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ARTIFICIAL INTELLIGENCE READINESS AND TEACHING SELF-EFFICACY IN HIGHER EDUCATION: THE MEDIATING ROLE OF DIGITAL SELF-EFFICACY

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Abstract

This study examined the relationship between faculty readiness for artificial intelligence (AI) applications and teaching self-efficacy among higher education faculty members, and tested whether digital self-efficacy mediated this relationship. Grounded in Bandura's Social Cognitive Theory, the study proposed that faculty readiness for AI applications would positively predict both digital self-efficacy and teaching self-efficacy, that digital self-efficacy would positively predict teaching self-efficacy, and that digital self-efficacy would mediate the relationship between AI readiness and teaching self-efficacy. A sample of 200 faculty members from higher education institutions completed self-report measures of AI readiness, digital self-efficacy, and teaching self-efficacy. Data were analyzed using descriptive statistics, Pearson correlation, multiple regression, and mediation analysis via the PROCESS macro. Results indicated that faculty readiness for AI applications significantly predicted teaching self-efficacy and digital self-efficacy, and that digital self-efficacy significantly predicted teaching self-efficacy. The regression model explained 58% of the variance in teaching self-efficacy. Mediation analysis confirmed that digital self-efficacy partially mediated the relationship between AI readiness and teaching self-efficacy, accounting for approximately 51% of the total effect. These findings suggest that faculty confidence in using digital technologies is a key mechanism through which AI readiness translates into stronger teaching self-efficacy, highlighting the importance of digital-skills training in faculty development programs.

Keywords: *artificial intelligence readiness, digital self-efficacy, teaching self-efficacy, higher education, mediation analysis*

Introduction

Artificial intelligence (AI) has emerged as one of the most influential technological developments of the twenty-first century. The integration of AI into higher education has transformed teaching, learning, assessment, and academic administration. AI-powered technologies such as intelligent tutoring systems, learning analytics, adaptive learning platforms, automated grading systems, and generative AI tools provide new opportunities for enhancing educational effectiveness and improving student learning experiences (Holmes et al., 2022; Zawacki-Richter et al., 2019). While the technology itself is increasingly sophisticated, its adoption within classrooms is not guaranteed unless educators feel prepared and supported. The psychological dimension of AI integration

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how teachers perceive, interpret, and emotionally respond to these tools thus becomes central (Ahmad & Rana, 2025).

Faculty members who possess the knowledge, skills, and confidence required for AI integration are more likely to use these technologies effectively in teaching and learning processes. Therefore, understanding the factors that contribute to successful AI adoption has become an important area of educational research.

Artificial Intelligence Readiness

Artificial Intelligence Readiness refers to an individual's preparedness, competence, and willingness to utilize AI technologies effectively within professional settings (Wang et al., 2023). Within higher education, AI readiness encompasses technological competence, confidence in interacting with students through AI-supported environments, and awareness of ethical considerations associated with AI implementation. Faculty members who demonstrate greater AI readiness are more likely to perceive AI as a useful educational resource and integrate it into instructional activities.

Recent studies have emphasized the importance of AI readiness in educational settings. Wang et al. (2023) reported that teachers who demonstrate higher levels of AI readiness exhibit stronger intentions to integrate AI technologies into classroom practices. Similarly, Ng et al. (2023) found that AI-related competencies contribute significantly to educators' ability to respond to technological innovations and digital transformation initiatives. As universities increasingly rely on AI-supported teaching methods, faculty readiness has become a critical determinant of successful technology adoption.

Digital Self-Efficacy

Digital Self-Efficacy refers to individuals' beliefs regarding their capability to effectively use digital technologies and solve technology-related problems (Ulfert-Blank & Schmidt, 2022). Derived from Bandura's concept of self-efficacy, digital self-efficacy reflects confidence in using technological tools to achieve desired outcomes. Individuals with strong digital self-efficacy are generally more willing to explore new technologies, adapt to digital environments, and engage in technology-enhanced activities.

