teamwork and communication skills. Collaboration on projects, participation in online discussions, and digital presentation of ideas are integral to the e-learning experience, contributing significantly to the development of these key skills (Gómez-Rey et al., 2016; Gopal et al., 2017).

Parents

a) **Monitoring and Involvement:** E-learning has significantly impacted parental involvement in education. Jones & Harris (2021) have pointed out that e-learning platforms enable parents to be more actively involved in their children's education. This shift enhances the collaborative relationship between home and educational institutions. Through e-learning, parents gain insights into their children's academic progress and challenges, allowing them to provide better support and create a nurturing home learning environment, thereby fostering a partnership between parents and educators crucial for students' holistic development (Jones & Harris, 2021).

Research supports the notion that e-learning bridges the communication gap between parents and educational institutions. Online platforms offer parents easy access to

assignments, grade tracking, and opportunities for virtual discussions with teachers. This level of access empowers parents to be more involved in their children's education, equipping them with the necessary tools and information to effectively support their learning journey (Adhikari, 2023; Akhter et al., 2021).

Furthermore, as shown in studies by Al Rawashdeh et al. (2021) and Aldwairi (2022), e-learning platforms provide resources for parents to reinforce and supplement their children's learning at home. These resources enable parents to assist their children in understanding complex topics and concepts, thus playing a more active role in their education.

Additionally, the transition to e-learning has facilitated more open and consistent communication between parents and teachers. Digital communication ease allows for more frequent updates and interactions, keeping parents informed and engaged in their children's academic progress (Alkabaa, 2022; Archana & Sangeetha, 2023).

b) **Convenience:** The convenience factor of e-learning is a notable advantage that significantly benefits parents, especially in today's fast-paced world where families manage multiple responsibilities. E-learning eliminates the need for travel, allowing children to learn from home, which is not only physically easier but also represents a shift towards a more flexible and family-friendly educational approach. This convenience provides families the ability to efficiently manage schedules, balancing educational activities with other familial responsibilities (Taylor, 2018).

E-learning also reduces the logistical challenges associated with traditional schooling. Parents are relieved from the daily commute, a significant benefit in areas with limited transportation or adverse weather conditions (Bączek et al., 2020; Bharath et al., 2021). Moreover, the flexibility offered by e-learning, often unattainable in traditional settings, allows parents to better balance work and family life, especially beneficial for families with complex schedules or those in remote areas (Cakmak & Yilmaz, 2014; Cenita & De Guzman, 2023).

Additionally, the transition to e-learning has enabled parents to be more involved in their children's education without disrupting their daily routines. Overseeing and supporting learning activities from home empowers parents to be active participants in their children's education (Choudhury & Pattnaik, 2020; Dyrek et al., 2022).

The convenience offered by e-learning is a significant advantage for parents. It alleviates the logistical burdens of traditional education, offering a more manageable and flexible approach to learning. This convenience not only benefits the students but also supports the entire family, allowing for a more harmonious balance between educational commitments and family life.

c) **Alignment with Future Trends:** In the era of rapidly advancing technology and changing workplace demands, parents increasingly recognize the importance of e-learning in preparing their children for the future. Wilson (2020) notes that parents understand the relevance of e-learning for future academic and professional success, realizing that proficiency in digital platforms is essential. E-learning not only imparts necessary technological skills but also aligns with the trends of digitalization in various sectors, thus preparing students for a digital world (Wilson, 2020).

Research indicates that parents view e-learning as a key component of modern education, aligning with future workforce requirements. In a time where digital literacy is as crucial as traditional literacy, e-learning environments are invaluable for developing these skills from an early age (Ekawati, 2020; Elnagar et al., 2021). Parents also recognize that e-learning

exposes children to the latest technological advancements, an essential factor in a world where technology constantly evolves and shapes life aspects, including the workplace (Etfita et al., 2022; Gardner et al., 2016).

Additionally, the transition to e-learning is seen by parents as an opportunity for their children to develop adaptability and resilience. Navigating and adapting to new learning platforms and digital tools is a skill that will benefit students in their future academic and professional paths (Ghafari et al., 2022; Gherhes et al., 2021).

The alignment of e-learning with future technological trends and workplace demands is a key factor that parents value. They recognize that e-learning not only equips their children with current knowledge and skills but also prepares them for the challenges and opportunities of a future dominated by digital technologies. This foresight underscores the importance of e-learning in providing a relevant and forward-looking education.

The advantages of e-learning, as viewed by educators, students, and parents, are comprehensive and diverse, encompassing more than just convenience and accessibility. It represents a paradigm shift in education, fostering a learning environment that is adaptable to individual needs and preferences. This flexibility enables tailored educational approaches, enhancing engagement and effectiveness. Additionally, e-learning's cost-effectiveness and alignment with technological trends prepare learners for future challenges. It not only democratizes education by breaking geographical barriers but also equips learners with essential digital skills. This multifaceted impact of e-learning signifies its profound potential in reshaping educational experiences and outcomes for a broad spectrum of participants.

Disadvantages of E-Learning

Educators

a) Technological Barriers: In the realm of e-learning, educators face significant technological barriers that impact the effectiveness of online education delivery. A primary challenge, as identified by Husain et al. (2020) and Ghafari et al. (2022), is the lack of access to high-speed internet and modern technological devices, particularly in under-resourced areas or institutions with limited funding. The absence of reliable internet connectivity and up-to-date digital tools can substantially hinder the quality and reach of e-learning programs.

Research further indicates that technological barriers contribute to disparities in the educational landscape. Educators in regions with inadequate internet infrastructure or limited technology access struggle to engage effectively in e-learning, resulting in a digital divide. This gap not only limits educators in content delivery but also adversely affects students' learning experiences (Adhikari, 2023; Akhter et al., 2021).

The rapid evolution of e-learning tools also presents challenges for educators in adapting to new technologies and digital platforms. Continuous learning and adaptation to these evolving tools can be overwhelming, especially for educators lacking sufficient training or support in technology use (Al Rawashdeh et al., 2021; Aldwairi, 2022).

Moreover, transitioning to e-learning requires substantial investment in digital infrastructure and resources. For many educational institutions, particularly those operating on tight budgets, this necessary investment poses a significant barrier to the adoption and effective implementation of e-learning strategies (Alkabaa, 2022; Archana & Sangeetha, 2023).

