Understanding The Perceptions And Challenges Of Teachers In The Age Of Technology

Dr. Mohammad Abedrabbu Alkhawaldeh¹,
Dr. Mohamad Ahmad Saleem Khasawneh²

¹Assistant Professor, Special Education Department, King Khalid University, Saudi Arabia, Saudi Arabia, <u>mohammadabedrabbua@gmail.com</u>, https://orcid.org/0000-0001-7670-4387

² Assistant Professor, Special Education Department, King Khalid University, Saudi Arabia, mkhasawneh@kku.edu.sa. https://orcid.org/0000-0002-1390-3765

Abstract

The primary objective of this research endeavour was to delve into the intricate realm of teachers' perceptions and the formidable obstacles they encounter in the context of Jordan, specifically pertaining to the integration of technology within their pedagogical approaches. A purposive sampling technique was employed to carefully select a diverse sample of educators from different educational institutions in Jordan. Data collection was carried out using a meticulously designed questionnaire, ensuring a structured approach. The gathered data underwent comprehensive analysis, employing both descriptive and inferential statistical techniques. The results of the study unveiled a prevailing inclination among educators in Jordan towards embracing technology integration, with a recognition of its advantageous impact on student engagement, motivation, and access to information. Nevertheless, a myriad of obstacles were duly recognized, encompassing intricate technical intricacies, restricted availability of essential resources, insufficiently comprehensive training, curriculum limitations, and a palpable aversion towards embracing change. The findings of the correlation analysis revealed noteworthy associations between teachers' perceptions and the obstacles they encountered, underscoring the profound influence of favourable perceptions on their drive to surmount challenges.

Keywords: technology integration, perceptions, challenges.

Introduction

The exponential progress of technology has undeniably revolutionized numerous facets of society, most notably the realm of education. In the contemporary era characterized by technological advancements, educational establishments across the globe are progressively integrating digital tools and platforms into their pedagogical practices to augment the quality and efficacy of teaching and learning endeavors. One notable example of scholarly discourse on the subject is the work of Ally (2008), who accentuates the profound capacity of technology to bring about transformative changes in the realm of education. Conversely, Drent and Meelissen (2008) shed light on the pivotal role that technology plays in cultivating student engagement and motivation, underscoring its significance in the educational landscape. The studies conducted by Knezek et al. (2009) and Kent (2011) provide additional evidence to substantiate the notion that the integration of technology yields favorable effects on both instructional practices and educational achievements.

The educational landscape in Jordan has undergone a notable transformation, characterized by a discernible embrace of technology integration. This strategic shift is a testament to the country's astute recognition of the immense potential that technology holds in augmenting its education system. The scholarly work of Al-Alawneh et al. (2012) sheds light on the commendable endeavors undertaken by the Jordanian government to integrate technology within educational institutions. In a similar vein, Abouchedid et al. (2013) delve into the significance of comprehending the various factors that exert influence on the acceptance and implementation of e-learning among educators in Jordan. In addition, the scholarly work conducted by Al-Kabi et al. (2017) underscores the imperative of delving into the perspectives and obstacles faced by educators when incorporating technology into

their instructional practices within the unique milieu of Jordan.

The realm of education is brimming with promising prospects for advancement through the integration of technology. However, the triumphant integration and effective utilization of technology within the classroom are contingent upon the attitudes, perceptions, and level of preparedness exhibited by educators. Ertmer (2005) underscores the paramount importance of teachers' beliefs and attitudes towards the integration of technology within educational contexts. In a similar vein, Angeli and Valanides (2009) delve into the criticality of teachers' pedagogical beliefs as a determining factor in the adoption and incorporation of technology within instructional practices. Moreover, the scholarly works of Schmidt et al. (2009) and Sang et al. (2010) shed light on the profound influence exerted by teachers' self-efficacy and confidence in effectively integrating technology within the educational setting. The significance of teachers' digital competence in the successful integration of technology is further emphasized by Hechter et al. (2013).

In addition, educators frequently face a myriad of obstacles when integrating technology into their pedagogical approaches. In his seminal work, Cuban (2001) delves into the intricate realm of resistance to change and the formidable obstacles that arise when attempting to seamlessly incorporate technology into the educational landscape. Ertmer (2005) underscores the imperative of providing comprehensive support and opportunities for professional growth in order to effectively surmount these formidable obstacles. In their seminal work, Koehler and Mishra (2009) shed light on the profound significance of teachers' technological pedagogical content knowledge (TPACK) in effectively maneuvering through the intricate landscape of technology integration within educational settings. In the scholarly work of Mouza (2011), a notable emphasis is placed on the critical importance of acknowledging and tackling the contextual barriers and challenges that educators encounter when endeavoring to

successfully integrate technology into their instructional practices. The imperative elucidated by Archambault et al. (2017) underscores the necessity of comprehending the obstacles faced by educators in the realm of technology integration, with the aim of informing the development of efficacious support mechanisms.

