

Teachers Engagement in the Digital Transformation Era: An Analysis of Challenges, Opportunities, and Best Practices.

دور المعلمين في عصر التحول الرقمي: تحليل التحديات والفرص و أفضل الممارسات.

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Abstract: In the contemporary landscape of education, the advent of digital technology has precipitated a seismic shift in the roles and responsibilities of teachers. This digital transformation has significantly transformed the landscape of education, placing new demands and opportunities on teachers.

This research paper conducts a comprehensive analysis of the challenges confronting teachers amidst the digital revolution, ranging from technological proficiency gaps to the integration of digital tools into pedagogical practices. Furthermore, it investigates the manifold opportunities afforded by technology, including enhanced student engagement, personalized learning experiences, and the democratization of educational resources.

Moreover, the paper delineates best practices for educators to optimize their use of digital tools, fostering innovative instructional approaches and cultivating digitally literate learning environments. By synthesizing empirical evidence and theoretical frameworks, it provides actionable insights and strategies.

Keywords: Teachers, Digital Transformation, Challenges, Opportunities.

المخلص: في المشهد التعليمي المعاصر، أدى ظهور التكنولوجيا الرقمية إلى حدوث تحول زلزالي في أدوار المعلمين ومسؤولياتهم. وقد أدى هذا التحول الرقمي إلى تحول كبير في مشهد التعليم، مما فرض متطلبات وفرصًا جديدة على المعلمين.

تجري هذه الورقة البحثية تحليلًا شاملاً للتحديات التي تواجه المعلمين في ظل الثورة الرقمية، بدءًا من الفجوات في الكفاءة التكنولوجية إلى دمج الأدوات الرقمية في الممارسات التربوية. علاوة على ذلك، فإنه يبحث في الفرص المتعددة التي توفرها التكنولوجيا، بما في ذلك تعزيز مشاركة الطلاب، وتجارب التعلم الشخصية، وإضفاء الطابع الديمقراطي على الموارد التعليمية. علاوة على ذلك، تحدد الورقة أفضل الممارسات للمعلمين لتحسين استخدامهم للأدوات الرقمية، وتعزيز الأساليب التعليمية المبتكرة وتنمية بيئات التعلم الرقمية. ومن خلال تجميع الأدلة التجريبية والأطر النظرية، فإنه يوفر رؤى واستراتيجيات قابلة للتنفيذ للمعلمين للتعامل مع تعقيدات التعليم الرقمي بفعالية.

الكلمات المفتاحية: المعلمين، التحول الرقمي، التحديات، الفرص والإمكانيات.

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Introduction:

The twenty-first century has seen an unprecedented rise in technological advancements, particularly in education. Digital technology has fundamentally changed how we teach and learn, leading to a reevaluation of educators' roles and responsibilities. This study aims to explore how educators are adapting to the digital transformation, including the challenges they face, the opportunities presented by digital tools, and the best strategies for integrating technology into teaching practices.

Educators today grapple with numerous challenges in the digital age, such as keeping up with rapidly evolving technology, ensuring digital literacy among students, and addressing disparities in access to technology. Additionally, they must prepare students for a world where digital skills are increasingly essential, raising questions about how to promote digital citizenship and critical literacy.

Despite these challenges, there are significant opportunities for educators to enhance teaching with digital tools. Technologies like multimedia resources and online platforms offer new ways to personalize instruction, facilitate collaboration, and engage students. However, realizing the full potential of digital technology requires not only technical skills but also innovative teaching approaches.

Given these transformative changes, it is crucial to examine how educators can drive educational innovation and improve student outcomes through digital technology. This study aims to contribute to our understanding of educators' evolving roles by exploring the challenges, opportunities, and best practices for integrating digital technology into teaching. Through a synthesis of existing literature and case studies, we seek to provide insights into how educators can thrive in a digitalized educational environment, ultimately empowering them to prepare students for success in the twenty-first century.