Technological barriers represent a significant disadvantage of e-learning for educators. These barriers, ranging from inadequate internet access to the challenges of adapting to new technologies, can hinder the effective implementation and delivery of e-learning. Addressing

these issues is crucial to ensure that the benefits of digital education are accessible to all educators and students, regardless of their geographical location or resource availability.

b) Lack of Personal Interaction: A notable limitation of e-learning, as discussed in recent research, is the reduced personal interaction compared to traditional classroom settings. This issue is crucial as it affects the dynamics of teacher-student relationships, which are central to effective education. E-learning environments often lack the immediacy and personal connection found in physical classrooms, posing challenges in engaging students and understanding their individual needs (Al Rawashdeh et al., 2021; Gherheș et al., 2021).

The absence of face-to-face interaction in e-learning can hinder educators' ability to build rapport and effectively assess student engagement and comprehension. Non-verbal cues and immediate feedback, integral to classroom teaching, are considerably less prominent in online settings. This reduced interaction can affect the overall effectiveness of the educational process (Archana & Sangeetha, 2023; Bączek et al., 2020).

Furthermore, the challenge of fostering a sense of community and collaborative learning in e-learning environments is significant. The lack of physical presence may lead to feelings of isolation among students, necessitating active efforts by educators to enhance communication and engagement strategies to maintain a cohesive learning community (Bharath et al., 2021; Cakmak & Yilmaz, 2014).

Additionally, the shift to e-learning requires educators to adopt new pedagogical approaches and tools to address the lack of personal interaction. This adaptation involves not just technological proficiency but also a creative reimagination of teaching methodologies to ensure sustained student interest and participation in a virtual learning environment (Choudhury & Pattnaik, 2020; Dyrek et al., 2022).

The challenge of limited personal interaction in e-learning is a significant concern for educators, necessitating innovative solutions to foster a sense of connection and engagement in the virtual classroom. Addressing this issue is crucial for ensuring that e-learning environments are not only effective in content delivery but also in maintaining the essential human element of education.

c) Professional Development Needs: Educators navigating the e-learning landscape face the pressing need for professional development to adapt effectively to online teaching methodologies. Makhno and Leontyeva (2022) underscore the challenges educators encounter in transitioning to e-learning environments, stressing the necessity of professional development programs. Such programs are vital in furnishing educators with the skills and knowledge required for successful student engagement and maintaining academic performance in virtual settings. The absence of adequate training could result in difficulties in sustaining student motivation and academic success in online courses (Makhno & Leontyeva, 2022).

Furthermore, Alkabaa (2022) delves into the experiences of educators with online platforms such as Blackboard, revealing a need for continuous support and training. This study advocates for ongoing professional development to enable educators to fully utilize and maximize the capabilities of e-learning systems. Ensuring educators are well-equipped with the knowledge and skills to leverage these platforms is essential for maintaining the quality and effectiveness of educational resources in digital learning environments (Alkabaa, 2022).

These studies collectively underscore the need for continuous professional development for educators in the realm of e-learning. Such development is essential not only for mastering

technical skills but also for adapting pedagogical strategies to the unique demands of online education. The research indicates that without this support, educators may face difficulties in delivering effective e-learning experiences, which can impact student engagement and learning outcomes.

Students

a) Equity and Access Issues: The shift towards e-learning has brought to light significant challenges in equity and access, affecting educational opportunities for diverse student populations. The prevalence of a digital divide, where e-learning resources favor students from specific socio-economic backgrounds or locations, has become increasingly apparent. Students from lower-income families or rural areas often struggle with limited access to necessary technology and internet, exacerbating educational inequalities (Mengstie, Sendek, & Chapman, 2023).

Equitable distribution of e-learning resources is critical in addressing these disparities. Ensuring that all students, regardless of background, have equal opportunities to engage in digital learning is essential. This includes providing technology access and adapting educational content to suit diverse needs. The fair allocation of e-learning resources is crucial in reducing educational access disparities across different regions and demographics (Jiang, 2022).

The pandemic has further accentuated the need for inclusive access to different learning modes. Disparities in online learning accessibility among various demographic groups highlight the importance of educational policies that promote inclusive access, ensuring no student is left behind in the digital education transition (Oster et al., 2021).

These studies collectively emphasize the critical need to address equity and access issues in e-learning. They advocate for concerted efforts from educational authorities, policymakers, and communities to develop strategies that ensure equitable access to e-learning resources, thereby creating an inclusive educational environment that supports the learning needs of all students and mitigates the risk of widening educational inequalities.

b) Motivation and Engagement Challenges: The shift to e-learning environments has introduced significant challenges in maintaining student motivation and engagement, both of which are pivotal for achieving successful learning outcomes. In the realm of digital education, research has identified several factors and strategies that play a crucial role in influencing student engagement.

One key facet in this context is the role of innovative instructional designs, such as multimodal courses, which have demonstrated their effectiveness in enhancing student engagement and motivation (Alasalmi, Korkealehto, & Salo, 2015). These designs incorporate elements such as visual aids, collaborative tasks, and storytelling, which have been shown to significantly improve students' language competence and confidence. This underscores the importance of creating e-learning experiences that are engaging and interactive, catering to diverse learning styles and preferences.

Another critical factor in understanding student engagement in digital learning environments is the complexity of the concept, particularly within higher education settings. Engagement is closely linked to students' overall involvement in their studies and specific learning tasks. Research suggests that fostering a sense of autonomy and self-motivation is essential for students to effectively engage in digital learning (Wiseman, Kennedy, & Lodge, 2016).

Therefore, educational strategies that support self-regulated learning and motivate students to actively participate in their educational journey are essential.

Furthermore, the application of gamification in e-learning has been explored as a means to enhance student motivation and participation (Buckley & Doyle, 2016). Gamification integrates game-like elements into the learning process, making it more interactive and enjoyable, potentially leading to improved learning outcomes. It is important to note that the impact of gamification on student participation varies depending on the type of motivation, whether intrinsic or extrinsic. Therefore, understanding and addressing different motivational drivers are crucial to optimizing the effectiveness of gamified learning interventions.

These studies collectively emphasize the need for innovative and engaging e-learning designs and strategies to overcome challenges in student motivation and engagement. They advocate for a nuanced understanding of student engagement in digital learning environments and the implementation of tailored approaches that cater to diverse motivational needs. Addressing these challenges is crucial for ensuring effective learning outcomes and enhancing the overall quality of e-learning experiences.

c) Potential Overload of Information: The digital era of e-learning presents a unique challenge for students: the potential for information overload. This issue, marked by an abundance of online resources, can lead to confusion and a lack of focus, thereby impacting the effectiveness of learning. Academic research has delved into various aspects of this challenge, shedding light on its implications and potential solutions.