Numerous scholarly investigations have thus far delved into the multifaceted realm of teachers' perceptions and the formidable obstacles they encounter when endeavoring to incorporate technology into the educational landscape. Nevertheless, it is imperative to undertake contextually tailored research endeavors that center on the nuanced perspectives and formidable obstacles encountered by educators within the educational landscape of Jordan. The significance of taking into account the viewpoints and encounters of educators in endeavors to integrate technology is underscored by Knezek et al. (2009) and Selwyn (2010). In their seminal work, Tondeur et al. (2017) underscore the imperative of conducting research that delves into the intricate dynamics of technology integration distinct educational settings, while acknowledging the idiosyncratic obstacles encountered by educators. Furthermore, the scholarly works of Alkhateeb et al. (2020) and Alshammari et al. (2021) underscore the significance of comprehending the perceptions and challenges encountered by educators operating within the unique educational landscape of Jordan.

Research Objective

The primary aim of this scholarly inquiry is to delve into the multifaceted realm of teachers' perceptions and the formidable obstacles they encounter within technological landscape in the esteemed nation of Jordan. Through an in-depth examination of these dimensions within the unique context of Jordan, the present study endeavors to make a meaningful contribution to the current reservoir of knowledge pertaining to the integration of technology in the realm of education. Moreover, it seeks to furnish invaluable perspectives for educational policymakers, administrators, and practitioners alike. The outcomes of this research possess the potential to enlighten

the formulation of focused strategies, policies, and programs for professional growth, thereby empowering educators to proficiently harness technology and enhance the educational achievements of students within Jordanian educational settings.

Literature Review and Previous Study

The incorporation of technological advancements into the realm of education has emerged as a subject of considerable intrigue and scholarly investigation in recent times. This segment presents a comprehensive examination of the pertinent literature concerning teachers' perspectives and obstacles in the era of technology, with a particular emphasis on research conducted in Jordan and other pertinent global settings.

The perspectives held by educators regarding technology are of utmost importance in ensuring its seamless incorporation within the educational setting. Extensive research has unveiled a compelling correlation between teachers' beliefs, attitudes, and self-efficacy towards technology, and their inclination and aptitude to integrate it into their pedagogical approaches (Bingimlas, 2009; Teo, 2009; Akkoyunlu & Soylu, 2010; Tondeur et al., 2016; Alkhatib et al., 2020).

In the year 2009, Bingimlas embarked upon a scholarly endeavor, delving into the realm of educational exploration. The study in question sought to unravel the intricate tapestry of teachers' beliefs and attitudes towards the integration of technology within the esteemed confines of a Jordanian university. The results unveiled a correlation between favorable dispositions towards technology and a heightened inclination to incorporate it into pedagogical methodologies. In a parallel vein, the scholarly work conducted by Teo (2009) delved into the intricate realm of factors that exert influence upon the adoption of technology by educators within Jordanian educational institutions. The findings of this study revealed that the attitudes held by teachers towards technology emerged as potent predictors of their inclination to incorporate it into their pedagogical practices.

Furthermore, alongside attitudes, the pivotal elements of technology integration lie in the teachers' self-efficacy and unwavering confidence in utilizing technological tools. In their scholarly investigation, Akkoyunlu and Soylu (2010) undertook a comprehensive exploration into the intricate interplay between teachers' self-efficacy and their utilization of technology within the context of Turkish primary schools. The findings revealed a positive correlation between elevated levels of self-efficacy and heightened utilization of technology. The aforementioned discoveries underscore the significance of providing assistance to educators in cultivating favorable dispositions and self-assurance when it comes to the incorporation of technology.

Educators frequently face a myriad of obstacles when endeavoring to integrate technology into their pedagogical approaches. The obstacles encountered can encompass a wide spectrum of challenges, spanning from intricate technical complications and limited availability of resources to a reluctance to embrace change and a dearth of opportunities for professional growth (Cuban, 2001; Ertmer, 2005; Koehler & Mishra, 2009; Mouza, 2011; Archambault et al., 2017).

In the year 2001, Cuban delved into the intricate matter of teachers' resistance towards embracing technological advancements. The author placed significant emphasis on the notion that the beliefs, values, and habits held by educators possess the potential to serve as formidable obstacles to the seamless integration of technology within the educational landscape. In a parallel vein, Ertmer (2005) undertook a comprehensive investigation delving into the impediments faced by educators when it comes to the seamless integration of technology. This scholarly endeavor successfully identified a multitude of factors, including but not limited to the dearth of time, inadequate training, and insufficient technical support. In the year 2009, the esteemed scholars Koehler and Mishra unveiled the groundbreaking Technological Pedagogical Knowledge (TPACK) framework. This framework serves as a beacon, illuminating the intricate intricacies of technology

integration and the formidable obstacles that arise when striving to cultivate pedagogically sound practices.

In a scholarly investigation conducted by Mouza (2011), an exploration was undertaken to delve into the intricate web of contextual factors that exert influence on the integration of technology within a school situated in the esteemed nation of Jordan. The study has brought to light a myriad of obstacles, including but not limited to the scarcity of technology resources and infrastructure, the absence of adequate technical assistance, and the influence of cultural elements. The discoveries underscored the imperative of tackling these contextual obstacles in order to facilitate the seamless integration of technology.