2. Literature Review

The theoretical foundation of this study is vital for grasping the intricate roles of educators in the digital era. We draw upon two key theoretical perspectives: socio-constructivism and technological determinism.

Socio-constructivist perspectives emphasize the importance of social interaction and collaborative learning in knowledge construction. In the realm of digital education, this perspective highlights educators' roles as facilitators of active learning experiences, where students engage with digital tools to construct knowledge collectively.

Conversely, technological determinism posits that technology significantly shapes societal structures and behaviors. Within education, this perspective underscores the transformative impact of digital technology on teaching and learning practices, thereby influencing the roles of educators.

Numerous studies have explored various facets of technology integration in education, offering insights into the challenges and opportunities faced by educators in the digital age. Research has identified gaps in educators' technological proficiency, resistance to change, and the need for professional development initiatives to effectively utilize digital tools.

Ertmer and Ottenbreit-Leftwich (2010) and Koehler and Mishra (2009) are prominent contributors to the discourse on technology integration in education. While Ertmer and Ottenbreit-Leftwich focus on factors influencing educators' technology adoption, Koehler and Mishra introduce the concept of Technological Pedagogical Content Knowledge (TPACK). Despite their differing approaches, these studies converge in exploring the complexities of integrating technology into instructional practices.

Ertmer and Ottenbreit-Leftwich emphasize the significance of factors such as knowledge, confidence, beliefs, and organizational culture in shaping educators' technology integration. They demonstrate how educators' proficiency, confidence,

positive beliefs, and supportive cultures facilitate technology incorporation into teaching practices.

Similarly, Koehler and Mishra's TPACK framework stresses the synthesis of technological, pedagogical, and content knowledge essential for successful technology integration. Their model provides educators with a comprehensive understanding of the expertise required to leverage technology effectively in education, echoing the importance of knowledge, confidence, and supportive environments highlighted by Ertmer and Ottenbreit-Leftwich.

Thus, while Ertmer and Ottenbreit-Leftwich's empirical findings shed light on practical challenges, Koehler and Mishra's theoretical framework offers a conceptual lens to understand and address these challenges.

Furthermore, studies such as Al Jamal, A. Q., et al. (2023) and Zerouali, I., et al. (2020) provide additional insights into educators' roles and challenges in the digital era. Al Jamal, A. Q., et al. (2023) highlight challenges in implementing digital transformation in higher education institutions in Arab countries, including competency gaps, budget limitations, awareness deficiencies, and concerns regarding security and privacy. Meanwhile, Zerouali, I., et al. (2020) delineate various roles educators must undertake in online learning settings, including fostering motivation, designing educational experiences, mastering technological skills, providing content, facilitating processes, evaluating learners, and managing the educational process. These studies collectively deepen our understanding of educators' roles and challenges amidst digital transformation.

2.1 Research Gap and Objectives:

Within the contemporary educational landscape, defined by the widespread integration of digital technology, a discernible gap exists in the comprehension of the intricate roles and encounters of teachers amid this digital metamorphosis. Although numerous inquiries have delved into different facets of technology assimilation in education, there persists a deficiency in extensive research dedicated specifically to the

hurdles, prospects, and optimal methodologies confronted by teachers in the digital age.

2.2 Statement of Problem:

In the current epoch of educational digital transformation, educators face a multifaceted landscape marked by a convergence of challenges, opportunities, and evolving best practices. This intricate terrain demands a meticulous exploration of teachers' roles amidst the shifting digital paradigm. Educators grapple with diverse challenges stemming from technology integration while simultaneously navigating the expansive potential for pedagogical innovation. Meanwhile, they must discern and adapt to emerging best practices aimed at optimizing the integration of digital tools into teaching and learning processes.

This study aims to delve into the intricate interplay among these factors—challenges, opportunities, and best practices—to unravel the complexities inherent in educators' experiences. By shedding light on these dynamics, we endeavor to elucidate strategies to harness the transformative power of digital technology in education, providing insights to empower educators in effectively leveraging digital tools to enhance educational outcomes.