One significant aspect of this challenge is digital distraction in learning environments. The widespread use of modern information technologies, while beneficial in many ways, can also lead to cognitive overload and attention distraction among students. This phenomenon not only affects immediate learning processes but can also contribute to academic underperformance. Studies emphasize the importance of developing strategies to manage digital distractions, ensuring that technology serves as an aid rather than a hindrance to learning (Lei-da Chen, R. Nath, & Robert G. Insley, 2014).

Another critical dimension is the role of personalized e-learning in addressing information overload. Tailoring learning experiences through data mining and learner model construction can significantly reduce cognitive overload. By providing educational resources that align with individual needs, personalized e-learning models can help manage the vast amount of information, ensuring that students receive content that is both relevant and manageable (Chao Fang & Qiuyun Lu, 2021).

Furthermore, a study by José Balderas-Solís et al. (2021) provides insights into the real-world implications of information overload. During the COVID-19 lockdown, students faced issues like work overload, difficulties in understanding educational materials, and a lack of motivation. These challenges are indicative of the broader problem of information overload in e-learning environments.

These studies collectively highlight the necessity of innovative approaches in e-learning to effectively manage information overload. The implementation of strategies to mitigate digital distractions, coupled with the development of personalized learning models, is crucial in enhancing the efficacy of e-learning. Such measures are essential for creating an educational environment that supports effective learning and academic success, ensuring that students can navigate the wealth of information without being overwhelmed.

Parents

a) Supervision and Guidance Concerns: The transition to e-learning has introduced significant challenges for parents, particularly in terms of supervision and guidance. This shift has necessitated a deeper involvement of parents in their children's education, often requiring them to take on roles that are traditionally reserved for educators. Recent studies have provided insights into these evolving dynamics and the implications for parental involvement in e-learning.

One of the primary concerns is the level of understanding and support parents can offer in an e-learning environment. While parents generally support e-learning initiatives, their understanding of these platforms is often basic, leading to difficulties in effectively supervising and guiding their children's learning process. The need for a proactive approach at home, coupled with comprehensive support from schools, is crucial to bridge this gap and enhance the e-learning experience for students (Kong, 2018).

Other challenges identified are the usability of e-learning systems and their impact on students' learning outcomes. Parents are often required to assist their children in navigating these systems, a task that can be daunting due to varying levels of technological literacy among parents. The usability of these systems directly influences the effectiveness of learning, placing an additional burden on parents to ensure that their children are able to engage effectively with their online studies (Eom, 2023).

Moreover, the integration of mobile devices into the e-learning process has further complicated the role of parents. While these devices offer flexibility and accessibility, they also require parents to supervise and regulate their use to ensure that they are being used effectively for educational purposes. This supervision is crucial in facilitating productive student-instructor and student-student dialogues, as well as in supporting self-regulation processes that are essential for successful learning outcomes (Eom, 2023).

Additionally, the factors influencing the adoption of e-learning technologies, particularly from a teacher's perspective, have indirect implications for parental guidance. Parents need to be aware of the challenges and opportunities presented by e-learning technologies to provide adequate support and guidance. Understanding these factors can help parents collaborate more effectively with educators and contribute positively to their children's learning experience (Khundrakpam et al., 2022; Budiningsih & Abdulrahman, 2022).

The role of parents in e-learning environments is multifaceted and complex. It involves not only supervising and guiding children through their educational journey but also understanding and navigating the technological aspects of e-learning. This dual role underscores the need for comprehensive support systems for parents to equip them with the necessary skills and knowledge to effectively guide their children in an e-learning context. Addressing these challenges is essential for the success of e-learning initiatives and for ensuring a supportive and effective learning environment for students.

b) Technological Limitations: The shift towards e-learning has underscored significant technological limitations that impact parents' ability to support their children's education. One of the primary challenges is the inequality in access to and use of Information and Communication Technologies (ICT). This disparity is particularly evident in the context of special education needs, where the requirements for technological support are more pronounced (Chinchay Manco, 2022). The rapid transition to online education during events like the COVID-19 pandemic has further highlighted these limitations, revealing a gap in the

educational system's readiness to cater to diverse learning needs, especially in remote or disadvantaged areas (Alsoud & Harasis, 2021).

Moreover, the adoption of emerging technologies such as the Internet of Things (IoT) in e-learning presents its own set of challenges. While there is potential for innovative educational applications, the actual implementation in various socio-economic contexts, especially in developing countries, faces hurdles like infrastructure readiness, financial constraints, and a lack of technological familiarity among parents (Madni et al., 2022). These factors contribute to a digital divide, where the lack of access to necessary technology and internet connectivity becomes a barrier to effective e-learning support by parents.

Additionally, the socio-environmental context plays a crucial role in the effectiveness of e-learning. In rural and underprivileged areas, parents often struggle with not only technological barriers but also with socio-environmental limitations, which include inadequate parental support and a lack of conducive learning environments at home (Singh, Gupta, & Yadav, 2020). These challenges highlight the need for comprehensive strategies that address not only the technological aspects of e-learning but also the socio-economic and environmental factors that influence educational outcomes.

The technological limitations faced by parents in supporting e-learning are multifaceted and extend beyond mere access to technology. They encompass a range of issues including infrastructure readiness, financial constraints, and socio-environmental factors, all of which need to be addressed to ensure equitable and effective e-learning experiences for all students (Chinchay Manco, 2022; Alsoud & Harasis, 2021; Madni et al., 2022; Singh, Gupta, & Yadav, 2020).

c) Concerns about Socialization: The rapid advancement and adoption of e-learning has brought forth unique challenges concerning the socialization of children, as perceived by parents. A significant concern is the potential impact on children's social development due to the reduced opportunities for direct social interaction, a cornerstone of traditional educational settings. This concern is particularly evident in the context of the COVID-19 pandemic, where the shift to remote learning models, such as tele-home visits in Early Head Start (EHS) programs, has highlighted parental apprehensions about missed socialization experiences for their children (Vicente et al., 2022).

Furthermore, cultural factors play a crucial role in shaping parental engagement in children's education, as evidenced by comparative studies between countries like Japan and the U.S. These studies reveal that cultural backgrounds significantly influence parental attitudes and actions in supporting their children's social development in e-learning scenarios (Yamamoto, Holloway, & Suzuki, 2016). This underscores the need for e-learning platforms and methodologies to be culturally sensitive and adaptable to diverse parental expectations and concerns.

