Journal homepage:
https://www.ijedm.com

International Journal of Educational Management, Rivers State University.

Digital Disconnect in Education: The Administrative Challenge of Aligning Rhetoric and Reality in the Implementation of AI-powered and Non-AI digital tools

[1]Oteyi, Joyce Vadukweenem & [2]Dede, Destiny.

[1]Institute of Education, Rivers State University, Nigeria.

[2]Department of Educational Management, Rivers State University, Nigeria.

Corresponding Authors' Email: joyce.oteyi@ust.edu.ng; dede.destiny@ust.edu.ng

Abstract

Despite the hype surrounding digital transformation in education, a persistent gap between rhetoric and reality threatens to undermine the promise of technology-enhanced learning. The accelerating pace of artificial intelligence and digital tool development has created a pronounced disconnect where administrative capacities and framework are increasingly hard-pressed to match the speed of technological change. This paper delves into the complex interplay between policy, practice, and technology, exposing the administrative challenges that fuels the digital disconnect. Through a critical examination of the gap between policy rhetoric and implementation reality, this research revealed the need for a more refined understanding of the administrative role in shaping digital initiatives. By highlighting the tensions between technological potential and practical implementation, this paper aimed to spark a critical conversation on the future of digital education and the administrative competencies required to bridge the digital disconnect, the paper concluded that effective alignment of administrative imperatives with technological advancement is crucial to bridge the digital disconnect and harness the full potential of AI and other digital solutions in education. The paper suggested amongst others that educational institutions should invest in developing administrators' capacity for digital leadership, including training in AI and digital tool implementation.

Keywords: Digital Disconnect, Administrative, Rhetoric and Reality, Artificial Intelligence, Digital Tools implementation

Introduction

The advent of artificial intelligence (AI) and other advanced digital tools in education heralds a new era of learning which is capable of unlocking unprecedented opportunities for students' growth and achievement. The possibilities of this modern education is far reaching; as it promises to improve and tailor learning experiences to individual needs and abilities, reduce the intensity of teachers' workload by helping out with non-instructional responsibilities like marking, grading, observing, evaluating, and preparing lessons amongst others. Artificial intelligence empowers individuals with disability; facilities and learning plans are available to support people with disability. This will lead to improved academic outcomes, increased

participation and a more positive learning environment since students with disability will be availed equal access to education and opportunities to succeed. The integration of intelligent digital solutions such as scalability, has the potential to democratize access to high-quality education, making it more inclusive and accessible to a broader audience, particularly in underserved areas. Harnessing the power of this particular technology provides equal opportunities for all students to succeed regardless of their geographical location or social economic background. This will also help the system bridge all sorts of educational divides. The most striking and crucial potential of AI in modern education lies in its ability to empower students with the necessary 21st-century skills that will enable them navigate and succeed in an increasingly complex, technology-driven world. By harnessing the power of digital tools with and without AI capabilities, educators can transform the learning experience, create dynamic, personalized and inclusive learning environment that equips students with the skills, knowledge and adaptability needed to thrive in the 21st century.

Despite the excitement around technology in education, the adoption of AI-driven and standard digital platforms in education is not a straightforward success story. There is a serious mismatch between what is expected and what actually happens in reality. Most schools often find it difficult to make intelligent and conventional digital tools work well which leads to frustration and disappointing results. They are expected to maintain a seamless integration with the existing systems but they are mostly confronted with compatibility issues, integration challenges and fragmented data. Commonsensically, educational institutions believe that the implementation of intelligent digital solutions will lead to immediate organizational efficiency and cost saving. It is anticipated that these technologies will automate manual processes, reduce labour cost and increased productivity. But the reality is far more complex than what it is observed. Implementing digital tools with or without AI capabilities often requires a significant upfront cost which will cover for software licensing, hardware upgrades, training and consulting fees. Sustaining efficiency gains from AI and other digital solutions require ongoing investment in training, support, maintenances and periodic upgrades and replacement. Consequently, for technology to flourish, individuals and organizations must be willing to invest time, effort and resources in the transition process. They must recognize that implementing new technologies requires an initial investment and that patience and dedication are essential to allow these innovations to mature and yield their full benefits. It is very crucial to give technology the time and space to develop, integrate and optimize before expecting to reap its reward. In spite of the widespread adoption and investment in intelligent and conventional digital tools in Nigeria,