In light of all this, we will attempt to formulate this research study to answer the following questions:

- 1- What are the primary challenges encountered by educators in the process of integrating digital technology into their teaching practices, and how do these challenges impact instructional approaches and student learning outcomes?
- 2- What are the key opportunities afforded by the digital transformation in education, and how can educators effectively leverage digital tools to enhance pedagogical innovation, student engagement, and overall educational experiences?
- 3- What strategies, frameworks, and support mechanisms are effective in empowering educators to overcome challenges, seize opportunities, and implement best practices

for integrating digital technology in education, ultimately fostering transformative change in teaching and learning environments?

2.3 Objectives and importance of the study:

The Objectives:

- 1- Identifying challenges that teachers face in integrating digital technologies into their teaching practices.
- 2- Exploring opportunities that digital transformation offers for teaching and learning.
- 3- Assessing the impact of digital transformation on teaching practices, student outcomes, and the overall educational ecosystem.
- 4- Providing practical recommendations and guidelines for teachers, and educational policymakers to navigate the challenges and capitalize on the opportunities presented by digital transformation.

The importance of the study:

The importance of the study emerges from the importance of the topic it discusses, as it has become necessary addressing and discussing the role of teachers in the Digital Transformation Era, especially, Challenges, Opportunities, and Best Practices.

3. Conceptual Framework:

3.1 Study's Concepts and Terminology:

Digital Transformation:

Overall, digital transformation in the education sector refers to the comprehensive integration of digital technologies and tools across various dimensions of the educational ecosystem. This integration encompasses the infusion of digital resources, platforms, and methodologies into teaching practices, learning experiences, administrative procedures, and communication channels. The overarching goal of this transformation is to enhance the quality, accessibility, and effectiveness of education through the strategic utilization of digital resources and strategies. According to Erik.S. and Anna.C. F. (2004):" it as a social phenomenon, or cultural evolution.

The digital transformation, otherwise called “digitalization”, is still a protean concept, whose acceptances differ between practitioners and researchers. (Emily Henriette, 2016, P:02).

- Digitisation stands for the complete networking of all sectors of the economy and society, as well as the ability to collect relevant information, and to analyse and translate that information into actions. The changes bring advantages and opportunities, but they create completely new challenges.

- Mazzone (2014): “DT is the deliberate and ongoing digital evolution of a company, business model, idea process, or methodology, both strategically and tactically.”

- In fact, the new aspect of digitalization is not the usage of information technology per se but the speed of change and the world’s level of connectedness. (Gimpel. H. and Röglinger. M. 2015. P.6).

- The use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new business models). (Liere-Netheler et al. 2018. P. 3928).

- Digital transformation is not a software upgrade or a supply chain improvement project. It’s a planned digital shock to what may be a reasonably functioning system. (Andriole. S. J. 2017. P 21).

- Digital transformation describes the changes imposed by information technologies (IT) as a means to (partly) automatize tasks. (Legner, C. et al. 2017. P305).

Dimensions of digital transformation:

According to Emily Henriette et al. (2016), there are two primary dimensions of digital transformation:

Firstly, digital technologies encompass tools that utilize digital data, typically in binary form (zeros and ones), and are processed electronically. Examples include computers, smartphones, tablets, internet connectivity, and various software applications.

Secondly, user experience (UX) refers to the overall interaction a person has with a product, service, or system, emphasizing ease of use, accessibility, aesthetics, performance, and satisfaction.

In today's technological landscape, the role of teachers has evolved significantly to embrace various aspects related to technology. Garima S. (2016) highlights that in the current era of digital transformation, access to information is readily available through technology. Teachers serve as facilitators and guides, assisting students in effectively managing vast information resources for optimal benefit and in making informed decisions in this technologically complex world (Garima S., 2016, p. 15). Furthermore, teachers play a vital role in helping students learn how to critically evaluate abundant information, distinguish between facts and propaganda, understand ethical, legal, and moral considerations related to information access and usage, and derive meaning from data. This broader perspective of education enables students to tackle real-world problems and prepares them for an uncertain future.