Moreover, the relationship between parental concerns about their child's performance and the development of self-directed learning behaviors in children is another aspect that has gained attention. Research suggests a transactional link between parental concerns and children's motivation in e-learning environments, where self-directed learning is often essential (Maltais et al., 2021). This highlights the importance of parental support and understanding in fostering effective learning behaviors in e-learning contexts.

The concerns about socialization in e-learning environments encompass a range of issues from missed social interactions to cultural and digital competencies. Addressing these concerns requires a multifaceted approach that includes culturally sensitive e-learning

strategies, support for parents in digital socialization, and an understanding of the transactional relationship between parental concerns and children's learning behaviors (Vicente et al., 2022; Yamamoto et al., 2016; Maltais et al., 2021).

In summary, while e-learning offers numerous advantages, it also presents significant challenges that need to be carefully considered and addressed. Striking the right balance between technological innovation and human interaction, ensuring equity, and providing support and training are critical to the successful implementation of e-learning.

Table1

The key findings from the thematic analysis of e-learning

Stakeholder	Advantages of E-Learning	Disadvantages of E-Learning	Recommendations
Educators	- Flexibility and Accessibility: E-learning platforms offer greater scheduling flexibility and course delivery customization. - Enhanced Collaboration and Communication: Facilitates improved collaboration and communication with students. - Cost-Effectiveness: Reduces the need for physical materials and transportation.	- Technological Barriers: Issues with access to high-speed internet or modern devices. - Lack of Personal Interaction: E-learning can lack the immediacy of traditional classroom settings. - Professional Development Needs: The need for ongoing training in digital pedagogy.	- Adaptation to Digital Tools: Regular training sessions on technology use for educators - Interactive and Engaging Content: Incorporating multimedia resources and interactive discussions. - Continuous Professional Development: Ongoing professional development in digital pedagogy.
Students	- Personalized Learning Experience: Ability to learn at their own pace with access to various resources. - Access to Global Resources: Opportunities to access materials and experts worldwide. - Skill Development: Development of digital literacy, critical thinking, and problem-solving skills.	- Equity and Access Issues: Disparities in access to technology and conducive learning environments - Motivation and Engagement Challenges: Reduced motivation and engagement in a non-physical classroom setting. - Potential Overload of Information: Information overload due to abundant online resources.	- Access to Resources: Ensuring necessary technological resources and support. - Enhanced Student Engagement: Using strategies like gamification and interactive assignments. - Support for Self-Directed Learning: Providing resources and guidance for self-directed learning.

Parents	- Monitoring and Involvement: Greater insight into their children's progress and active involvement. - Convenience: Allows children to engage in education from home, reducing travel and logistical challenges. - Alignment with Future Trends: Prepares children for technological advancements and future workplace trends.	- Supervision and Guidance Concerns: Challenges in providing adequate supervision and guidance. - Technological Limitations: Technological barriers hindering the ability to support children's e-learning. - Concerns about Socialization: Lack of social interaction and development opportunities.	- Involvement in Learning Process: Encouraging more involvement in the e-learning process. - Technological Literacy: Enhancing parents' technological literacy. - Balancing Screen Time: Guiding on balancing children's screen time to prevent digital fatigue.

This table captures the key findings from the thematic analysis of e-learning in educational institutions, reflecting the perspectives of educators, students, and parents. It summarizes the advantages, disadvantages, and recommended strategies for each stakeholder group.

Recommendations

Educators

a) Adaptation to Digital Tools: In the evolving landscape of education, the adaptation of educators to digital tools and platforms is paramount for enhancing the effectiveness of e-learning. The integration of technology in educational practices is not merely a response to contemporary needs but a forward-looking approach to pedagogy. Studies have shown that educators' proficiency in digital tools significantly impacts the quality and efficacy of e-learning environments (Liao et al., 2022; Ismail & Din, 2022; Marnita, Nurdin, & Prihatin, 2023).

The ability of educators to effectively utilize digital platforms for teaching and learning extends beyond basic technological skills. It encompasses an understanding of how these tools can be integrated into pedagogical strategies to facilitate a more engaging and interactive learning experience. This requires a shift from traditional teaching methods to more dynamic and student-centered approaches, leveraging the capabilities of digital technologies (Ismail & Din, 2022).

Furthermore, the importance of regular training sessions for educators in the use of technology cannot be overstated. Such training ensures that educators are not only adept at using digital tools but are also equipped to adapt to the rapidly changing technological landscape. Continuous professional development in this area is crucial for educators to stay abreast of new technologies and pedagogical strategies that enhance learning outcomes (Marnita, Nurdin, & Prihatin, 2023).

The adaptation to and integration of digital tools in education is a critical step towards enhancing the effectiveness of e-learning. It requires a concerted effort in training educators, not just in the use of technology, but in the integration of these tools into effective and innovative teaching practices (Liao et al., 2022; Ismail & Din, 2022; Marnita, Nurdin, & Prihatin, 2023).

b) Interactive and Engaging Content: In the realm of e-learning, the development of interactive and engaging content stands as a pivotal factor in enhancing student participation and learning outcomes. The integration of multimedia resources and the facilitation of interactive discussions have been identified as essential components in this regard. Research indicates that the use of diverse multimedia materials, such as videos, simulations, and interactive graphics, significantly contributes to a more immersive and engaging learning experience (Sokoloff, 2022; Khalaf, 2022; Guy, Byrne, & Dobos, 2018).

The effectiveness of interactive content is not limited to the enhancement of student engagement alone; it also plays a crucial role in deepening students' understanding of complex concepts. Studies have shown that when learners are actively engaged with the content through interactive means, their ability to comprehend and retain information improves markedly (Khalaf, 2022; Guy et al., 2018). This is particularly relevant in subjects that require a high level of conceptual understanding, such as the sciences.

Moreover, the role of interactive discussions in e-learning cannot be overstated. Facilitating discussions where students can engage with each other, and the instructor contributes to a more collaborative and dynamic learning environment. This approach not only aids in the clarification of doubts and the reinforcement of concepts but also fosters a sense of community among learners, which is often lacking in online learning settings (Sokoloff, 2022; Khalaf, 2022).

The development of interactive and engaging content is a critical strategy for educators aiming to enhance the efficacy of e-learning. By incorporating multimedia resources and fostering interactive discussions, educators can create a more engaging, effective, and collaborative learning environment that resonates with the needs of modern learners (Sokoloff, 2022; Khalaf, 2022; Guy et al., 2018).

c) Continuous Professional Development: In the rapidly evolving domain of digital education, continuous professional development (CPD) in digital pedagogy is indispensable for educators. The dynamic nature of digital technologies and pedagogical methods necessitates that educators engage in ongoing learning to remain effective in e-learning environments. Williams (2020) underscores the importance of CPD, particularly in technology-enhanced learning (TEL), highlighting that effective CPD is crucial for educators' professional and pedagogical growth. This continuous learning process ensures that educators are not only proficient in using digital tools but are also adept at integrating these tools into their teaching methodologies.