many educational institutions still grapple with integration issues leading to a persistent gap between rhetoric and reality. This gap in digital access and proficiency not only limits the full potential of technology but also worsens existing differences and compromises efforts to equip students with the skills necessary for success in an increasingly digital world. This paper seeks to address the challenges that school administrators face when trying to implement digital technologies in education. In spite of the numerous benefits that technology promises; the vision remains elusive for many schools as they are unable to effectively use it. Therefore, this paper exposes the complexities involved in implementing digital technologies in education. It will explore the administrative hurdles, policy pitfalls and practical challenges that hinder progress. By shedding light on these obstacles, the researcher aims to identify actionable strategies for overcoming them, ultimately bridging the gap between technological promise and educational reality. Educational managers and administrators must join forces to make technology a transformative force in education, rather than just a distant dream.

The Rhetoric-Reality Gap

There is a big difference between what people say technology can do for education and what is actually happening in schools. Technology is not living up to the expected hype of transformation in teaching and learning process in schools. In fact, the gap between what is promised and what happens in reality is a major challenge. The enthusiasm for technology in education can distract from intricate issues and essential needs of students and teachers, potentially neglecting the problems it aims to address. Overzealous adoption of technology can lead to "innovation blindness" where fascination with novelty overshadows established practices, hindering meaningful progress. (Selwyn, 2019). The issues of rhetoric-realty gap will be uncovered under the following sub titles.

Overpromising and Under Delivering

When educational technology comes up with new technologies, their sales team and marketers tend to blow the product out of proportion. They often exaggerate the capabilities and benefits of their products just to get the needed attention, make massive sales and attract investors for the company. Educational technologists often 'oversell and under deliver', promising revolutionary changes that never materialize, leaving educators frustrated and disillusioned (Reich, 2018). Another category of persons that make elaborate promises are the politicians and policy makers, they often assure the citizenry of revolutionary changes in different sphere; including education just to win their votes and secure funding. In most cases they do not fully

understand the complexities of implementation. For instance, Goodluck Jonathan, former president of Nigeria during his presidential campaign promised to prioritize education and ensure that every child has access to quality education by 2010. That promise of universal access to quality education had remained a mirage till date as, millions of school-age children, particularly those from disadvantage communities and low-income families have continued to be denied the opportunity to learn, thereby worsening the already staggering number of out-of-school children in Nigeria. Educational administrators and leaders will not be exempted from the group of persons who over promise and under deliver. In a bid to remain relevant and trendy, or even to attract grants and funding, school leaders may over promise the benefits of technology. School administrators that are eager to appear innovative and attract funding grants often adopt technology without sufficient consideration of its pedagogical value (Cuban, 2021). The under deliverers in the context of digital tool implementation in education comprises of teachers, IT staff, and students. These categories of persons face numerous challenges that hinder their ability to effectively utilize technology. Teachers who are the primary facilitators of learning often struggle with lack of training and support, insufficient professional development opportunities leave them unprepared to integrate digital tools into their teaching practices. According to the national educational technology plan (2017) teachers' lack of proficiency in using technology is not due to lack of zeal or effort but rather a lack of opportunity to develop the necessary skills and knowledge. Similarly, the rigidity in the structure of curriculum and assessment can constrain teachers' ability to innovate and experiment with new technologies making them stuck with the regimented traditional ways (National Center for Education Statistics, 2019). Technological issues such as poor internet connectivity, outdated hardware and general compatibility problems are capable of frustrating the efforts of the teacher and making them resort to traditional teaching routines (National Education Association, 2018). The IT staff is responsible for maintaining the digital infrastructure and they encounter their own fair share of challenges in the implementation of digital tools. They face limited resources; ranging from inadequate funding, insufficient personnel and outdated equipment. These issues can hinder the effective implementation of digital tools. The increasing complexity of digital tools and system can lead to maintenance fatigue; causing IT staff to become unfulfilled and demoralized by the constant need to update, troubleshoot and maintain complex technologies (Forrester Research, n.d). Students and intended beneficiaries are not left out in the struggles of digital tool implementation. Digital literacy is one big challenge amongst students, particularly digitally native peers. Situations like

this creates digital divides amongst students and consequently results in unequal access to information, limited opportunities for online learning and social isolation amongst others. Another challenge of digital learning for students is information overload; too much volume of available information makes it difficult for students to decipher what is relevant and what is not (UNESCO, 2020).