Overall, in the era of digital transformation, teachers play a pivotal role in facilitating learning and adapting to the evolving educational landscape. Their roles include providing digital literacy instruction, seamlessly integrating technology into teaching practices to enhance learning experiences, designing and adapting curricula, and fostering collaboration and communication among students.

4.The Role of Teachers in the Digital Transformation Era:

In the process of integrating digital technology into their teaching practices, educators encounter several primary challenges, as highlighted by Kirandeep Dham (2023):

Digital Literacy: Teachers' proficiency with technology varies, with some feeling more confident than others. Providing comprehensive training and professional development opportunities is essential to empower educators, ensuring they are comfortable and enthusiastic about incorporating digital tools into their teaching. This

proactive approach guarantees that all teachers receive the necessary support to embrace technology, thus creating engaging learning experiences for their students.

Resistance and Reticence to Change: Some educators may be hesitant to fully embrace digital education. Cultivating a culture of openness to change and emphasizing the positive impact of technology can help alleviate this resistance.

Time Constraints: Integrating technology may initially require extra time and effort from educators. Effective planning and support mechanisms can help alleviate time constraints and facilitate a smoother transition.

Access to Resources: Disparities in access to the latest technology and adequate digital resources among schools can pose significant challenges. Investing in infrastructure and tools is crucial to ensure widespread adoption.

Balancing Tradition with Innovation: It's important to strike a balance between traditional teaching methods and cutting-edge technologies to ensure that technology enhances rather than replaces meaningful human interaction in the learning process.

Additionally, Suchita (2023) highlights various challenges and barriers faced by educators and institutions in effective technology integration. These include limited access to technology resources, concerns about technological pedagogical knowledge (TPK), resistance to change, and the ongoing need for support and professional development. Recognizing and addressing these challenges are crucial for designing sustainable and impactful technology integration initiatives.

Furthermore, a significant challenge inherent in digital transformation is the need for information systems researchers to develop approaches, methods, and techniques for studying information technology that transcend an analytic and reductionistic stance.

Addressing these challenges requires a comprehensive approach, including providing professional development opportunities, ensuring equitable access to technology, fostering a culture of innovation, and supporting educators in overcoming integration barriers.

4.1. The impact of challenges on the instructional approaches and student learning outcomes:

The challenges presented by digital transformation have a significant impact on instructional approaches and student educational achievements. Here's a clearer breakdown of how these challenges influence teaching and learning outcomes:

Ensuring Equitable Access to Technology: One of the primary hurdles is guaranteeing fair access to technology and digital resources for all students. Discrepancies in device availability, internet connectivity, and digital literacy skills can widen existing academic gaps. Educational strategies need to adapt to address these inequalities, ensuring that every student has equal access to learning opportunities.

Transitioning to Interactive Pedagogical Models: Digital transformation often requires a shift from traditional lecture-based teaching to more interactive and student-centered approaches. However, this transition can be daunting for educators who may lack the necessary training or support in using digital tools effectively. Moreover, digital tools may not always align with established teaching methods, necessitating educators to adjust their practices accordingly.

Technical Challenges and Infrastructure Support: Integrating digital tools into teaching practices relies on technical expertise and robust infrastructure. Issues like compatibility problems, software glitches, and a shortage of technical assistance can disrupt the smooth integration of technology, impacting student academic performance.

Ensuring Quality and Relevance of Digital Content: The abundance of digital resources and online learning platforms necessitates careful evaluation to ensure their quality and relevance. Educators must assess digital resources to ensure they meet curriculum standards, encourage active learning, and effectively engage students. Thoughtful selection and curation of resources are crucial to enhance teaching methods and improve student learning outcomes.

Addressing these challenges requires a holistic approach, including providing adequate support and training for educators, investing in reliable infrastructure, and prioritizing the selection of high-quality digital content aligned with educational goals.