Furthermore, the implementation of CPD programs, as discussed by Pantazatos et al. (2020), demonstrates the necessity for educators to adapt to Next Generation Digital Learning Environment (NGDLE) toolkits. Such programs are designed to bridge the gap between current educational practices and the emerging demands of digital learning. The CPD initiatives provide educators with the skills and knowledge required to navigate the complexities of digital education, thereby enhancing their ability to deliver content effectively and engage students in the digital realm.

The commitment to continuous professional development is a key factor in the successful implementation of digital pedagogy. Educators must actively participate in CPD programs to stay current with the latest developments in digital education and to refine their teaching strategies accordingly. This ongoing process of learning and adaptation is essential for educators to effectively deliver e-learning and to foster an engaging and dynamic learning environment for their students (Williams, 2020; Pantazatos et al., 2020).

Students

a) Access to Resources: Ensuring students have access to a wide range of educational resources is a critical factor in the success of e-learning environments. The availability and accessibility of Open Educational Resources (OER) play a pivotal role in enhancing student learning experiences, particularly in higher education. Grimaldi et al. (2019) emphasize the 'access hypothesis,' which posits that OER can significantly benefit learning by providing students with access to essential course materials. This is especially true for students who might otherwise face barriers in accessing these resources. The implication of this hypothesis is profound, suggesting that equitable access to educational materials can lead to improved learning outcomes and a reduction in educational disparities.

Furthermore, the integration of digital libraries and e-learning resources, as explored in the study by Asabere et al. (2021), highlights the importance of system characteristics such as user interface, software design, and content relevance in e-learning platforms. The effectiveness of these digital resources in teaching and learning is closely tied to their ease of use and perceived usefulness by both students and educators. This underscores the need for e-learning systems to be not only accessible but also user-friendly and relevant to the educational needs of students.

Providing students with access to a diverse array of educational resources, including OER and well-designed e-library systems, is essential in facilitating effective e-learning. Such access not only supports the learning process but also contributes to bridging the educational divide, ensuring that all students could engage with and benefit from digital learning environments (Grimaldi et al., 2019; Asabere et al., 2021).

b) Enhanced Student Engagement: In the context of e-learning, enhancing student engagement is paramount for ensuring effective learning outcomes. Innovative strategies such as gamification and the incorporation of interactive assignments have emerged as effective means to maintain student motivation and focus. The application of gamification in e-learning environments leverages elements of game design and mechanics to create a more engaging and interactive learning experience. This approach has been shown to significantly boost student motivation, leading to improved learning outcomes (Bachiri, Mouncif, & Bouikhalene, 2023).

Furthermore, the use of interactive assignments in e-learning platforms plays a crucial role in fostering active student participation. These assignments, often characterized by their dynamic and engaging nature, encourage students to engage more deeply with the course material. Interactive assignments can take various forms, including online quizzes, interactive discussions, and problem-solving activities, all of which contribute to a more stimulating learning environment (Safar et al., 2022).

Additionally, the integration of gamification and interactive assignments in e-learning not only enhances student engagement but also caters to diverse learning styles and preferences. This personalized approach to learning ensures that students remain engaged and invested in their educational journey, thereby maximizing their potential for academic success (Bouchrika, Harrati, Wanick, & Wills, 2019).

c) Support for Self-Directed Learning: In the rapidly evolving landscape of e-learning, supporting self-directed learning has become a crucial aspect of educational practice. Educators are increasingly recognizing the importance of fostering an environment where students can take charge of their own learning journey. This approach not only enhances

student engagement but also develops critical skills such as problem-solving, critical thinking, and independent research. Studies have shown that when educators provide support for self-directed learning, students demonstrate more adaptive learning behaviors and a higher level of engagement with the course material (Nacu et al., 2016; Schweder & Raufelder, 2021).

Furthermore, the integration of technology in e-learning offers unique opportunities to support self-directed learning. Tools such as gamification and interactive platforms can significantly enhance the learning experience, making it more engaging and tailored to individual student needs. These technologies can provide immediate feedback, allow for personalized learning paths, and foster a sense of autonomy among learners (Palaniappan & Noor, 2022).

The role of educators in facilitating self-directed learning in e-learning environments is multifaceted. It involves creating a supportive framework where students are encouraged to explore, inquire, and engage with the content independently. This approach not only aligns with the needs of contemporary learners but also prepares them for the challenges of an increasingly complex and information-rich world. As education continues to evolve, the ability to learn independently will be an invaluable skill, making the support for self-directed learning an essential component of effective teaching practices.

In light of these insights, it is recommended that educators actively cultivate and nurture an environment conducive to self-directed learning. This can be achieved by designing curriculum and learning activities that encourage exploration and inquiry, and by providing students with the tools and resources they need to guide their own learning. Educators should also focus on developing students' metacognitive skills, enabling them to reflect on their learning process, set personal goals, and assess their progress. By empowering students to take ownership of their learning, educators can help them develop the confidence and competence needed to navigate the complexities of the modern world. This shift towards fostering self-directed learning not only enhances the immediate educational experience but also equips students with lifelong learning skills essential for their future success.

Parents

a) Involvement in Learning Process: The involvement of parents in the e-learning process is a critical factor for the success of students' educational experiences. Active parental engagement, which includes monitoring student progress and providing necessary support, plays a significant role in enhancing the effectiveness of e-learning. Studies have shown that when parents are involved in their children's education, particularly in an online setting, it leads to improved academic outcomes and a more enriching learning experience (Tan et al., 2022; Tresnatri et al., 2022).

Parental involvement in e-learning goes beyond mere supervision; it encompasses understanding the content, participating in discussions, and providing emotional and motivational support. This engagement helps in creating a conducive learning environment at home, which is essential for the success of e-learning. Additionally, when parents are actively involved, they can better communicate with educators, providing valuable feedback and insights that can enhance the learning process (Dziedzic, 2021).

The role of parents in the e-learning process is multifaceted and indispensable. Their involvement is not just beneficial for the academic success of their children but also for their overall development and well-being. As e-learning continues to grow, fostering a collaborative environment involving educators, students, and parents will be key to achieving optimal educational outcomes.

