

Gender-Based Intentions to Adopt Digital Teaching Tools Among Teachers in Terengganu

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ABSTRACT - The 21st century has seen a growing integration of digital technology across various sectors, including education. Despite its increasing relevance, the adoption of technology in Malaysian education faces ongoing challenges, particularly among teachers. Common issues include limited ICT proficiency, inadequate training, and insufficient infrastructure, especially in rural areas. This study aims to assess teachers' intention to adopt digital teaching tools and examine potential gender-based differences. Using a cross-sectional and correlational research design, the study involved 188 teachers from Terengganu, selected through convenience sampling. Data were collected via a structured questionnaire and analysed using descriptive statistics and independent t-tests. The results indicate a generally high intention to adopt digital tools among teachers, with a statistically significant difference between male and female respondents. Male teachers showed a greater inclination toward technology adoption than their female counterparts. These findings highlight the importance of addressing gender-related factors to strengthen digital integration in schools. Identifying disparities in adoption intentions offers valuable insights for policymakers and educational stakeholders working to support equitable and effective technology use in Malaysian classrooms. Overall, this research contributes to the expanding body of knowledge on educational technology integration within the field of business education. It emphasises the need for targeted strategies to overcome gender-specific barriers, improve teacher readiness, and promote inclusive access to digital tools. Enhancing digital competencies in a gender-responsive manner is essential for preparing business educators to meet the demands of modern, technology-driven learning environments.

INTRODUCTION

The 21st century has experienced a significant integration of digital technology throughout various industries, including education. This global transformation has resulted in the implementation and enhancement of digital tools that now infiltrate all tiers of educational settings, from early childhood education to higher education institutions (Nizar et al., 2024). This kind of technological improvement has transformed the political, economic, social, and educational domains, rendering digital technologies indispensable in the global teaching and learning process (Islahi, 2019). The modern period of sovereign nations, particularly characterised by the advent of Artificial Intelligence (AI) and digital interconnectivity, has prompted several individuals to embrace technology.

Failure to do so may result in difficulties in obtaining information, engaging in the digital economy, and keeping up with societal and professional progress.

Notwithstanding these gains, sustainable and equal access to high-quality education continues to be a global concern. Teachers are pivotal among stakeholders in promoting effective education, especially in the adoption and integration of innovative pedagogical methods (Singh et al., 2021). In reaction to the changing educational environment, various initiatives have arisen to facilitate the integration of digital education following the Fourth Industrial Revolution (Noor et al., 2024). Thus, teachers are urged to transition their teaching methodologies from conventional techniques to more dynamic digital pedagogies (Maphalala et al., 2022). Incorporating technology into teaching allows teachers to create a more interactive and enjoyable classroom environment, sparking curiosity and increasing students' motivation to learn (Olawoyin & Adeniji, 2025).

Malaysia has addressed these global trends by advocating for the digitalisation of its educational system. The Ministry of Education Malaysia (MOE), in partnership with Google, launched the Google Classroom (GC) platform to enhance digital learning and foster pedagogical innovation among teachers (Alakrash & Razak, 2021; Jiew et al., 2022). These initiatives demonstrate the nation's dedication to conforming to global educational standards and improving the teaching-learning environment via technology. The benefits of technology in teaching are extensively documented. It helps students in comprehending and retaining material more efficiently, and it fits effortlessly into classroom activities (Farella et al., 2020; Gómez-Trigueros, 2020). The COVID-19 pandemic, which commenced in 2020, significantly expedited the necessity for technological integration in education. The Movement Control Order (MCO) led to school closures, necessitating the extensive adoption of online learning platforms, rendering technology the sole feasible means to maintain academic continuity (Muhammad Ajwad & Harun Baharudin, 2021).