Research consistently demonstrates that digital self-efficacy is associated with successful technology integration and professional performance. Hatlevik et al. (2018) found that teachers with higher levels of digital self-efficacy exhibited greater confidence in utilizing educational technologies and implementing innovative instructional strategies. Similarly, Scherer et al. (2021) reported that digital self-efficacy predicts technology acceptance and digital competence among educators.

Teaching Self-Efficacy

Teaching Self-Efficacy refers to teachers' beliefs regarding their ability to organize and execute teaching-related activities successfully (Tschannen-Moran & Hoy, 2001). It is considered one of the most influential psychological factors affecting instructional effectiveness, classroom management, and student engagement.

Teachers with high self-efficacy are more likely to implement innovative instructional practices, persist when facing challenges, and positively influence student achievement. Extensive evidence indicates that teaching self-efficacy contributes positively to educational outcomes. Klassen and Tze (2014) reported that teachers with higher self-efficacy demonstrate stronger instructional performance, greater job satisfaction, and increased commitment to teaching. As educational environments become increasingly digitalized, technological competence may play an important role in shaping teaching self-efficacy.

Literature Review

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Existing research suggests a positive relationship between AI readiness and teaching self-efficacy. Faculty members who feel prepared to integrate AI technologies are likely to demonstrate greater confidence in performing teaching-related responsibilities. Chiu et al. (2024) reported that AI competence is strongly associated with educators' professional confidence and instructional effectiveness. Similarly, Alhwaiti (2023) found that acceptance of AI applications positively influences faculty members' teaching self-efficacy.

Research also suggests that AI readiness contributes to digital self-efficacy. Faculty members who possess greater AI knowledge and technological competence often report stronger confidence in their digital abilities (Ng et al., 2023). Exposure to AI-related technologies provides opportunities for mastery experiences that strengthen efficacy beliefs and facilitate adaptation to technological innovations.

Furthermore, digital self-efficacy has been identified as an important predictor of teaching self-efficacy. Teachers who believe they can successfully use digital technologies are more likely to feel confident in engaging students, implementing instructional strategies, and managing classroom activities effectively (Yang et al., 2024). Consequently, digital self-efficacy may function as a mechanism through which AI readiness influences teaching self-efficacy.

Research consistently demonstrates that digital self-efficacy contributes to effective teaching practices and professional competence (Hatlevik et al., 2018). Teachers who feel confident using digital technologies are more likely to engage students, utilize diverse instructional strategies, and manage classroom activities successfully. Consequently, digital self-efficacy may positively influence teaching self-efficacy.

In Pakistan, the educators understanding of making sense of AI's role in their instructional practices has become essential in ensuring its ethical and successful use (Shahid et al., 2024). However study has reported that teachers often lack clarity regarding how to incorporate AI in meaningful manner in planning of lessons, assessment of students (Ahmed et al., 2024). Another barrier is availability of many new tools that leads to reluctance and exhaustion in adopting unfamiliar systems (Ahmad et al., 2024).

Nevertheless teachers with prior positive experiences using educational technology generally exhibit greater confidence in adopting more advanced systems like AI (Nafees et al., 2025). Another study reported that technological self-efficacy, positive attitudes, and perceived usefulness significantly enhance readiness, whereas AI-related anxiety and ethical concerns hinder it (Farooq, 2025). Anwar et al. (2025) reported in their study that digital teaching competence significantly impacts faculty career well-being and teacher self-efficacy. Teacher self-efficacy mediated the relationship between digital teaching competence and faculty career well-being, providing deeper insights into this linkage.

Qureshi et al. (2025) reported in his study on attitude of faculty members and their preparedness in utilizing AI in teaching in Pakistan. The results indicated that even though the faculty acknowledged the value of AI tools however their readiness to adopt them was restrained due to limited training, poor infrastructure, and ethical concerns. Attitude towards AI and perceived usefulness predicted readiness to use AI. Despite growing literature in Pakistan on AI readiness, teaching self-efficacy, and digital self-efficacy, no study has yet examined how digital self-efficacy mediates the relationship between teacher self-efficacy and AI readiness same manner as being explored in current study.