To further enhance the e-learning experience, it is recommended that parents engage in regular communication with educators to stay informed about their child's progress and the curriculum. Additionally, creating a structured and distraction-free learning environment at home can significantly aid in maintaining students' focus and motivation. Parents should also be encouraged to explore resources and tools that can assist them in supporting their child's learning journey effectively. By taking these proactive steps, parents can significantly contribute to the success and effectiveness of e-learning for their children.

b) Technological Literacy: The enhancement of parents' technological literacy is a crucial element in supporting their children's e-learning experiences. In the digital age, where education increasingly relies on online platforms and digital tools, the ability of parents to navigate these technologies effectively plays a significant role in their children's educational success. Research indicates that when parents are technologically literate, they are better equipped to assist, guide, and support their children through the e-learning process (Chinchay Manco, 2022; Narayan,2020; Moca & Badulescu, 2021).

Technological literacy for parents encompasses a broad range of skills, from basic digital competencies to more advanced understanding of e-learning platforms and educational software. This proficiency enables parents to monitor their children's progress, understand the content being taught, and interact effectively with educators and online learning systems. Furthermore, technologically literate parents can provide a more supportive home learning environment, addressing technical issues and facilitating access to online resources.

As e-learning becomes more prevalent, the technological literacy of parents is increasingly important. Educators and educational institutions should consider providing resources and training opportunities for parents to develop these essential skills. By doing so, they can ensure that parents are not only supportive of their children's learning journey but are also active participants in it.

To further support this initiative, it is recommended that schools and educational programs offer workshops and training sessions for parents, focusing on the use of e-learning platforms and digital tools relevant to their children's education. Additionally, providing easy-to-understand guides and technical support can help parents overcome any initial barriers to technology use. By empowering parents with the necessary technological skills, we can create a more collaborative and effective learning environment for students, where the support extends beyond the classroom into the home.

c) Balancing Screen Time: In the digital era, where e-learning has become increasingly prevalent, guiding parents on balancing their children's screen time is essential. The prolonged use of digital devices for educational purposes raises concerns about digital fatigue and its impact on students' health and well-being. Studies have shown that excessive screen time can lead to adverse outcomes such as visual impairment, general fatigue, and decreased socioemotional well-being (Chassiakos et al., 2016). Therefore, it is crucial for parents to monitor and regulate their children's screen time to mitigate these risks.

Furthermore, the development of a balanced approach to screen time is necessary to maintain a healthy learning environment. This involves creating a structured routine that allocates specific time for online learning and other activities, ensuring that students have ample time away from screens. The establishment of a Family Media Use Plan, as suggested by Chassiakos et al. (2016), can be an effective tool in achieving this balance. Such a plan

would help in setting boundaries for screen time, guiding displays of personal information, and encouraging age-appropriate critical thinking and digital literacy.

In conclusion, parental guidance in managing screen time is a key factor in fostering a conducive e-learning environment. Parents play a pivotal role in ensuring that their children's engagement with digital media is balanced and healthy. By implementing strategies to regulate screen time, parents can help prevent digital fatigue and support their children's overall well-being and academic success.

To further support this initiative, it is recommended that educational institutions and health professionals provide resources and guidelines to parents on effective screen time management. Workshops and informational sessions on the impact of screen time on health and learning, along with practical tips on creating a balanced digital routine, can empower parents to make informed decisions. Additionally, encouraging regular breaks, outdoor activities, and offline hobbies can help in maintaining a healthy balance between digital and non-digital activities in children's daily lives. By taking a proactive approach to screen time management, parents can significantly contribute to their children's physical, mental, and educational well-being.

These recommendations, derived from various studies, aim to address challenges and enhance the effectiveness of e-learning for educators, students, and parents.

Discussion

The implementation of e-learning within educational institutions has become increasingly prevalent over the past decade. While e-learning presents opportunities to enhance education, this review has identified various advantages and disadvantages from the perspectives of educators, students, and parents. Below, we synthesize these findings and discuss their implications for practice, policy, and future research.

Interplay of Advantages and Disadvantages

a) Technological Considerations: The integration of e-learning in educational settings has unveiled a complex interplay of advantages and disadvantages, particularly in terms of technological considerations. While e-learning offers unprecedented flexibility and accessibility, it simultaneously confronts challenges related to the digital divide, technological barriers, and issues of equity and access. The digital divide, a term that encapsulates the gap between those with and without access to digital technologies and the internet, emerges as a critical concern in this context (Azionya & Nhedzi, 2021). This divide not only affects the accessibility of e-learning but also raises questions about equity in education.

Moreover, the rapid shift to online learning, especially during the COVID-19 pandemic, has highlighted the disparities in access to technology and internet connectivity. These disparities have profound implications for students from marginalized communities, who may lack the necessary resources to engage effectively in e-learning (Hass, Hass, & Joseph, 2022). The situation underscores the need for educational institutions and policymakers to address these inequities to ensure that all students have equal opportunities to benefit from digital education.

Additionally, the challenges of implementing e-learning are not limited to access issues. They also encompass the need for effective pedagogical strategies that can adapt to the nuances of digital learning environments. This includes the development of personalized learning paths and the use of mobile-assisted learning tools, which can help bridge the gap in educational access and cater to diverse learning needs (Song, Tan, & Awang, 2021).

The technological considerations in e-learning present a dual narrative of opportunities and challenges. While e-learning has the potential to democratize education by making it more accessible and flexible, it also necessitates a concerted effort to overcome the barriers of the digital divide and ensure equitable access for all learners. Future research and policy development should focus on creating robust support systems and infrastructure that can mitigate these challenges and harness the full potential of e-learning (Pittman et al., 2021).

b) Pedagogical Implications: The transition to e-learning has brought significant pedagogical implications, particularly in the realms of personalized learning and information management. E-learning offers the advantage of providing personalized learning experiences and access to a diverse range of resources. However, it also presents challenges such as the potential for information overload and the lack of personal interaction, which are critical components of traditional learning environments. These challenges necessitate a balanced approach in e-learning pedagogy.

Personalized learning in e-learning environments allows for tailoring educational experiences to individual student needs, preferences, and learning styles. This personalization can lead to more effective and efficient learning outcomes. For instance, the use of artificial intelligence and machine learning in e-learning can create personalized learning paths, optimizing learner performance and engagement (Fake & Dabbagh, 2021). However, educators must carefully manage this personalization to prevent students from becoming overwhelmed by excessive content or overly complex learning paths.

Moreover, the lack of face-to-face interaction in e-learning can impact the social aspects of learning and student engagement. This challenge highlights the importance of incorporating interactive elements into e-learning courses. For example, the use of discussion forums, collaborative projects, and virtual meetings can help simulate the interactive aspects of traditional classrooms and foster a sense of community among learners (Chen et al., 2022).