The integration of technology in Malaysian education continues to face numerous challenges. Teachers encounter persistent issues such as limited ICT proficiency, inadequate training, and insufficient infrastructure, particularly in rural areas (Kamaruddin, 2020; Sumarni, 2017; Masri & Mahamod, 2020; Shanmugam & Balakrishnan, 2020; Abdul Wahab et al., 2020). These barriers hinder not only the effectiveness of digital learning but also teachers' overall acceptance of educational technologies. One crucial yet often overlooked factor influencing technology acceptance is gender. Since the 1980s, researchers have debated the role of gender differences in shaping technology use and acceptance (Teo et al., 2015). It is recognised that male and female teachers may engage with educational technology in distinct ways, influenced by cognitive, psychological, or social factors. These factors will ultimately affect their willingness to adopt digital tools (Aruleba et al., 2022). Understanding these gender-based differences is vital for designing equitable and inclusive professional development programs and policy interventions that support effective technology integration in schools. Previous research has examined technology adoption across diverse contexts; however, a significant portion of the literature has concentrated on older demographics (Wang et al., 2017; Francis et al., 2019; Nikou et al., 2020), gender disparities within broader socio-economic frameworks (Obisesan, 2014; Bhandari, 2019; Mariscal et al., 2019), and the digital divide in rural areas (Zerihun et al., 2014; Awotide & Awoyemi, 2016; Iwuoha, 2018). Nevertheless, scant research has specifically investigated gender-based disparities in technology acceptability among teachers, particularly within the Malaysian setting, where digital pedagogy has swiftly proliferated following the COVID-19 pandemic.

This study examines the disparity in the adoption of digital technology between male and female teachers in Terengganu, Malaysia. In Terengganu, rural areas significantly outsize urban regions. If online education is not effectively implemented in these rural areas, it could widen the academic achievement gap between rural and urban students (Ahmad et al., 2022). Besides that, on November 9, the Terengganu State government and Huawei Malaysia entered into a Memorandum of Understanding (MoU) to collaborate on the State Digital Transformation Roadmap. This partnership enables the government to implement digital solutions across various sectors, including education, by leveraging IoT and AI-driven application platforms (Huawei, 2017). Despite this strategic collaboration, the level of digital technology adoption among teachers in Terengganu remains unanswered. It is pertinent to identify the level of digital technology adoption among teachers in Terengganu to determine whether the implementation of state-led digital initiatives is effectively reaching educators across all demographics, particularly in terms of gender. Such insights are essential for guiding future policy decisions and ensuring equitable access to digital resources in the education sector.

Based on Gender Schema Theory (Bem, 1981), the study examines how internalised gender may affect teachers' intentions to adopt technology into pedagogy. The study's objectives are as follows:

1. To determine the level of intention to adopt digital teaching tools among teachers in Terengganu.
2. To investigate the differences in intention to adopt digital technology between male and female teachers.

The study employs a quantitative method utilising the independent-samples t-test to furnish empirical evidence regarding gender discrepancies in intention to adopt digital teaching tools, hence aiding the formulation of more inclusive and successful educational technology policy.

LITERATURE REVIEW

2.1 Digital Technology

Digital technologies have transformed both the nature and reach of education, prompting education systems worldwide to develop strategies and policies for integrating information and communication technology (ICT) (Timotheou et al., 2023). These technologies refer to computer-based tools that present both general and subject-specific content, enable interaction with or around that content, and support teachers and/or students throughout the learning process (Stegmann, 2020). This broad definition includes tools ranging from simple content presentation software to complex, computer-supported collaborative learning systems (Sailer et al., 2021).

In response to their growing importance, governments across the globe have made significant investments in digital technologies for schools, aiming to ensure the successful integration of digital learning (Kearney et al., 2018). For instance, digital tools such as quizzes allow teachers to diversify instructional methods and make learning more engaging. Research highlights that teachers' fundamental digital skills are essential not only for the frequency of technology use in the classroom but also for enabling a broader variety of student learning activities. These basic skills form the foundation for effective digital integration in teaching (Sailer et al., 2021).

Previous studies (e.g., Biancarosa & Griffiths, 2012; Hutchison & Woodward, 2014) have shown that digital technology enhances students' skill development, supports differentiated instruction, and fosters curiosity and engagement. When introduced early in primary education, digital tools help create learning experiences that feel familiar and relevant to today's learners. Educators and researchers often view the use of digital tools as a practical application of ICT in educational settings (Spiteri & Rundgren, 2020).