Disconnection between Policy and Practice

Programme managers, policy makers, government, administrators and all other stakeholders should learn how to clearly define goals and objectives that will guide effective programming and lead to meaningful outcomes. Many goals and initiatives in Nigeria's educational system suffer from lack of clarity, specificity and concrete objectives, which can lead to ineffective programming, unrealistic expectation, wasted resources, confusion amongst stakeholders and difficulty in measuring progress amongst others. According to Bryson (2018) ambiguity in goals and objectives can lead to confusion, miscommunication, and lack of focus among stakeholders. When policies are unclear or conflicting, implementers may struggle to understand what is expected of them, leading to confusion, frustration and ineffective implementation (O'Toole, 2010). It is worthy of note to mention that defining educational goals and objectives should be a shared responsibility amongst various stakeholders especially those who will be impacted by the initiative. Collaborations of this nature ensure that goals are realistic, achievable, measurable, time-bound and relevant. Hoy and Miskel (2013) opined that shared goal setting amongst educational managers and stakeholders is crucial for educational leadership because it promotes accountability, collective ownership, improved communication and commitment to achieving common goals. Furthermore, when educational goals and objectives are vague and unclear; they begin to lack the appropriate direction and purpose leading to uncertainty, poor focus, misinterpretation, inefficient resource allocation, lack of accountability amongst others. The only way to avert the aforementioned negative effects is to ensure that stakeholders work with well-defined goals. Goals that are elusive or overly broad are unlikely to inspire commitment or guide decision making, which may result in frustration and wasted resources (Kaplan & Norton, 2006). A very good case study is the UBE programme in Nigeria launched in 1999. The programme promised a vague goal of providing free and compulsory education for all Nigerian children. The vagueness of the programme contributed to its limited success and unfulfilled learning outcomes encircled by persisting disparities. Actually, the UBE programme has been criticized for its elusiveness and lack of clear

implementation strategies, leading to a disconnection between policy and practice; implementers struggle to know what is expected of them (Oke, 2015).

Ignoring Existing Challenges

Downplaying or disregarding practical realities on ground can be very detrimental to the current goals and visions of policy makers and leaders. They should adequately consider the obstacles, difficulties and complexities that already exist in the system for a smooth sail. Inadequate planning, lack of understanding, fear of criticism, overconfidence could be the reasons why leaders and policy makers ignore existing challenges. They believe that their current solution and initiative is so powerful to overcome any existing obstacle and so they avoid discussions of challenges to prevent criticism or negative feedback. Many leaders may ignore all the harbingers and proceed with the initiative just to promote their own political interests. Self-confidence, fear of disapproval can cause leaders to ignore warning signs, dismiss dissenting voices and prioritize their own interest over the well-being of their organization or community (Brown, 2018).

Administrative Hurdles

Administrative hurdles are those obstacles, barriers or challenges that educational administrators face when implementing AI and other digital solutions in education. These hurdles are capable of hindering the effective integration of technology which will eventually lead to digital disconnects between the promised benefits (rhetoric) and the actual outcomes (reality). Below are the highlights of hurdles that administrators are confronted with as it concerns the implementation of intelligent digital solutions.

Bureaucratic Red Tapes

Educational leaders go through frustrating procedures when it comes to decision-making and action within an organization or institution. They are majorly characterized by excessive paperwork, they draft numerous forms of reports and documentations that require approvals, delays in paperwork approvals can have a ripple effect, leading to inefficiencies, increased cost and a slower pace of innovation. Unnecessary delays can be a major hindrance to success (Burrus, 2020). Sadly, educational leaders have to go through multi layered approval processes which increase the likelihood for rejections or revisions. A case study worth noting is the Edo state's education technology initiative which was officially introduced in 2018. The initiative is to provide digital learning resources and internet connectivity to public schools and this magnitude of project required approval from the Ministry of Education and Universal Basic

Education Commission (UBEC). Due to bureaucratic hurdles, the approval process was delayed for 9months resulting in increased cost; inflation, exchange rate fluctuations and vendor price changes increased the project cost by 25%. More so, the delay caused certain inefficiencies in implementation which extended the timeline of the project by three months. And of course, all the arising issues generally slowed down the pace of innovation in education technology adoption in Edo state (Adebayo, 2023). Strict adherence to inflexible procedures can make it very difficult to adhere to changing circumstances, especially as it concerns innovation. Cordelia and Tempini (2015) revealed that opportunities for improved efficiency and effectiveness in public services may be missed due to rigid regulatory frameworks that are capable of impeding the adoption of innovative technologies.