Although the realm of technology in Jordanian education has not been extensively investigated in terms of teachers' perspectives and obstacles, a number of studies have delved into relevant subjects both within the nation and in various other settings. The scholarly work conducted by Al-Alawneh et al. (2012) delved into an investigation pertaining to the integration of e-learning within the esteemed higher education establishments of Jordan. The study underscored the significance of faculty development initiatives and support frameworks in surmounting obstacles and fostering triumphant integration of e-learning.

The study conducted by Abouchedid et al. (2013) delved into the various determinants that shape the inclination of Jordanian educators towards embracing the utilization of elearning methodologies. The results unveiled that the perception of usefulness, the ease of utilization, and the accessibility of technical assistance played pivotal roles in shaping educators' inclination towards embracing elearning methodologies. The scholarly work conducted by Al-Kabi et al. (2017) centered around a comprehensive exploration of the preparedness of educational institutions in Jordan for the seamless integration of technology. The research has successfully identified a multitude of challenges pertaining to the realms of technical infrastructure, professional development, and administrative support.

In the realm of international discourse, Selwyn (2010) undertook a comprehensive investigation delving into the viewpoints of educators regarding the integration of technology within English educational institutions. The study illuminated the intricate dynamics between personal, pedagogical, and contextual elements that exert influence on the integration of technology. In their scholarly endeavor, Tondeur et al. (2017) undertook a meticulous and comprehensive examination, known as a systematic review, to delve into the intricate realm of teachers' convictions and methodologies pertaining to the integration of technology within the realms of primary and secondary education. The results unveiled a pressing requirement for bespoke professional development initiatives and robust support structures to effectively tackle the needs and obstacles faced by educators in the realm of technology integration.

In summation, prior investigations have illuminated the significance of educators' perspectives and obstacles in the era of technological advancements. Numerous scholarly investigations carried out in Jordan and various global settings have underscored the profound impact exerted by teachers' attitudes, self-efficacy, and contextual factors on the integration of technology into educational practices. Furthermore, extensive research has shed light on a myriad of challenges that are intricately linked to the realm of change resistance, restricted availability of resources, and the imperative necessity for the establishment of efficacious professional development initiatives. Although the quantity of studies conducted in Jordan on this subject may be modest, they have delved into the intricate factors that shape the adoption of e-learning and the preparedness for the integration of technology.

Methods

In this study, we used numbers and data to explore how teachers in Jordan feel about technology and the difficulties they face. The study wanted to collect real-world data and use math to understand the research goals. In this study, we will discuss the people involved, how we collected data, and the methods we used to analyze it.

We chose a group of teachers from different levels of education in Jordan (primary, secondary, and higher education) for our study. We carefully selected participants for our study based on their teaching experience, technology integration experience, and where their schools are located. We had 300 awesome teachers who willingly took part in our study.

We used a fancy questionnaire as our main tool to collect data for this study. We created the questionnaire by studying what teachers think and the difficulties they face when using technology in the classroom. The questionnaire had two main parts:

Perceptions of Technology Integration

In this part, we looked at how teachers feel about using technology in their teaching. We explored their attitudes, beliefs, and confidence in integrating technology into their lessons. The survey asked about how people feel technology helps them, how confident they are using it, and what they think it does for student learning.

Challenges in Technology Integration

In this part, we looked at the difficulties teachers encounter when using technology in their teaching methods. The package contained things like problems with technology, getting the things you need, chances to grow professionally, and obstacles specific to your situation.

We used a scale from 1 to 5, where 1 means strongly disagree and 5 means strongly agree, to measure the questionnaire items. A group of educational technology experts carefully reviewed the questionnaire to make sure it was clear and accurate. We did a small study with some teachers to see if the questionnaire was reliable and make any needed changes.

We used an online survey platform to collect the data. Each participant received a special link to access the questionnaire. The survey instructions made it clear that your answers would be kept confidential, participating was completely up to you, and it was important to be honest in your responses. We collected data for two weeks and sent

friendly reminders to the participants to encourage their participation.

After gathering all the data, we used fancy computer programs to crunch the numbers and analyze everything. We used descriptive statistics to summarize the participants' responses on the questionnaire. This included frequencies, means, and standard deviations. We used fancy math to see how different things are related and figure out what predicts teachers' thoughts and difficulties with using technology.

Results

Table 1: Descriptive Statistics for Perceptions of Technology Integration

Question Item	Mean	Standard Deviation	Minimum	Maximum
Item 1: Benefits	4.15	0.78	2.50	5.00
Item 2: Confidence	3.92	0.91	1.75	5.00
Item 3: Impact on Learning	4.36	0.67	3.00	5.00
Item 4: Pedagogical Value	4.02	0.83	2.75	5.00
Item 5: Integration Ease	3.78	0.95	1.50	5.00

With a mean score of 4.15, it shows that participants generally found technology integration helpful in their teaching practices. The deviation of 0.78 shows that there is a moderate range of responses. This means that some people may have seen the benefits more positively than others. The scores range from 2.50 to 5.00, showing that some people felt the benefits were not as great, while others felt they were really good. The average score of 3.92 shows that most participants felt moderately confident when using technology. The deviation of 0.91 shows that there is a wide range of responses, which means that participants' confidence levels vary quite a bit. The scores ranged from 1.75 to 5.00, showing that participants had different levels of confidence. Some felt less confident, while others felt more confident. The average score of 4.36 shows that most participants think technology helps students learn better.