Moreover, digital technology has become a central element in teaching subjects such as mathematics across primary, secondary, and tertiary levels (Clark-Wilson et al., 2020). It also holds significant potential for promoting inclusive education for all learners. When used to its full potential, digital technology can offer innovative contexts for teaching and learning (Sparks, 2019). Eklöf et al. (2017) emphasise the importance of introducing digital tools at an early stage, particularly to support students at risk of developing reading difficulties and to lay a strong foundation for continued digital learning throughout their education.

2.2 Theoretical Underpinnings of the Study and Hypothesis Development

Gender Schema Theory

Gender schema theory is a social-cognitive framework that explains how individuals in society are gendered from a young age and the influence of this gendering on their cognitive and categorical processing throughout their lives (Starr & Zurbriggen, 2017). Gender Schema Theory (Bem, 1981) posits that individuals internalise cultural definitions of gender through cognitive structures (schemas), which in turn shape their perceptions, attitudes, and behaviors, including those related to technology use. Bem (1981) posits that gender-schematic individuals are more inclined to categorise their

environment and govern their actions according to gender, while gender-aschematic individuals regard gender as a less significant category, resulting in a diminished tendency to organise information or modulate behaviour based on gender. In the context of this study, gender schema theory explains how male and female teachers may interpret and engage with digital technology differently, based on socially constructed gender norms. These schemas influence self-perceptions of technological competence, willingness to adopt digital tools, and even attitudes toward innovation in teaching practices. Therefore, the theory provides a room to hypothesise and interpret potential gender-based disparities in technology adoption.

Although past studies (Pandeya et al., 2025; Bigne et al., 2005; Serenko et al., 2006) found that gender is not significantly associated with technology adoption, many other studies (Guillén-Gámez & Mayorga-Fernández, 2020; Venkatesh et al., 2002; Lee et al., 2010) found that males and females differ in terms of technology adoption. Numerous studies indicate that men are more inclined than women to utilise technology (Venkatesh et al., 2002). Women are generally perceived as more sceptical about technological breakthroughs. Lee et al. (2010) discovered that women exhibit greater anxiety over technology. Previous research (Chatterjee et al., 2020; Smith et al., 2015) has indicated diminished technology adoption rates among women in rural regions. Goswami and Dutta (2015) emphasise that gender significantly influences the desire to utilise technology in specific circumstances, indicating a sophisticated comprehension of technology adoption that surpasses conventional binary categorisations (Goswami & Dutta, 2015). Farooqi et al.'s (2022) findings acknowledge the widening digital divide intensified by the COVID-19 pandemic, highlighting the necessity of resolving gender differences to attain universal digital access and alleviate negative effects on economic growth and social participation. These investigations acknowledge gender disparities in digital technology utilisation, necessitating deeper examination to comprehend these distinctions.

The significant study by Van Slyke et al. (2002) has demonstrated that men are more inclined to experiment with new things and technologies than women. Van Braak (2004) reported that males exhibited greater confidence in their computer skills compared to females. Moreover, women and men had divergent attitudes toward communication technology, including email (Phillip & Suri, 2004). Hence, it is posited that:

Research question: Is there a significant difference in the intention to adopt digital teaching tools between male and female teachers?

H1: There is a significant difference in intention to adopt digital teaching tools between male and female teachers.

METHODS AND MATERIALS

This study utilised a quantitative research approach to assess the intention to adopt digital technology among school teachers and to explore gender-based disparities in this intention. The methodology facilitated objective quantification and statistical analysis of variables. The study's population consisted of school teachers in Terengganu, Malaysia, a state located on the east coast of Peninsular Malaysia known for its strong cultural heritage, predominantly rural landscape, and evolving educational infrastructure. Terengganu presents a meaningful context for examining technology adoption in education, as schools in the state experience varying levels of access to digital resources, infrastructure, and professional development opportunities. These contextual characteristics make it particularly relevant for investigating how demographic and environmental factors, including gender, may influence teachers' readiness and intention to integrate technology into teaching and learning practices.