4.2. The key opportunities afforded by the digital transformation in education:

The integration of Information and Communication Technology (ICT) in Higher Education Institutions (HEIs) has demonstrated notable successes, offering promising prospects for educational advancement. As evidenced by studies such as that by Miguel.T. R. and Marco. M. (2019, p.148), the strategic incorporation of ICT in educational practices holds the potential to significantly broaden access to learning opportunities while simultaneously enhancing the quality of education delivery.

Within this context, the digital transformation of teaching and learning processes brings forth multifaceted opportunities for educational institutions to evolve and innovate. These opportunities include:

Student Engagement: Digital environments afford educators the capacity to actively engage students in the learning process, fostering greater motivation and deeper involvement in educational activities. Through interactive platforms and multimedia resources, students are encouraged to participate in discussions, collaborate on projects, conduct research, and engage in self-directed learning endeavors.

Progress Monitoring: Real-time tracking and analysis of student performance metrics represent a pivotal advancement facilitated by digital tools. These tools enable educators to identify areas of challenge and strength among students, allowing for tailored interventions and instructional adjustments to better support individual learning needs. Such personalized feedback mechanisms contribute to more effective teaching practices and improved student outcomes.

Accessibility and Inclusion: The democratizing influence of digital technologies is particularly evident in their capacity to mitigate barriers to education. By providing flexible learning modalities and adaptive resources, ICT facilitates access to education

for diverse learner populations, including those with disabilities or facing socio-economic constraints. This inclusivity fosters a more equitable learning environment and promotes educational attainment among historically marginalized groups.

Personalization: One of the hallmark advantages of digital learning environments is their inherent flexibility in accommodating diverse learning preferences and paces. Through adaptive learning platforms and personalized learning pathways, educators can tailor educational experiences to suit individual learner profiles, addressing areas of weakness and capitalizing on strengths. This personalized approach not only enhances student engagement but also fosters deeper comprehension and retention of subject matter.

Future-proofing: Recognizing the evolving demands of the modern workforce, educational institutions are tasked with equipping students with the requisite digital skills and competencies for success in the digital age. By integrating ICT into curricula and fostering digital literacy across disciplines, HEIs prepare graduates for the dynamic and technology-driven landscape of contemporary employment.

In summary, the strategic integration of ICT in HEIs represents a transformative force in education, offering a myriad of opportunities for enhancing teaching and learning practices. From fostering student engagement and personalized learning experiences to promoting accessibility and future employability, ICT holds immense potential for driving educational advancement and fostering inclusive, learner-centered educational environments.

4.3. The effective strategies, frameworks, and support mechanisms that empowering teachers to overcome challenges, and implement best practices for integrating digital technology in education:

To be an empowered teacher in the digital transformation era, means having enough resources and freedom to provide every student with the education that they deserve. Teachers play a vital role in imparting education and shaping the life of students, especially in the digital transformation era that we live today. Their role

cannot be overlooked as they contribute maximum towards a student's learning. Therefore, empowering teachers means empowering them with right knowledge, skills, and competence that would enable them to meet the demanding and challenging needs of the ever-changing society. This should be a continuous process where they should develop and gain lifelong experiences which will give them encouragement and support and engage in continuous professional development. Consequently, it is the duty of the concerned authorities to empower the teachers with new knowledge and skills and inculcate a positive attitude in them. In addition, teachers should be empowered with using the new educational technologies that would help them teach well and enable learning in faster and better way. Using animation, videos and multimedia aids will transform the traditional learning environment, thereby making it more engaging and entertaining.

Incorporating new technologies and providing teachers with freedom to innovate, research and experiment will improve the curriculum and make learning an invaluable experience for students.