Additionally, the integration of personalized e-learning services, such as those compatible with Moodle, can improve learning efficiency by providing personalized e-materials and learning paths (Chang, Li, & Huang, 2022). However, it is crucial to ensure that these services are designed to be user-friendly and accessible to all students, regardless of their technological proficiency.

The pedagogical implications of e-learning require educators to be adept in digital pedagogy and to strike a balance between leveraging the benefits of personalized learning and managing the challenges associated with digital education. Future research should focus on developing effective strategies for personalized learning, exploring innovative ways to foster student interaction in digital environments, and addressing the ethical implications of using AI in education.

c) Social and Parental Aspects: The integration of e-learning into educational systems has brought to the forefront the importance of considering social and parental aspects. While e-learning offers flexibility and accessibility, it also raises concerns about socialization and the need for effective parental supervision. These concerns necessitate a thoughtful approach to designing and implementing e-learning strategies, where collaboration between educators, parents, and students is key to creating a harmonious e-learning environment.

The impact of information and communication technology (ICT) on children's development, including their religious and moral values, highlights the dual nature of technology. While ICT can facilitate education and communication, it can also lead to reduced socialization and

changes in behavior if not used wisely (Hardiyana et al., 2022). This underscores the need for parental supervision in managing children's use of technology, especially in early childhood.
Furthermore, the experiences of nursing students in field internships under the supervision of teaching assistants and senior instructors demonstrate the importance of intelligent attention and management in e-learning environments (Dinmohammadi & Avazeh, 2019). This approach can be extended to parental involvement in e-learning, where parents play a crucial role in supporting and supervising their children's educational experiences.
Additionally, the challenges and strengths of early intensive behavioral intervention (EIBI) and naturalist developmental behavioral intervention (NDBI) for autistic children emphasize the need for a balanced approach to education. These interventions, which focus on increasing socialization and communication, highlight the importance of considering individual learning styles and the role of parents in supporting their children's education (Mottron, 2017).
The social and parental aspects of e-learning require careful consideration to ensure a balanced and effective educational experience. Parents play a vital role in supporting their children's learning, and their involvement, along with collaboration between educators and students, is essential for the success of e-learning strategies.

Implications for Practice

The exploration of e-learning's advantages and disadvantages reveals critical implications for educational practice. The shift towards e-learning necessitates a reevaluation of traditional pedagogical approaches and highlights the need for innovative strategies to maximize the benefits of digital learning while addressing its inherent challenges.

a) Embracing Technology-Enhanced Learning: The adoption of technology-enhanced learning (TEL) practices, such as microteaching in teacher education, offers insights into how e-learning can be effectively integrated into curricula. These practices demonstrate the potential of TEL to enrich learning experiences, even in disciplines traditionally reliant on face-to-face interaction (Zalavra & Makri, 2022). The successful implementation of TEL practices requires educators to be adept in both technological and pedagogical skills, ensuring that e-learning is not just a replication of traditional methods but a transformative educational experience.

b) Situated Learning and Interprofessional Education: The concept of situated learning, particularly in interprofessional education, underscores the importance of contextualizing e-learning within real-world settings. This approach fosters collaborative learning and enhances the development of practical skills, essential for students in professional programs (Zakrajsek & Schuster, 2018). By situating e-learning in authentic contexts, educators can bridge the gap between theoretical knowledge and practical application, enhancing the overall effectiveness of digital education.

c) Addressing the Digital Divide: The digital divide remains a significant challenge in the realm of e-learning. Addressing this divide is crucial to ensure equitable access to technology and internet connectivity, enabling all students to benefit from digital education. This includes catering to the needs of students in under-resourced areas and ensuring that e-learning tools are accessible to students with diverse learning needs.
The COVID-19 pandemic has exacerbated the digital divide, particularly in countries with less developed ICT infrastructure, such as Pakistan. The lack of proper internet access and digital

learning systems has disproportionately affected students from rural and remote areas, highlighting the urgent need for equitable access to e-learning resources (Jamil & Muschert, 2023). This situation underscores the importance of developing strategies to bridge the digital divide, ensuring that all students, regardless of their geographical location or socio-economic status, have access to quality education.

Addressing the digital divide in e-learning is a multifaceted challenge that requires a concerted effort from educators, policymakers, and the community. Strategies to bridge this divide must consider socio-economic, cultural, linguistic, and gender-related factors to ensure that all students have equal opportunities to engage in and benefit from digital education.

d) Ethical Considerations: The ethical implications of e-learning, particularly the use of AI and machine learning, must be carefully considered. Educators and policymakers need to address concerns related to data privacy, algorithmic bias, and the equitable use of technology in education. This involves developing ethical guidelines and policies that ensure the responsible use of AI in educational settings (Tarhini, 2016).

e) Financial Analysis of Educational Activities: The evaluation of the return on investment (ROI) for professional development activities in e-learning is essential for driving decision-making and resource allocation. Financial analysis helps in quantifying the worth of e-learning activities and in determining their impact on educational outcomes (Opperman et al., 2016). This approach is vital for ensuring that investments in e-learning are both effective and sustainable.

The implications for practice in e-learning encompass a range of considerations, from embracing technology-enhanced learning and contextualizing education in real-world settings to understanding the social ecology of educational practices and conducting financial analyses of educational activities. These considerations are crucial for the successful integration of e-learning into educational systems and for maximizing its potential benefits.

Future Research Directions

Future research in e-learning should encompass a broad spectrum of areas to enhance its effectiveness and address its challenges. Key areas include the integration of advanced technologies like AI, VR/AR, and blockchain to personalize and enrich learning experiences, and the exploration of innovative pedagogical strategies such as blended and flipped classrooms. Additionally, studies should focus on the cultural and contextual adaptability of e-learning, ensuring it meets diverse educational needs across different regions and cultures. Long-term impacts, sustainability, and ethical considerations of e-learning, particularly in data privacy and usage, are also crucial areas for investigation. Furthermore, understanding the role of parental and community engagement in e-learning and conducting comparative and cross-disciplinary studies will provide a holistic view of digital education's potential and challenges. This comprehensive approach to future research will be instrumental in shaping the evolving landscape of e-learning, catering to the needs of a global educational community.

In summary, e-learning in educational institutions presents a complex array of pros and cons, intricately linked and varying across different stakeholder groups. By recognizing and addressing these multifaceted issues, educational institutions can optimize the benefits of e-learning while minimizing its potential drawbacks.