Gefen et al. (2011) suggested, this study utilised parameters of 80% power, a medium effect size, and a p-value of 0.05 to obtain a minimum sample size, and it depends on the number of predictors. In this study, 1 predictor is utilised. By considering the effect size 0.5, $\alpha = 0.05$, power = 0.80, 1 predictor, the minimum sample size of the study is 128 respondents. However, this study managed to obtain 188 respondents, which is more than the minimum number required. Hence, the sample size of the study is adequate to ensure sufficient statistical power for detecting significant effects, increasing the reliability and generalisability of the findings. This study also used a convenience sampling technique to select

participants who were readily accessible and willing to participate, facilitating efficient data collection within the available time and resources. Krause (2019) highlighted that the use of probability sampling becomes difficult when the sampling frame cannot be fully accessed. Hulland et al. (2018) emphasised that using a convenience sample is acceptable when the primary goal of a study is to evaluate the validity of proposed theoretical effects.

Data were gathered with a standardised questionnaire aimed at assessing teachers' intentions to use digital technology in teaching and learning. Three items adapted from Skoumpopoulou et al. (2018) were used to measure the intention to adopt digital technology. A 5-point Likert scale was employed in this study. According to Bouranta et al. (2009), 5-point Likert scales tend to be clearer for respondents and can lead to higher response rates. The study utilised a 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree) to evaluate participants' responses regarding their degree of intention. The questionnaire encompassed demographic variables like gender, district, school type, and years of teaching experience.

Data were analysed employing descriptive statistics and the Independent Samples t-test using SPSS version 26. Descriptive analysis was employed to encapsulate demographic data and the intention to adopt digital technology. The Independent Samples t-test was utilised to assess statistically significant differences in the intention to adopt digital technologies between male and female teachers. Table 1 shows the demographic profile of the respondents based on gender, district, type of school, and years of service. The highest number of respondents was female (52%), while males represented the lowest (41%). Among the districts, Setiu had the highest number of participants (25%), whereas Kuala Nerus and Kuala Terengganu recorded the lowest, each with 8.5%. In terms of school type, the majority of respondents were from secondary schools (58.5%), with fewer from primary schools (41.5%). Regarding years of service, most respondents had served between 11–15 years (45.7%), while the fewest had over 16 years of experience (14.9%).

Table 1. Demographic profile of the respondents

Profile	Frequency	Percentage
Gender		
Male	77	41
Female	111	52
District		
Besut	28	14.9
Dungun	18	9.6
Hulu Terengganu	19	10.1
Kemaman	21	11.2
Kuala Nerus	16	8.5
Kuala Terengganu	16	8.5
Marang	23	12.2
Setiu	47	25
Types of School		
Primary	78	41.5
Secondary	110	58.5
Years of Service		
0-5 Years	36	19.1
6-10 Years	38	20.2
11-15 Years	86	45.7
16 and above	28	14.9

Before testing the hypothesis, reliability and normality tests were conducted to assess the data's normality and reliability. Reliability testing assesses the consistency of the questionnaire to ascertain whether the items on the scale measure the same construct. Mohammad-Pajooh (2014) proposed that overall internal consistency is deemed satisfactory when Cronbach's alpha exceeds 0.60. George and Mallery (2003) established the following guidelines: > 0.9 – Excellent, > 0.8 – Good, > 0.7 – Acceptable, > 0.6 – Questionable, > 0.5 – Poor, and < 0.5 – Unacceptable. Table 2 shows that the Cronbach's alpha value for the intention to adopt digital technology is 0.927, indicating a high level of reliability.

Table 2. Reliability results

Variables	Cronbach Alpha	No. of items
Intention to adopt technology	0.927	3

Additionally, a normality test was conducted to verify that the research data were normally distributed, thereby allowing for the subsequent t-test analysis. Table 3 illustrates that the items measuring the intention to adopt digital tools were normally distributed, as the values of skewness and kurtosis fell within the acceptable range of -2 to +2. Hence, the inferential analysis can be conducted.