Theoretical framework

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The present study is grounded in Bandura's Social Cognitive Theory (SCT) (Bandura, 1986, 1997), which explains human behavior through the reciprocal interaction of personal factors, environmental influences, and behavioral outcomes. A central concept within SCT is self-efficacy, defined as an individual's belief in their capability to organize and execute actions required to achieve desired outcomes.

According to Bandura, individuals who possess strong efficacy beliefs are more likely to adopt new behaviors, persist when facing challenges, and perform effectively in demanding situations within educational settings, self-efficacy has been recognized as a significant predictor of teachers' instructional effectiveness, classroom management practices, and professional adaptability (Tschannen-Moran & Hoy, 2001). As educational institutions increasingly integrate artificial intelligence technologies into teaching and learning processes, faculty members are required to acquire new technological competencies and adapt to rapidly changing digital environments.

Social Cognitive Theory suggests that mastery experiences and perceived competence strengthen efficacy beliefs. Faculty members who perceive themselves as prepared to use AI technologies are likely to experience greater confidence when engaging with digital tools and technological systems. This confidence can be conceptualized as digital self-efficacy, which reflects individuals' beliefs regarding their ability to successfully perform technology-related tasks (Ulfert-Blank & Schmidt, 2022).

Based on Social Cognitive Theory, Artificial Intelligence Readiness was conceptualized as the independent variable, Teaching Self-Efficacy as the dependent variable, and Digital Self-Efficacy as the mediating variable. The theoretical model proposes that faculty members who demonstrate greater readiness for AI applications are likely to develop stronger digital self-efficacy beliefs, which in turn to higher levels of teaching self-efficacy. Therefore, Digital Self-Efficacy serves as an explanatory mechanism through which AI readiness influences teaching effectiveness.

H1: Faculty readiness for AI applications positively predicts teaching self-efficacy.
H2: Faculty readiness for AI applications positively predicts digital self-efficacy.
H3: Digital self-efficacy positively predicts teaching self-efficacy.
H4: Digital self-efficacy mediates the relationship between faculty readiness for AI applications and teaching self-efficacy.

Methodology

Research Design

The present study employed a quantitative cross-sectional research design to examine the relationship between study variables; AI Readiness, teaching self-and digital self-efficacy. A survey-based approach was adopted because it enables researchers to collect standardized data from a large number of participants and examine relationships among multiple variables simultaneously (Creswell & Creswell, 2018). The quantitative design was considered appropriate because the study aimed to test theoretically derived hypotheses and examine the predictive relationships among the study variables.

Participant

The sample consisted of 200 faculty members employed in higher education institutions. Participants needed to meet the following criteria to be included in the study: having teaching experience of minimum two years and to be able to read and understand English.

Sampling Technique

Participants were recruited using convenience sampling. This non-probability sampling technique was considered appropriate because it allowed access to faculty

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members who were readily available and willing to participate in the research (Etikan et al., 2016).

Instruments

Artificial Intelligence Readiness Scale (RAIS)

AI readiness was measured using the Readiness for Artificial Intelligence Applications Scale (RAIS), developed by Ramazanoglu and Akin (2025). They defined AI readiness as the cognitive, emotional, and behavioral state of an individual or organization that facilitates the adoption and effective use of AI technologies to achieve specific goals. This definition includes aspects such as technological self-efficacy, interpersonal interaction, and ethical awareness. The instrument consists of 19 items distributed across three dimensions: technology self-efficacy, interaction with students and ethical awareness. The scale was developed to assess educators' preparedness for utilizing artificial intelligence applications in educational settings. Participants responded to items using a Likert-type response format. Higher scores indicated greater readiness to integrate and utilize AI technologies within teaching practices. The Cronbach's alpha reliability coefficient of the RAIS, was found to be 0.892 (Ramazanoglu & Akin, 2025).