Conclusion

The comprehensive review of e-learning in educational institutions from the perspectives of educators, students, and parents has unearthed a complex landscape marked by both promise and challenges. It has provided a nuanced understanding of the multifaceted effects of e-learning, delineating the areas where it excels and the aspects where it might falter.

The insights gained from the advantages and disadvantages expressed by various stakeholders highlight the imperative for a balanced approach. E-learning is not a panacea, nor is it fundamentally flawed; rather, its success depends on strategic implementation that is mindful of the diverse needs and expectations of the educational community.

While the benefits such as flexibility, personalization, and the broad spectrum of accessible resources open new horizons in education, challenges related to technological barriers, social interaction, and equity remain significant hurdles. These challenges are not insurmountable, but they require deliberate planning, investment, collaboration, and ongoing evaluation.

Educational institutions embracing e-learning must invest in robust technological infrastructures, professional development for educators, and engage in continuous dialogue with students and parents. A concerted effort to address the identified drawbacks and leverage the inherent strengths of e-learning can pave the way for more inclusive, effective, and innovative educational environments.

In conclusion, the future of e-learning in educational institutions is neither a utopia nor a dystopia; it is a continually evolving landscape that offers great potential if navigated with insight, empathy, and strategic vision. This review offers a roadmap for that journey, highlighting the landmarks of success and the pitfalls to avoid. It calls for an ongoing commitment to research, adapt, innovate, and engage in a pursuit that can transform education for the benefit of all involved. The challenges are real, but so are the opportunities, and the balance between them will shape the future of education in the digital age.

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Appendices

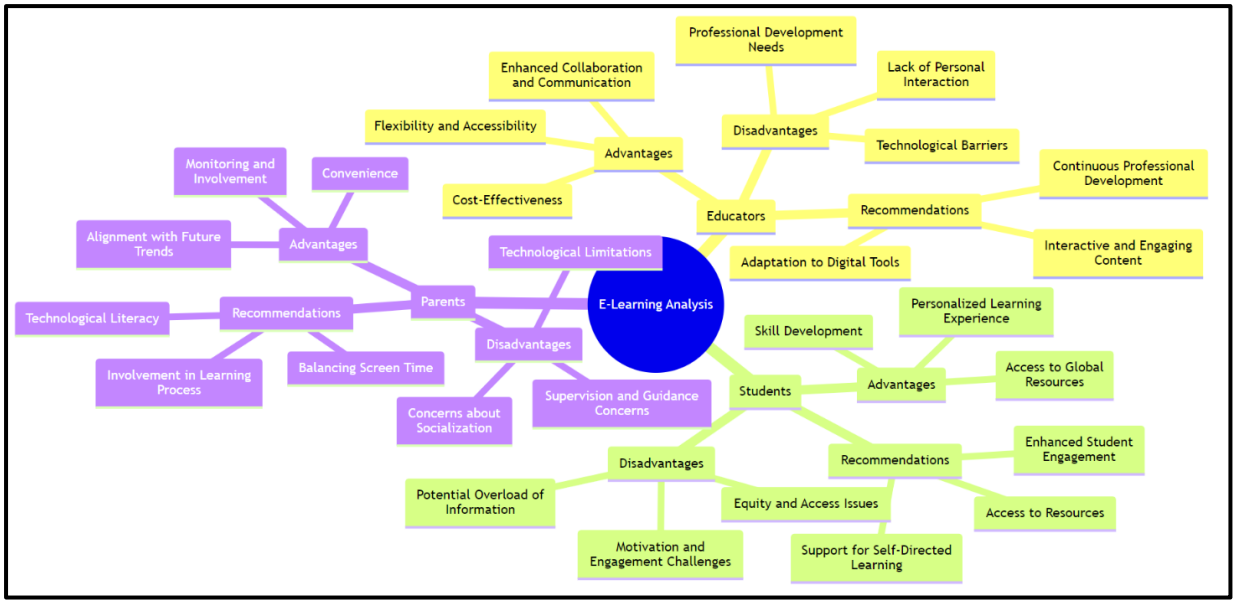

Figure 1 : Mind Map of the thematic analysis of findings

Table1

The key findings from the thematic analysis of e-learning

Stakeholder	Advantages of E-Learning	Disadvantages of E-Learning	Recommendations
Educators	- Flexibility and Accessibility: E-learning platforms offer greater scheduling flexibility and course delivery customization. - Enhanced Collaboration and Communication: Facilitates improved collaboration and communication with students. - Cost-Effectiveness: Reduces the need for physical materials and transportation.	- Technological Barriers: Issues with access to high-speed internet or modern devices. - Lack of Personal Interaction: E-learning can lack the immediacy of traditional classroom settings. - Professional Development Needs: The need for ongoing training in digital pedagogy.	- Adaptation to Digital Tools: Regular training sessions on technology use for educators - Interactive and Engaging Content: Incorporating multimedia resources and interactive discussions. - Continuous Professional Development: Ongoing professional development in digital pedagogy.
Students	- Personalized Learning Experience: Ability to learn at their own pace with access to various resources.	- Equity and Access Issues: Disparities in access to technology and conducive learning environments	- Access to Resources: Ensuring necessary technological resources and support.

	- Access to Global Resources: Opportunities to access materials and experts worldwide. - Skill Development: Development of digital literacy, critical thinking, and problem-solving skills.	- Motivation and Engagement Challenges: Reduced motivation and engagement in a non-physical classroom setting. - Potential Overload of Information: Information overload due to abundant online resources.	- Enhanced Student Engagement: Using strategies like gamification and interactive assignments. - Support for Self-Directed Learning: Providing resources and guidance for self-directed learning.
Parents	- Monitoring and Involvement: Greater insight into their children's progress and active involvement. - Convenience: Allows children to engage in education from home, reducing travel and logistical challenges. - Alignment with Future Trends: Prepares children for technological advancements and future workplace trends.	- Supervision and Guidance Concerns: Challenges in providing adequate supervision and guidance. - Technological Limitations: Technological barriers hindering the ability to support children's e-learning. - Concerns about Socialization: Lack of social interaction and development opportunities.	- Involvement in Learning Process: Encouraging more involvement in the e-learning process. - Technological Literacy: Enhancing parents' technological literacy. - Balancing Screen Time: Guiding on balancing children's screen time to prevent digital fatigue.

This table captures the key findings from the thematic analysis of e-learning in educational institutions, reflecting the perspectives of educators, students, and parents. It summarizes the advantages, disadvantages, and recommended strategies for each stakeholder group.