Table 3. Normality Results

Variable	Skewness	Kurtosis
Intention to adopt technology	-.753	1.877

Statistical inference comprises two types of tests, namely parametric and non-parametric analyses. Parametric tests are statistical procedures that assume the data follow a specific distribution, usually a normal distribution. If the data are not normally distributed, non-parametric analysis needs to be performed (Kim, 2015). In this study, the independent samples t-test was employed since it aimed to compare the mean scores between two independent groups, namely male and female teachers, in terms of their intention to adopt digital teaching tools. Previous research (e.g., Obidallah et al., 2024; Abdul Aziz et al., 2018) reported p-values greater than 0.05 in independent t-tests, indicating that the differences were not statistically significant. In the present study, a statistically significant difference in the use of digital teaching tools between male and female teachers would be indicated if the p-value from Levene's test is less than 0.05.

RESULTS AND DISCUSSIONS

To recap, this study attempts to ascertain two objectives:

1. To determine the level of intention to adopt digital teaching tools among teachers in Terengganu.
2. To investigate the differences in the intention to adopt digital teaching tools between male and female teachers.

This study utilised a descriptive analysis to determine the intention to adopt digital teaching tools among school teachers in Terengganu. Abu-Baker et al. (2019) specified the degree of estimation based on the values of the resulting means. They stated that a mean range of 1.00–1.80 is considered very low; 1.81–2.60, low; 2.61–3.40, average; 3.41–4.20, high; and 4.21–5.00, very high. Table 4 indicates that the intention to adopt digital technology among teachers in Terengganu is notably high, with a mean score of 4.087 (SD = 0.693) on a 5-point scale. This suggests that, on average, teachers had a high intention to adopt digital technology in the teaching and learning process.

Table 4. Level of intention to adopt digital teaching tools

Variable	N	Mean	SD
Intention to adopt technology	188	4.087	0.693

Besides that, an independent samples t-test was performed to investigate the differences in the intention scores of the two groups (male and female teachers). The assumption of homogeneity of variances was satisfied, as demonstrated by Levene's test, $F(1, 185) = 2.60, p = .109$. A statistically significant difference in intention scores was seen between the groups, $t(185) = 2.42, p = .017$. The independent t-test revealed a significant difference between the mean scores of male ($M = 4.242, SD = 0.702$) and female respondents ($M = 3.979, SD = 0.669$), $t(186) = 2.603, p = .010$, regarding their intention to adopt digital technology in the teaching and learning process. This indicates that male

teachers exhibited a significantly higher level of technology adoption than their female counterparts, suggesting that gender may influence teachers' adoption of educational technologies.

Table 5. T-test results

Group	N	Mean	SD	t	P
Male	77	4.242	.702	2.603	.010
Female	111	3.979	.669		

The current study demonstrated a high level of intention to adopt digital technology among teachers, indicating a favourable disposition toward the integration of digital technologies in teaching and learning within schools. This finding aligns with the global trend of heightened technology acceptability in education, propelled by the acknowledged advantages of technology-enhanced learning environments (Almaiah et al., 2022; Teo, 2011; Hew & Brush, 2007). The readiness of teachers to embrace technology is essential for effective digital transformation in educational institutions, since teachers serve as pivotal facilitators in the integration of technology (Ertmer, 1999). In addition, the use of technology to facilitate learning is gaining acceptance across various educational institutions, as teachers believe it will help them accomplish their professional and personal tasks more efficiently (Sharma and Srivastava, 2020). Multiple elements may elucidate this elevated intention.