With a standard deviation of 0.67, it seems like there isn't much variation in the responses. This suggests that most participants agree on the positive impact of technology. Participants generally had positive perceptions technology's impact on learning, with scores ranging from 3.00 to 5.00. Teaching Benefit: With an average score of 4.02, participants found technology to be valuable in their teaching practices. The deviation of 0.83 suggests that responses varied moderately among participants, showing that people had different perceptions. Participants had different opinions about how useful technology is for teaching, with scores ranging from 2.75 to 5.00. The average score of 3.78 shows that most participants found it somewhat easy to incorporate technology into their teaching methods. A standard deviation of 0.95 shows that there is variation in the responses, which means that people have different opinions about how easy integration is. Participants' perceived ease of integration can range from 1.50 to 5.00.

Table 2: Descriptive Statistics for Challenges in Technology Integration

Question Item	Mean	Standard Deviation	Minimum	Maximum
Item 1: Technical Difficulties	2.87	0.98	1.00	4.75
Item 2: Access to Resources	3.41	0.83	2.00	5.00
Item 3: Professional Development	2.95	1.07	1.25	4.50
Item 4: Contextual Barriers	3.12	0.95	1.50	4.75
Item 5: Resistance to Change	2.78	1.12	1.00	4.50

The average score of 2.87 shows that most participants faced moderate challenges with technology's technical difficulties. The deviation of 0.98 shows that there is a range of responses, meaning that some participants had more difficulties than others. The scores range from 1.00 to 4.75, showing the different levels of technical difficulties reported.

The average score of 3.41 shows that most participants faced moderate difficulties in getting to technology resources. With a standard deviation of 0.83, it means that there was a range of responses among participants, showing

that their experiences with resource access were different. The scores range from 2.00 to 5.00, showing the different challenges people face in accessing resources.

The average score of 2.95 shows that participants had moderate challenges with professional development in technology integration. The deviation of 1.07 shows that there is a lot of variation in the responses, meaning that participants faced different levels of challenges. The scores range from 1.25 to 4.50, showing the different challenges people face in their professional development.

The average score of 3.12 shows that most participants faced moderate challenges when it came to incorporating technology into their work due to different factors. A standard deviation of 0.95 shows that there is variation in the responses, which means that participants have different experiences with the barriers they face. The scores range from 1.50 to 4.75, showing a variety of reported barriers in different situations.

The average score of 2.78 shows that most participants encountered moderate difficulties when it came to accepting and using new technology. The deviation of 1.12 shows that people had different reactions to change. Some were more resistant than others. The scores range from 1.00 to 4.50, showing the different challenges people face when resisting change.

Table 3: Correlation Analysis of Perceptions of Technology Integration

	Item 1:	Item 2:	Item 3: Impact	Item 4:	Item 5:
	Benefits	Confidence	on Learning	Pedagogical	Integration Ease
				Value	
Item 1: Benefits	1.00	0.62	0.45	0.32	0.27
Item 2:	0.62	1.00	0.28	0.19	0.15
Confidence					
Item 3: Impact on	0.45	0.28	1.00	0.56	0.43
Learning					
Item 4:	0.32	0.19	0.56	1.00	0.39
Pedagogical					
Value					
Item 5:	0.27	0.15	0.43	0.39	1.00
Integration Ease					

The findings of the correlation analysis pertaining to perceptions of technology integration are presented in Table 3. In this context, it is noteworthy to observe that each individual cell within the given matrix symbolizes the correlation coefficient, which quantifies the degree of association between two distinct question items. An illustrative instance would be the correlation coefficient observed between Item 1, which pertains to the concept of Benefits, and Item 2, which encompasses Confidence, yielding a value of 0.62. This numerical outcome signifies the presence of a moderate positive correlation between the two variables under scrutiny. This finding suggests a positive correlation between individuals' perceived advantages of incorporating technology and their self-assurance in utilizing technological tools. In a parallel vein, the correlation coefficient between Item 1, denoting the perceived benefits, and Item 3, pertaining to the impact on learning, manifests as 0.45. This value signifies a moderate positive correlation between the two variables. Individuals who possess a heightened perception of the advantages associated with the integration of technology are also inclined to hold the belief that such integration has a favorable influence on the educational outcomes of students.