Resistance to Change

Embracing change often triggers a sense of unease, as individuals are uncertain whether the new path will yield better outcomes than their current circumstance. This natural apprehension coupled with the fears of the unknown, comfort with familiarity and doubts about the potential benefits can lead to reluctance to adapt, causing people to resist change. One key reason why implementers or educators resist change is due to fear of the unknown, they are skeptical about how this new technology will impact their job security, roles and responsibilities. The biggest challenge we face in the adoption of technology in Nigerian schools is not the technology itself but the mindset of the teachers. Teachers must shift from being sole knowledge providers to becoming facilitators of learning, guiding students in their educational journey (Ajayi, 2020). Additionally, when teachers lack the needed digital skills, understanding or training about the new technology, they begin to oppose the change because of their inadequate preparation to receive it (Oye & Olamide, 2020). Teachers have an unmatched familiarity with the traditional workflow in schools which keeps them very comfortable. The fear of being replaced by automation and AI fuels teachers' anxieties leading to resistance to technological changes in the classroom. In a rapidly evolving world, the biggest risk lies in avoiding uncertainty, the surest path to failure is reluctance to take bold action. (zuckerberg, 2019). Generational differences may also cause resistance to change; of course the digital natives will have higher levels of acceptability when it comes to integrating technology as opposed to those who were born before the widespread use of digital technology. Younger generations are more likely to embrace technology, with a significant proportion excited about its impact on their lives (Deloitte, 2022).

Inadequate Funding

Another key administrative hurdle is the problem of insufficient funding. Lack of adequate funding can hinder effective management and operation of the educational institution. An educational leader may be constrained by budget to make tough choices that may impact staffing levels. They may decide to reduce the number of staff to what they can conveniently cater for; which means that the remaining employees will be expected to carry the workload of the actual staff population, causing them to easily burnout and display decreased morale amongst others. Employers can feel undervalued and overworked due to staff reductions which can lead to chronic work related stress, reduced productivity and increased turnover rates (De Lange, 2022). Lack of sufficient funds may prevent investment in modernized infrastructure; as schools will continue to struggle with the use of outdated infrastructure leading to inefficiencies and decreased productivity. According to a recent study by Wakefield research (2022) outdated technology can significantly reduce staff productivity leading to 65% of employees working longer hours to compensate for inadequate tools and 56% of employees missing deadlines due to insufficient technology. Furthermore, inadequate funding for schools can limit students' access to technology, thereby hindering their ability to develop crucial skills necessary for success in the digital age (National Education Association, 2020). Insufficient funding for educational institutions may also cause reduced innovation, difficulty meeting regulatory requirements, problems with attracting and retaining talents and inability to invest in growth.

Policy Pitfalls

The integration of technology in education has the potential to transform learning but it is often hindered by unintended consequences. Well-meaning policies can sometimes create obstacles leading to a digital disconnect that leaves some students behind. This disconnect can result from inadequate distribution of digital resources, insufficient support or inadequate access. As policy makers strive to harness the benefits of technology, they must navigate complex challenges and avoid common pitfalls. Insufficient funding is a significant policy pitfall and the lack of it can disrupt needed maintenances and upgrades causing equipment to become obsolete and ineffective. Inadequate funding for technology can lead to a range of issues including outdated devices, limited access, and insufficient technical support and worsening digital equity concerns, ultimately leaving students in a state of digital darkness (McLeod, 2017). Lack of clear guideline is one major policy shortcoming that may hinder the effective use of technology in education. Most teachers may not be sure about what is expected of them in the classroom

with regards to technology, they may also lack the needed support and resources to run a smooth technology integrated classroom, however, when there are explicit guidelines on the expected operational standards, teachers may become confident and prepared to carry out their expected responsibilities. Puentedura (2013) affirmed that without explicit guidelines for technology integration, classroom can devolve into a 'pedagogical free-for-all' where the tool dictates instruction rather than the effective pedagogy driving technology use. Inadequate teacher training and support for digital literacy is an underrated aspect which reveals policy weakness. It explains the lack of sufficient preparation and resource provided to teachers to effectively integrate technology into their teaching practices. These can definitely decrease teacher morale and to address this; educational policies should prioritize teacher capacity building and mentorship initiatives that foster digital proficiency, enabling educators to thrive in an ever-evolving world. Educational policies should place strong emphasis on building teachers' digital literacy to ensure they can create learning environments that cater to the needs of modern students (OECD, 2019). A study on "digital divide in Nigerian schools: a case study of inequitable distribution of digital resources" was conducted by Adebayo and Fakeye (2020). The researchers found out that affluent private schools had better digital infrastructure including, computers, internet connectivity and other digital tools. They also enjoy greater access to digital resources, including online materials and digital textbooks while their counterpart in public schools face challenges like outdated hardware, limited internet access and poor digital literacy among teachers. The research uncovered a significant policy gap in Nigeria's education sector; it also emphasized the need for policymakers to revisit the existing policy to bridge the digital divide. Policy pitfalls in Nigerian education also covers issues of neglecting digital safety, privacy and security concerns, overemphasis on technology as a replacement for human amongst others.