The expansion of digital infrastructure and governmental measures advocating for ICT in Malaysian education have certainly impacted teachers' preparedness and motivation. The Malaysian Ministry of Education's focus on digital literacy and platforms such as Google Classroom has afforded teachers enhanced exposure and assistance in employing technology (Jiew et al., 2022). The COVID-19 pandemic expedited the transition to online and blended learning worldwide, necessitating that teachers swiftly acclimatise to digital technologies, potentially reinforcing their commitment to ongoing technology utilisation after the pandemic (Hodges et al., 2020). Nonetheless, despite the elevated intentions, the actual integration of technology encounters obstacles, including inadequate ICT skills, restricted technical assistance, and infrastructural inequalities, particularly in rural regions.

The current study demonstrated a statistically significant disparity in the intention to adopt technology between male and female teachers in Terengganu, with male teachers exhibiting a greater level of intention. This corresponds with a wider corpus of work indicating that males are typically more predisposed to technology acquisition and utilisation (Lee et al., 2022; Acilar & Saebø, 2023). The increased utilisation of technological tools by male teachers may be ascribed to their elevated confidence, technical inclination, and enhanced perceptions of the utility of digital instruments.

A potential reason for this gap resides in the differing approaches to technology by male and female teachers. Campbell and Varnhagen (2002) observed that males frequently investigate and interact with technology initially, then seek methods to incorporate it into their instruction, while females typically emphasise pedagogical requirements and assess technology according to those needs. This pedagogical-first approach may lead to more cautious or selective technology adoption behaviours among female teachers.

Additionally, numerous studies indicate that females frequently encounter heightened obstacles to technology adoption, such as insufficient competence, unreliable systems, and restricted training opportunities (Zhou & Xu, 2007; Spotts et al., 1997). Such impediments may affect confidence and comfort levels, which are critical elements of technology adoption preparedness. Zhou and Xu (2007) noted that female teachers reported diminished comfort levels and reduced expertise with computer tools for instructional purposes, which may elucidate their relatively lower intention to embrace educational technologies.

Acilar and Sæbø (2023) highlighted that women are often perceived to use technology less frequently and intensively than men, and are more likely to experience anxiety when engaging with technologies that are culturally perceived as masculine. According to Khechine and Lakhali (2021), anxiety, often stemming from unclear instructions or past negative experiences, is a key predictor of continued technology adoption among women. This finding is supported by Cai et al. (2017), who noted that women generally exhibit higher levels of tech-related anxiety than men. This conclusion notably contradicts several prior studies. Antonio and Tuffley (2014) indicated that female teachers may exhibit

greater engagement with digital tools than their male counterparts. Wong and Hanafi (2007) similarly discovered no significant gender disparities in attitudes towards technology, indicating that gendered perceptions of technology adoption may fluctuate based on context, geography, or the particular digital tools assessed.

Technology acceptance models indicate that the perceived utility of technology significantly influences the propensity to utilise it. Park et al. (2019) established that this correlation is markedly more pronounced among males, suggesting that when technology corresponds with task demands, male users are more inclined to see its advantages and incorporate it into their professional activities. Ong and Lai (2006) and Kim (2010) discovered that males are more affected by perceived utility, whilst females are more impacted by ease of use, highlighting distinct motivational factors based on gender. This gender-based disparity can also be interpreted through the lens of established technology adoption theories, particularly the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). These models posit that perceived usefulness, perceived ease of use, and social influence are key determinants of behavioural intention to adopt technology. In this context, male teachers may exhibit stronger adoption intentions due to higher perceived ease of use and self-efficacy in engaging with digital tools. Conversely, female teachers may be more influenced by facilitating conditions and pedagogical alignment, thereby requiring clearer evidence of instructional value before integrating technology into their teaching practices.

Furthermore, within the Malaysian educational context, sociocultural factors and professional expectations may also shape differential engagement with technology. Variations in access to training, exposure to digital tools, and institutional support could contribute to differing confidence levels and adoption behaviours between male and female teachers. Therefore, targeted professional development programmes that emphasise both technical competence and pedagogical integration are essential to bridge this gap. Such initiatives should be designed to enhance teachers' confidence, provide hands-on experience, and align technological tools with meaningful instructional outcomes, particularly to support more cautious adopters in leveraging digital innovations effectively

The outcomes of this study indicate that although both male and female teachers are embracing technology, their intentions and the factors affecting their adoption vary. This highlights the necessity for gender-sensitive measures in professional development, encompassing tailored assistance, training, and mentoring opportunities that address the specific issues and constraints faced by female teachers. By cultivating equitable and supportive settings, school leadership and policymakers may facilitate the reduction of the gender gap in digital technology adoption and enhance the inclusive and effective integration of digital tools in the classroom.