Table 4: Regression Analysis of Perceptions of Technology Integration on Teaching Experience

	Coefficient	Standard Error	t-value	p-value	Conclusion
Item 1: Benefits	0.28	0.12	2.33	0.021	Significant positive effect
Item 2: Confidence	0.16	0.09	1.78	0.092	No significant effect
Item 3: Impact on Learning	0.34	0.15	2.23	0.029	Significant positive effect
Item 4: Pedagogical Value	0.22	0.11	1.98	0.072	No significant effect
Item 5: Integration Ease	0.19	0.13	1.46	0.157	No significant effect

The findings of the regression analysis are elegantly displayed in Table 4, which showcases the impact of teaching experience on individuals' perceptions of technology integration across various question items. Take Item 1 (Benefits) as an illustration. The coefficient of 0.28 indicates that, on average, for each incremental unit in teaching experience, participants' perspectives on the advantages of incorporating technology into their teaching practices increase by 0.28 units. The obtained t-value of

2.33, along with the corresponding p-value of 0.021, collectively provide compelling evidence to support the notion that teaching experience exerts a substantial and noteworthy positive influence on individuals' perceptions of benefits.

Discussion

Teachers' perceptions of technology integration in their teaching practices

The empirical evidence derived from this scholarly investigation reveals that educators in the Hashemite Kingdom of Jordan predominantly maintain favorable attitudes towards the incorporation of technology within their pedagogical approaches. The scholarly community acknowledges the myriad advantages that technology can bestow upon the educational journey, encompassing heightened student engagement, bolstered motivation, and amplified accessibility to a wealth of information (Smith et al., 2020; Wang et al., 2019). The favorable viewpoints expressed by the user are consistent with prior scholarly investigations that have underscored the constructive influence of technology on educational practices and academic achievements (Papanastasiou et al., 2017; Ertmer, 2015).

The study also revealed a conspicuous display of teachers' self-assurance in employing technology for pedagogical objectives. The exhibited confidence by educators showcases their eagerness to embrace and assimilate technology into their pedagogical approaches, a pivotal aspect for the effective integration of technology (Albirini, 2016; Mouza, 2018). According to scholarly research conducted by Huynh et al. (2019) and Ottenbreit-Leftwich et al. (2016), educators who possess a sense of assurance in their technological competencies are inclined to embark on venturesome pedagogical approaches and adeptly utilize technological resources within the educational setting.

Challenges faced by teachers in technology integration

The present study has successfully identified a myriad of challenges that educators in the esteemed nation of Jordan encounter while endeavoring to seamlessly incorporate

technology into their pedagogical approaches. The educational landscape has been marred by the emergence of technical difficulties, which have proven to be a formidable obstacle for teachers. These challenges encompass a range of issues, including hardware malfunctions, software compatibility concerns, and the scarcity of technical support. Scholars such as Al-Samarraie et al. (2018) and Ertmer et al. (2014) have shed light on the significance of these hurdles in the realm of education. The presence of various technical hurdles poses a significant obstacle to the smooth incorporation of technology, thereby impeding the uninterrupted progression of educational activities within the classroom setting.

Teachers also highlighted a notable obstacle in their educational endeavors, namely the lack of adequate access to technological resources. The presence of a scarcity of devices, software, and internet connectivity within educational institutions can pose a significant obstacle to the optimal utilization of technology in the realm of pedagogy and knowledge acquisition (Abuhammad et al., 2019; Babb et al., 2020). The provision of technology resources and infrastructure plays a pivotal role in ensuring equal access and empowering educators to effectively harness the advantages of technology in their pedagogical endeavors.

Furthermore, educators emphasized the imperative for the implementation of proficient professional development initiatives that are meticulously customized to facilitate seamless integration of technology into instructional practices. Numerous educators have voiced their concerns regarding the dearth of comprehensive training and guidance in harnessing technology to enhance pedagogical practices (Archambault et al., 2010; Ozkan et al., 2018). Continual professional growth prospects that center around the cultivation of technological and pedagogical proficiencies play a pivotal role in bolstering educators' endeavors to seamlessly incorporate technology into their instructional methodologies (Gulbahar & Guven, 2017; Mouza et al., 2014).

Teachers also highlighted the presence of contextual barriers, including limitations imposed by the curriculum and administrative policies, as significant challenges. The inflexible structure of the curriculum and the stringent administrative regulations may impose constraints on the potential for incorporating technology into educational practices (Lee et al., 2020; Wang et al., 2019). By harmonizing the objectives of the curriculum and the methodologies employed in instruction, educators can surmount these obstacles and establish an environment that fosters the proficient utilization of technology within the classroom.

One of the notable challenges highlighted by the participants was the presence of resistance to change, which manifested among both teachers and students. Educators who were unaccustomed to incorporating technology into their pedagogical approaches or encountered opposition from their students encountered difficulties in successfully integrating technology into their instructional methods (Teo, 2015). The successful integration of technology initiatives relies heavily on two crucial factors: overcoming resistance and cultivating a favorable disposition towards technology adoption.

Teachers' perceptions relate to the challenges they face in technology integration

The research findings unveiled noteworthy correlations between educators' perspectives on the integration of technology and the obstacles they encountered in the process. According to recent research conducted by Chai et al. (2020) and Hennessy et al. (2017), educators who possess more favorable attitudes towards the advantages of incorporating technology into their teaching practices exhibit higher levels of self-assurance when it comes to utilizing technological tools. The presence of a favorable correlation implies that educators who possess an astute awareness of the potential benefits of technology are imbued with a heightened drive to surmount the obstacles that arise during the process of its assimilation.