Digital Self-Efficacy Scale (DSE)

Digital Self-Efficacy was developed by Ulfert-Blank and Schmidt (2022). The instrument evaluates individuals' confidence in their ability to effectively use digital technologies and technological systems within professional environments. The scale assesses five dimensions: information and data literacy, communication and collaboration, digital content creation, safety, problem solving. Reliability, calculated via McDonald's Omega, was good at $\Omega = 0.84$ (Ulfert-Blank & Schmidt, 2022).

Teaching Self-Efficacy Scale (TSE)

Teachers' Sense of Efficacy Scale (TSES) developed by Tschannen-Moran and Hoy (2001) was used in current study. The instrument evaluates teachers' beliefs regarding their capability to perform teaching-related responsibilities successfully. The scale consists of three dimensions: student engagement, instructional strategies, classroom management. The Cronbach's alpha reliability coefficient of the TSE, was found to be 0.90 (Tschannen-Moran & Hoy, 2001).

Procedure

Data were collected using a structured questionnaire consisting of demographic information and the three study instruments. Participants were informed about the purpose of the research before participation. The questionnaire was distributed electronically and in person depending on accessibility and participant preference. Respondents were assured that their responses would remain confidential and anonymous. Participation was voluntary, and participants were informed that they could withdraw from the study at any stage. After collection of data the data were analyzed using the Statistical Package for the Social Sciences (SPSS). Prior to hypothesis testing, data screening procedures were conducted to identify missing values and ensure accuracy of data entry. Following analysis were used to draw meaningful conclusions: descriptive statistics, Pearson product-moment correlation analyses, multiple regression analyses and for mediation analysis Process Macro by Hayes was used.

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RESULTS

Table 5.1

Percentages and Frequencies of Demographic Variables of Participants (N = 102)

Variables	*f*	*%*
Age		
22-26	66	33
27 and more	134	67
Gender		
Male	92	46
Female	108	54
Type of Institute		
Government	98	49
Private	102	51
Teaching Experience		
2 years	38	19
3 years	80	40
4 years and more	82	41

Note: f= Frequency, % = Percentage

The table demonstrates the frequencies and percentages of the participants included in the study, including their age, gender, type of institute and teaching experience. 67% of the participants belonged to the age group of 27 and more, with majority of the participants were female 54%, and teaching at private institutes 51%.

Table 5.2

Descriptive Statistics and Alpha Reliabilities for all Study Variables (N = 102)

Scales	Items	□	M	SD	Skewness	Kurtosis	Range	
							Min	Max
TSE	12	.94	3.47	.976	.04	-.42	1.42	5.92
CM	4	.83	3.47	1.02	-.02	-.29	1.00	6.00
SE	4	.86	3.51	1.02	.06	-.33	1.25	6.00
IS	4	.89	3.43	1.03	.11	-.34	1.25	6.00
DSE	27	.95	3.43	.88	-.06	-.39	1.16	5.47
iSE	3	.81	3.45	.94	-.14	-.23	1.00	5.67
cSE	10	.89	3.43	.91	.02	-.46	1.00	5.50
dSE	4	.84	3.39	.94	-.09	-.23	1.00	5.75
sSE	5	.83	3.44	.93	.07	-.34	1.20	5.80
pSE	5	.87	3.46	.96	-.13	-.35	1.00	5.60
RAIS	19	.95	3.44	1.02	.05	-.38	1.21	5.90
tse	6	.83	3.44	1.06	-.03	-.54	1.00	5.83
si	7	.89	3.44	1.04	.07	-.37	1.14	5.86
ea	6	.89	3.43	1.03	.11	-.22	1.00	6.00

Note: □= Cronbach's Alpha, M=Mean, SD=Standard Deviation, TSE=teacher self-efficacy; se= student engagement; cm= classroom management; is=instructional