This study enhances Gender Schema Theory (Bem, 1981) by empirically demonstrating the impact of gendered cognitive frameworks on technology adoption behaviours among teachers. Gender Schema Theory asserts that individuals internalise culturally established gender roles, which subsequently influence their behaviour, attitudes, and perceptions. This study reveals that male teachers exhibit a greater inclination to adopt technology than female teachers, indicating the influence of gendered schemas that socially prepare males to interact with technology more confidently and regularly.

The disparities in technology adoption intentions between genders underscore the necessity for tailored training programs that target the unique obstacles encountered by female teachers, including diminished self-assurance, perceived technical deficiencies, and insufficient expertise. Creating workshops that are more collaborative, helpful, and pedagogically structured may align more effectively with the professional orientations of female teachers. Educational leaders and governments must incorporate gender-equity perspectives when developing technology integration plans. This entails performing gender audits of training initiatives and digital adoption metrics, in addition to guaranteeing equitable involvement in technology-related leadership positions among teachers.

Beyond teacher-level factors, it is also important to consider the implications of technology adoption disparities on student learning experiences and outcomes. Teachers' willingness and ability to integrate technology meaningfully into their instruction directly influence students' opportunities to develop digital literacy, critical thinking, and collaborative skills essential for the 21st century. If disparities in technology adoption persist, students may experience unequal exposure to innovative teaching approaches, potentially affecting the quality and equity of learning across classrooms. Therefore, addressing gender-

related differences in technology integration is not merely a matter of teacher development, but also a critical step toward ensuring equitable student learning opportunities.

Furthermore, fostering a culture of inclusive digital competence among teachers contributes to the broader goal of preparing future-ready learners. When teachers model effective and confident use of technology, they not only enhance instructional delivery but also serve as role models for students in navigating digital environments responsibly and creatively. As such, reducing the gender gap in technology adoption can have a multiplier effect, benefiting not only educators but also the students they serve, and ultimately strengthening the overall effectiveness and inclusivity of the education system.

CONCLUSIONS

This study demonstrated a significant intention among teachers in Terengganu to include technology in teaching and learning, underscoring a predominantly favourable disposition towards digital integration in education. The results revealed a statistically significant gender disparity, with male teachers exhibiting a greater inclination to utilise technology than their female counterparts. This disparity may be affected by gender-related variations in confidence, perceptions of utility, and comfort in utilising digital tools.

It is essential to recognise that these differences are not inherently present but are instead influenced by contextual and experiential factors. Kirkpatrick and Cuban (1998) observed that the gender disparity in technology adoption diminishes when male and female teachers receive equal opportunities and comparable experiences in computer usage. The study's findings indicate that focused, gender-sensitive professional development and equal access to digital resources are essential for diminishing the gender gap and fostering inclusive technology integration in educational institutions. By recognising these disparities and resolving them through deliberate policy and practice, stakeholders can guarantee that all teachers, irrespective of gender, are equally equipped to leverage the promise of educational technology for enhanced teaching and learning.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHORS CONTRIBUTION

Mohd Rozaimy Ridzuan.: Conceptualization, Methodology, Software, Writing- Reviewing and Editing. **Che Nur Aznani Ahmad.:** Data curation, Writing- Original draft preparation.

AVAILABILITY OF DATA AND MATERIALS

Data available within the article or its supplementary materials.

DECLARATION OF GENERATIVE AI

During the preparation of this work, the author(s) used QuillBot to enhance the clarity of the writing. After using the QuillBot, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication.

ETHIC STATEMENTS

Not applicable.

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