Bridging the Gap; Strategies for Effective Implementation

The preceding section of this paper explored the various administrative challenges hindering the effective implementation of AI and digital tools in education. It is very evident that a significant gap exists between policy promises and reality. To bridge this gap, educational leaders, policymakers and stakeholders must come together to develop and implement strategies that will unflinchingly address these challenges. This will call for an all en-compassing approach that utilizes best practices, innovative solutions and collaborative efforts. Below are the strategies for effective implementation that can bridge the gap and ensure the potentials of AI and digital tools are realized.

Develop Unambiguous Implementation Plans: educational leaders and policymakers should ensure that goals and objectives are specific, it should clearly define what is to be achieved after which a realistic timeline for implementation will be established. The schedule could feature milestone and deadlines for precision. A realistic timeline is essential for a successful technology implementation, as rushing the procedure could lead to disappointing outcomes, user frustration and wasted resources (Smith, 2021). The plan should also include clearly defined roles responsibilities of different personnel that will be involved for clarity and preparedness. The needed resources for implementation should be determined and be made available, be it human, financial or technological. Potential challenges must be anticipated with corresponding mitigation plans to arrest the challenges. Strategic planning is not just about creating a plan, but also about preparing for the unexpected. It is essential to identify potential risk and develop contingency strategies to navigate the inevitable challenges that will arise (Mintzberg, 2018).

Provide Ongoing Professional Development: providing ongoing professional development is very crucial to bridging the gaps of digital disconnect. Ensure regular upskilling and reskilling during which knowledge and skills needed to effectively integrate technology will be acquired. It also enables educators stay updated on current trends and best practices. Furthermore, professional development will go a long way in addressing issues of digital divides. The most effective strategy for bridging the digital divide is through continuous training and support, empowering individuals with the necessary skills and knowledge to fully engage in a di gital society (NTIA, 2020). According to ISTE (2010) ongoing professional development boosts teacher confidence in using technology to support students learning.

Monitor Progress and Evaluate Impact: the effectiveness of digital inclusion initiatives should be regularly tracked and assessed. More so, data for key indicators like digital literacy rates, online engagement and participation as well as devices and internet access rates should be monitored; all these are done for the purpose of identifying areas of improvement and adjust the strategies accordingly. Regular assessments and evaluation are crucial to ensure that technology is enhancing student learning, and to pinpoint areas where teachers need further training and support to effectively integrate digital tools (McGuire, 2017).

Conclusion

The digital disconnect in education is a pressing administrative challenge that demands urgent attention. Fixing this, requires educational managers and school administrators to match words with actions when introducing new digital tools. This means making sure everyone has equal access, training teachers properly, and regularly evaluating progress. By doing so, administrators can unlock technology's potential to create a fair, effective, and student-focused learning environment. Ultimately, the successful integration of digital solutions will be pivotal in shaping the future of education.

Suggestions

The following suggestions were made;

1. Educational institutions should develop a comprehensive digital literacy programme for teachers and administrators
2. Educational institutions should invest in developing administrators' capacity for digital leadership, including training in AI and digital tool implementation
3. Policymakers makers should be encouraged to prioritize funding for digital infrastructure
4. Research on effective technology integration strategies and digital tools evaluation methods should be supported and encouraged by the appropriate stakeholders

References

Adebayo, E.O. (2023). *Edo state education technology initiative: A case study of delayed approval*, Unpublished PGDE Project, University of Benin.

Adebayo, O.O. & Fakeye, O.A. (2020). Digital divides in Nigerian schools: A case study of inequitable distribution of digital resources, *Journal of Educational Technology Development and Exchange*, 13 (1), 1-20.

Ajaiyi, O.O. (2020). *Education in Nigeria: challenges and opportunities*. World Bank office, Nigeria.