Overall, there are many strategies, practices, innovative approaches, and transformative models that can empower future teachers to confidently and effectively integrate technology into their instructional practices, ensuring that they are prepared to navigate the digital landscape and facilitate meaningful learning for their students

According to Zainab M.A (2019, P.3110): One of the most important roles imposed by the digital age on teachers include:

- The role of the explainer, using technological means such as the internet and various technologies to present the lesson. Then, students rely on this technology to solve assignments and conduct research.
- The role of encouraging interaction in the educational process by encouraging the asking of questions and connecting learners with other students and teachers from different countries.

- The role of encouraging the generation of knowledge and creativity. Teachers urge students to use technological means and innovate educational programs they need, allowing them to control the material by expressing their opinions and perspectives.
- The role of being an organized educational mediator for communication, focusing on tasks that cannot be performed by other means with the same efficiency. This includes efforts to organize effective communication between teachers and students.
- The role of guiding the development of higher-order thinking skills in learners, imparting life skills, supporting the knowledge economy, utilizing and managing educational technology, and fostering critical thinking abilities.

Consequently, educators can employ various innovative teaching strategies to enhance engagement and improve knowledge retention. These strategies may include:

- **Flipped Classrooms:** Transform traditional lecture and homework elements.
- **Gamification:** Use of game-like elements for enhanced engagement.
- **Personalized Learning:** Customised educational experiences facilitated by digital tools.
- **Self-paced Learning:** Flexibility for students to learn at their own speed.
- **Assessment and Feedback Methods:** Assessment strategies are transformed through technology, such as online quizzes, e-portfolios and digital submission platforms allow for a more dynamic interaction between student work and educator feedback.
- **Classroom and Online Integration:** Educators can employ hybrid models where lectures may be delivered face-to-face, but supplementary materials and discussions are facilitated through online forums.
- Self-assessment of digital teaching strategies and student outcomes.
- **Networks and Communities:** Joining subject-specific and pedagogical digital forums to exchange ideas.
- **Continual Research:** Keeping abreast of emerging educational technology research to inform practice.

By implementing these strategies, frameworks, and support mechanisms, educators can be empowered to overcome challenges and effectively integrate digital technology into education, ultimately enhancing teaching and learning outcomes for all students.

- CONCLUSION:

The advent of digital transformation and technology in the educational realm represents notable advancements with evolving potential impacts. This research endeavor aims to scrutinize the role of educators in the digital era, juxtaposed with the attendant challenges, opportunities, and optimal approaches. Employing a critical document analytical methodology, diverse sources including newspapers, blogs, scholarly journals, and books were subjected to scrutiny and interpretation.

The findings underscore the transformative potential of these technologies in augmenting the educator's role, fostering student engagement, incentivizing enhanced academic performance, facilitating real-time performance monitoring and analysis, and innovating solutions to pedagogical challenges. Furthermore, digital tools can facilitate authentic assessments, enabling educators to discern students' strengths and weaknesses and tailor instructional strategies accordingly. Nonetheless, a cautious approach is warranted, necessitating thorough consideration of the benefits and drawbacks of technology integration, including ethical dimensions.

This inquiry posits that while digital technologies hold promise for revolutionizing education in developing nations, a judicious and well-informed deployment is imperative. Efforts should focus on maximizing the positive impacts while mitigating concerns such as data privacy breaches, disparities in technology access, and the imperative for educators to continually update their skill sets.

Future endeavors should prioritize further research to deepen insights into the ramifications of digital transformation and technology in education. Central to this pursuit is the imperative to harness the benefits of these innovations while proactively addressing potential adverse effects. Ultimately, the objective should be the utilization

of digital technologies to foster more equitable and efficacious educational opportunities for all stakeholders.

In summation, the digital transformation of education portends significant potential for reshaping pedagogical paradigms. However, the realization of this potential hinges upon a deliberate and informed approach to technology integration, guided by ethical imperatives and evidence-based practices. By empowering educators to adeptly navigate digital realms, bridging access disparities, and upholding data privacy standards, the educational landscape can be enriched. Continued research endeavors are indispensable for comprehensively elucidating the impact of digital transformation on education and informing strategies that promote equitable and effective learning environments for all.

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