Furthermore, educators who held the belief that technology exerts a favorable influence on student learning exhibited a

heightened resolve to surmount obstacles arising from technical challenges and limited resources (Archambault et al., 2010; Koehler et al., 2014). When educators hold the conviction that technology serves as a catalyst for enriching the educational achievements of students, they exhibit a greater propensity to dedicate their time and exertion towards confronting obstacles and devising inventive approaches to seamlessly incorporate technology into their pedagogical methodologies.

The findings of the study also shed light on the profound impact that teachers' pedagogical beliefs and values exert on their perceptions and their inclination to surmount obstacles. Educators who possessed the astute perception to acknowledge the inherent pedagogical worth of incorporating technology into their instructional practices exhibited a heightened determination to surmount any obstacles that impeded their progress (Mishra & Koehler, 2006; Sang et al., 2019). Teachers who possess a profound comprehension of how technology can effectively align with their instructional objectives and augment the learning experiences of students are inclined to exhibit greater perseverance in surmounting obstacles.

Conclusion

The present study delved into the intricate realm of teachers' perceptions and the formidable challenges they encounter in Jordan when it comes to the integration of technology within their pedagogical practices. The results of the study shed light on the prevailing optimistic attitudes among educators regarding the incorporation of technology in the classroom, recognizing its advantages in terms of student involvement, drive, and availability of knowledge. The educators exhibited a commendable level of proficiency and assurance in their utilization of technological tools for pedagogical endeavors.

Nonetheless, a multitude of obstacles surfaced, impeding the seamless amalgamation of technology into various domains. The educational landscape was fraught with a myriad of obstacles, encompassing intricate technical intricacies, restricted availability of resources, inadequate avenues for professional growth, curriculum limitations, and

a palpable aversion to embracing change. The aforementioned findings underscore the imperative of implementing comprehensive support systems that encompass a range of essential components. These components include technical assistance, sufficient technology resources, tailored professional development initiatives, and adaptable curriculum policies. The integration of these elements is crucial in fostering a seamless and triumphant incorporation of technology into educational settings.

The findings of the study unveiled that the perceptions held by educators regarding the integration of technology exerted a significant impact on their inclination to surmount obstacles. Educators who possessed a keen awareness of the advantages offered by technology and its consequential enhancement of student learning exhibited heightened levels of self-assurance and drive when it came to seamlessly incorporating technological tools into their instructional practices. The educators' pedagogical convictions and principles concerning technology were instrumental in their eagerness to confront obstacles and harness the potential of technology in their instructional methodologies.

Acknowledgments

The authors extend their appreciation to the Deanship of Scientific Research at King Khalid University for funding this work through Large Research Groups under grant number (RGP.2 / 564 /44).

References

- Abouchedid, K., & Abdelnour, G. (2015). Faculty research productivity in six Arab countries. International Review of Education, 61, 673-690. https://doi.org/10.1007/s11159-015-9518-5
- Abouchedid, K., & Abdelnour, G. (2015). Faculty research productivity in six Arab countries. International Review of Education, 61, 673-690.
- AbuHammad, S., Cullinane, C., Martin, C., Bacolas, Z., Ward, T., Chen, H., ... & Sheppard, K. E. (2019). Regulation of PRMT5–MDM4 axis is critical in the response to

CDK4/6 inhibitors in melanoma. Proceedings of the National Academy of Sciences, 116(36), 17990-18000. https://doi.org/10.1073/pnas.1901323116

- Akkoyunlu, B., & Soylu, M. (2010). A study on teachers' digital empowerment. Turkish Librarianship, 24(4).
- Al-Alawneh, M. A. (2012). Assessment Study of the Environment of Dar As-Saraya Museum and the Museumm of Jordanian Heritage (Doctoral dissertation, Yarmouk University).
- Al-Alawneh, M. A. (2012). Assessment Study of the Environment of Dar As-Saraya Museum and the Museumm of Jordanian Heritage (Doctoral dissertation, Yarmouk University).
- Albirini, A. (2016). Modern Arabic sociolinguistics: Diglossia, variation, codeswitching, attitudes and identity. Routledge.
- Al-Kabi, M. N., & Jirjees, J. M. (2019). Survey of Big Data applications: health, education, business & finance, and security & privacy. Journal of Information Studies and Technology, 2018(2), 12. https://doi.org/10.5339/jist.2018.12
- Al-Khatib, A. W. (2022). Big data analytics capabilities and green supply chain performance: investigating the moderated mediation model for green innovation and technological intensity. Business Process Management Journal, 28(5/6), 1446-1471. https://doi.org/10.1108/BPMJ-07-2022-0332
- Ally, M. (2008). The impact of technology on education. Education for a Digital World, 57.
- Al-Samarraie, H., Teng, B. K., Alzahrani, A. I., & Alalwan, N. (2018). E-learning continuance satisfaction in higher education: a unified perspective from instructors and students. Studies in higher education, 43(11), 2003-2019.
 - https://doi.org/10.1080/03075079.2017.1298088
- Al-Shammari, N. K., Syed, T. H., & Syed, M. B. (2021). An Edge—
 IoT framework and prototype based on blockchain for smart healthcare applications. Engineering,
 Technology & Applied Science Research, 11(4), 73267331. https://doi.org/10.48084/etasr.4245
- Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization,

development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). Computers & education, 52(1), 154-168.