Brown, B. (2018). *Dare to lead: brave work. Tough conversations around the world of politics*. New York: Penguin Random House.

Burrus, D. (2020). *The anticipatory organization: Turn disruption and change into opportunity and advantage*. Texas: Greenleaf Book Group Press.

Bryson J.M (2018). *Strategic planning for public and non-public organizations: A guide to strengthening and sustaining organizational achievement* (5th. ed). John Wiley & sons

Cordelia, A., & Tempini, N. (2015). E-government and organizational change: A socio-technical perspective. *Government Information Quarterly*. 32 (3), 129-299.

Cuban, L. (2021). *Oversold and underuse: computers in the classroom*. Cambridge, MA: Harvard university press.

De Lange, (2022). The consequences of staff reduction on employees' well-being. *Journal of Workplace Wellness* 15 (2), 12-20.

Deloitte, (2022). The technology generation Gap. *Journal of Technological Advancement and Generational Dynamics* 12 (3), 1-12.

Forrester Research (n.d). *Maintenance fatigue and related issues: A growing concern for IT teams*. Cam bridge: Forrester Research Press,

Hoy, W.K, & Miskel, C.G. (2013). Educational leadership and reform: developing and implementing effective school programs and policies for student success (4th ed). Boston, MA: Allyn and Bacon

International Society for Technology in Education (2019). *Evaluating technical inclusion, A guide for educators and administrators* in J.H Reynolds and J.R. Willis (Eds.) technology integration in education. Seattle, WA: Longford Publishing House

Jonathan, G. E. (2010). *National Campaign Speech*. Unpublished Speech delivered during the 2010 presidential campaign in Nigeria.

Kaplan, R.S. & Norton, D.P. (2006). The strategy focused organization: how balanced score card companies thrive in the new business environment. Boston: Harvard business school press.

McGuire, C.A. (2017). *Using technology to support students learning* in Spector, J.M., Lockee, B.B., & Smaldino, S.E. (Eds.), learning, problem solving and mind tools. Essays in honour of David Jonassen. New York: Routledge.

McLeod,S. (2017). *What school leaders need to know about digital technologies and social media.* San Francisco: Jossey-Bass,

Mintzberg, H. (2018). The importance of contingency planning in strategic implementation. *Journal of Strategic Management*, 30 (2), 15-28.

National Educational Technology Plan (2017). Future ready learning: reimagining the role of technology in education. *U.S. Department of Education.*

National Centre for Education Statistics (2019). Teaching with technology: use of educational technology in public schools. U.S. Department of Education.

National Education Association (2018). NEA members' benefits student poll. *National Education Association.*

National Education Association (2020). *Solving issues of digital divides*. New York: Rowman & Littlefield publishers,

National Telecommunication and information administration. (2020). *Digital inclusion: A framework for addressing the digital divide,* New Haven: Techpress publishing,

Organization for Economic Co-Operation and Development (2019). *OCED report on technology and the moving forward of education*. OECD Publishing

Oke, J. (2015). Challenges of implementing universal basic education in Nigeria, *Journal of Education and Practice* 6 (10), 123-135.

O'Toole, L.J. (2010). Research on policy implementation: Assessments and prospects. *Journal of Public Administration Research and Theory.* 10 (2), 263-288.

Oye, N.D., & Olamide, T.A. (2020). Factors resisting teachers' use of educational communication technology in secondary schools. *Journal of Education and Practice* 11 (14), 128-137.

Puentedura, R. (2013). *Transformation, Technology and education*. In R. McBride & M. Searson (Eds), proceedings of the society of information technology and teacher education international conference. Association for the advancement of computing in education.

Reich, J, (2018). *The monsters of educational technology and implementation,* Wands Worth: Hack education

Selwyn, N. (2019). *Digital technology and the contemporary university: degrees of digitalization,* New York: Routledge.

Smith, J. (2021). Effective technology implementation: A guide for educators. *Journal of Educational Technology,* 20 (1), 13-24.

UNESCO, (2020). *Digital learning and skills: preparing teachers and learners for a rapidly changing world through innovative pedagogies.* Paris: UNESCO Publishing.

Wakafield Research, (2022). *The impact of outdated technology on employee productivity: The productivity puzzle*. New York: Penguin Random House.

Zuckerberg, M. (2019). *The biggest risk is not taking any risk at all, in a world that is changing really quickly. The only strategy guaranteed to fail is not taking risk*. Quote from question and answer session Facebook headquarters, Singapore: Meta Newsroom.