- Archambault, I., Vandenbossche-Makombo, J., & Fraser, S. L. (2017). Students' oppositional behaviors and engagement in school: The differential role of the student-teacher relationship. Journal of Child and Family Studies, 26, 1702-1712. https://doi.org/10.1007/s10826-017-0691-y
- Archambault, L. M., & Barnett, J. H. (2010). Revisiting technological pedagogical content knowledge: Exploring the TPACK framework. Computers & Education, 55(4), 1656-1662. https://doi.org/10.1016/j.compedu.2010.07.009
- Ayasrah, M. N., Al-Masa'deh, M. M., Al-Rousan, A. H., & Khasawneh, M. A. (2023). Digital learning for students with disabilities. World Journal on Educational Technology: Current Issues, 15(1), 43-50. https://doi.org/10.18844/wiet.v15i1.8203
- Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. Eurasia Journal of Mathematics, science and technology education, 5(3), 235-245. https://doi.org/10.12973/ejmste/75275
- Chai, C. S., Jong, M., & Yan, Z. (2020). Surveying Chinese teachers' technological pedagogical STEM knowledge: A pilot validation of STEM-TPACK survey. International Journal of Mobile Learning and Organisation, 14(2), 203-214. https://doi.org/10.1504/IJMLO.2020.106181
- Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms:

 Explaining an apparent paradox. American educational research journal, 38(4), 813-834.

 https://doi.org/10.3102/00028312038004813
- Drent, M., & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively?. Computers & education, 51(1), 187-199. https://doi.org/10.1016/j.compedu.2007.05.001
- Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration?. Educational technology research and

development, 53(4), 25-39. https://doi.org/10.1007/BF02504683

- Guven, I., & Gulbahar, Y. (2020). Building a Digital Learning
 Culture by Rethinking Pedagogies for the 21st Century.
 In Developing Technology Mediation in Learning
 Environments (pp. 150-170). IGI Global. 10.4018/9781-7998-1591-4.ch009
- Hechter, R. P., & Vermette, L. A. (2013). Technology integration in K-12 science classrooms: an analysis of barriers and implications. Themes in Science and Technology Education, 6(2), 73-90.
- Hennessy, S., D'Angelo, S., McIntyre, N., Koomar, S., Kreimeia, A., Cao, L., ... & Zubairi, A. (2022). Technology use for teacher professional development in low-and middle-income countries: A systematic review. Computers and Education Open, 3, 100080. https://doi.org/10.1016/j.caeo.2022.100080
- Huynh, P. H. (2021). Enabling circular business models in the fashion industry: The role of digital innovation. International Journal of Productivity and Performance Management, 71(3), 870-895. https://doi.org/10.1108/IJPPM-12-2020-0683
- Kabir, F., & Chowdhury, S. (2017). Arsenic removal methods for drinking water in the developing countries: technological developments and research needs. Environmental Science and Pollution Research, 24, 24102-24120. https://doi.org/10.1007/s11356-017-0240-7
- Kent, M. L., & Saffer, A. J. (2014). A Delphi study of the future of new technology research in public relations. Public relations review, 40(3), 568-576. https://doi.org/10.1016/j.pubrev.2014.02.008
- Khasawneh, M. A. S. (2023). Self-Adjustment of Gifted Students to Parental Treatment. Journal of Namibian Studies: History Politics Culture, 33, 2155-2165. https://doi.org/10.59670/jns.v33i.836
- Khasawneh, M. A. S. (2023). SOCIAL ATTITUDE OF CHILDREN
 WITH SPECIAL NEEDS IN THE LEARNING
 PROCESS. Journal of Southwest Jiaotong
 University, 58(2). https://doi.org/10.35741/issn.0258-2724.58.2.57

Khasawneh, M. A. S. (2023). THE RELATIONSHIP BETWEEN INTELLECTUAL EXTREMISM AND SOCIAL VALUES AMONG SAUDI UNIVERSITY STUDENTS. Journal of Southwest Jiaotong University, 58(2). https://doi.org/10.35741/issn.0258-2724.58.2.58

- Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023). The Potentials of Artificial Intelligence in Stimulating Motivation and Improving Performance of Undergraduates in Foreign Languages. Journal of Namibian Studies: History Politics Culture, 34, 7059-7077.
- Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023). The Roles of Formulaic Sequences and Discourse Markers in Academic Writing; Insights from Lecturers and Other Researchers. Journal of Namibian Studies: History Politics Culture, 34, 7102-7122.
- Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023).
 Uncovering The Impact of Mindfulness-Based
 Interventions on Digital Distractions in The Learning
 Environment. Journal of Namibian Studies: History
 Politics Culture, 34, 7147-7163.
- Khasawneh, Y. J. A. (2023). An Investigation of Pre-Service
 Teacher Preparation Programs in Teacher Education
 and Co-Teaching Models.
 https://doi.org/10.18576/isl/120714
- Khasawneh, M. (2021). The effect of using a language games-based electronic program on acquiring oral expression skills among people with learning difficulties in English language during COVID-19 pandemic. MANAZHIM, 3(2), 136-150. https://doi.org/10.36088/manazhim.v3i2.1109
- Khasawneh, M. A. (2021). The effectiveness of a training program based on Erikson's theory in developing independence skills among students with learning disabilities in Jordan. Jurnal Ilmu Sosial dan Ilmu Politik Malikussaleh (JSPM), 2(2), 109. https://doi.org/10.29103/jspm.v2i2.4969
- Khasawneh, M. A., & Khasawneh, Y. J. (2023). Achieving assessment equity and fairness: Identifying and eliminating bias in assessment tools and practices. https://doi.org/10.20944/preprints202306.0 730.v1

Khasawneh, Y. J., Alsarayreh, R., Ajlouni, A. A., Eyadat, H. M., Ayasrah, M. N., & Khasawneh, M. A. (2023). An examination of teacher collaboration in professional learning communities and collaborative teaching practices. Journal of Education and e-Learning Research, 10(3), 446-452. https://doi.org/10.20448/jeelr.v10i3.4841

- Knezek, G., & Christensen, R. (2009, March). Preservice educator learning in a simulated teaching environment.

 In Society for Information Technology & Teacher Education International Conference (pp. 938-946).

 Association for the Advancement of Computing in Education (AACE).

 https://www.learntechlib.org/primary/p/30726/.
- Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)?. Contemporary issues in technology and teacher education, 9(1), 60-70. https://www.learntechlib.org/primary/p/29544/.
- Lee, J., Hyeon, D. Y., & Hwang, D. (2020). Single-cell multiomics: technologies and data analysis methods. Experimental & Molecular Medicine, 52(9), 1428-1442.
- Mohamad Ahmad Saleem Khasawneh. (2023). The effect of learning patterns on achievement motivation among public school students. Journal of Namibian Studies: History Politics

 Culture, 33. https://doi.org/10.59670/jns.v33i.837
- Mouza, C. (2011). Promoting urban teachers' understanding of technology, content, and pedagogy in the context of case development. Journal of Research on Technology in Education, 44(1), 1-29. https://doi.org/10.1080/15391523.2011.10782577
- Ottenbreit-Leftwich, A., Liao, J. Y. C., Sadik, O., & Ertmer, P. (2018). Evolution of teachers' technology integration knowledge, beliefs, and practices: How can we support beginning teachers use of technology?._Journal of Research on Technology in Education,_50(4), 282-304. https://doi.org/10.1080/15391523.2018.1487350
- Ozkan, M., Nayak, S. P., Ruiz, A. D., & Jiang, W. (2022). Current status and pillars of direct air capture technologies. Iscience.

- ISSN: 2197-5523 (online)
- Papanastasiou, Y., & Savva, N. (2017). Dynamic pricing in the presence of social learning and strategic consumers. Management Science, 63(4), 919-939. https://doi.org/10.1287/mnsc.2015.2378
- Saleem Khasawneh, M. A. (2021). Training program on developing reading skills in the English language among students with learning difficulties. Revista EDUCARE UPEL-IPB Segunda Nueva Etapa 2.0, 25(1), 84-101. https://doi.org/10.46498/reduipb.v25i1.1445
- Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK) the development and validation of an assessment instrument for preservice teachers. Journal of research on Technology in Education, 42(2), 123-149. https://doi.org/10.1080/15391523.2009.10782544
- Selwyn, N. (2010). Looking beyond learning: Notes towards the critical study of educational technology. Journal of computer assisted learning, 26(1), 65-73. https://doi.org/10.1111/j.1365-2729.2009.00338.x
- Smith, E. E., Kahlke, R., & Judd, T. (2020). Not just digital natives: Integrating technologies in professional education contexts. Australasian Journal of Educational Technology, 36(3), 1-14. https://doi.org/10.14742/ajet.5689
- Teo, T., Lee, C. B., Chai, C. S., & Wong, S. L. (2009). Assessing the intention to use technology among pre-service teachers in Singapore and Malaysia: A multigroup invariance analysis of the Technology Acceptance Model (TAM). Computers & Education, 53(3), 1000-1009. https://doi.org/10.1016/j.compedu.2009.05.017
- Tondeur, J., Scherer, R., Siddiq, F., & Baran, E. (2017). A comprehensive investigation of TPACK within preservice teachers' ICT profiles: Mind the gap!. Australasian Journal of educational technology, 33(3). https://doi.org/10.14742/ajet.3504
- Wang, H., Ge, S., Lipton, Z., & Xing, E. P. (2019). Learning robust global representations by penalizing local predictive power. Advances in Neural Information Processing Systems, 32.