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strategies, DSE= digital self-efficacy, ise=information and data literacy; cSE = communication and collaboration; dSE =digital content creation; sSE = safety; pSE = problem-solving; RAIS= readiness for AI applications scale; tse=technology self-efficacy; is=interaction with students; ea=ethical awareness

Table 5.1 demonstrates the descriptive statistics and alpha reliabilities of all study variables included in the study. Reliability analysis of the study variables reported that study variables had high reliability, with mental health screening having reliability of .70, perceived mental health stigma scale having reliability of .89 with its subscales having following reliability, community behavior based stigma .71, , community perception based stigma .77 and community attitude based stigma .71, mental health literacy with a reliability of .78, attitude towards illness scale with a reliability of .878 and help seeking behavior scale with reliability of .71. The table also showed that univariate normality analysis confirmed that all the scores were normally distributed i.e., the value of skewness was less than 2. As for kurtosis, all the scores were normally distributed i.e., the value of kurtosis was less than 3.

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Table 5.3

Correlation Matrix for all the Variables used in the Study (N = 200)

Scales	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. TSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2. se	.95**	--	--	--	--	--	--	--	--	--	--	--	--	--
3. cm	.96**	.88**	--	--	--	--	--	--	--	--	--	--	--	--
4. is	.95**	.86**	.88**	--	--	--	--	--	--	--	--	--	--	--
5. DSE	.73**	.69**	.70**	.71**	--	--	--	--	--	--	--	--	--	--
6. ise	.66**	.63**	.63**	.63**	.92**	--	--	--	--	--	--	--	--	--
7. cse	.72**	.67**	.70**	.69**	.96**	.85**	--	--	--	--	--	--	--	--
8. dse	.67**	.64**	.63**	.66**	.95**	.85**	.89**	--	--	--	--	--	--	--
9. sse	.71**	.67**	.68**	.70**	.94**	.82**	.91**	.86**	--	--	--	--	--	--
10. pse	.69**	.66**	.67**	.66**	.95**	.86**	.90**	.87**	.87**	--	--	--	--	--
11. RAIS	.69**	.65**	.67**	.68**	.75**	.66**	.73**	.69**	.71**	.73**	--	--	--	--
12. tse	.68**	.64**	.66**	.67**	.74**	.65**	.72**	.69**	.71**	.72**	.97**	--	--	--
13. si	.68**	.63**	.66**	.66**	.73**	.64**	.72**	.68**	.69**	.73**	.98**	.93**	--	--
14. ea	.66**	.62**	.63**	.64**	.72**	.63**	.70**	.66**	.68**	.70**	.97**	.91**	.93**	--

Note: TSE=teacher self-efficacy; se= student engagement; cm= classroom management; is=instructional strategies, DSE= digital self-efficacy, ise=information and data literacy; cSE = communication and collaboration; dSE =digital content creation; sSE = safety; pSE = problem-solving; RAIS= readiness for AI applications scale; tse=technology self-efficacy; is=interaction with students; ea=ethical awareness

**p <0.01, *p<0.05

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The relationship among study variables was investigated using Pearson product-moment correlation coefficient. Pearson correlations were computed to examine relationships among teacher self-efficacy, student engagement, classroom management, instructional strategies, dimensions of digital self-efficacy, and AI-related variables (N = 200). All correlations were statistically significant at p < .01. The three subscales of teacher self-efficacy showed very strong positive intercorrelations. Student engagement, classroom management, and instructional strategies were highly correlated with each other, r = .86 to .88, _p < .01, and with the overall teacher self-efficacy scale, r = .95 to .96, p < .01. This suggests strong internal consistency among TSE components. The five dimensions of digital self-efficacy also demonstrated very strong positive correlations with each other, r_s = .82 to .95, _p < .01, and with the overall digital self-efficacy scale, r_s = .92 to .96, _p < .01. The highest correlation was between digital content creation and safety (r = .91, p < .01). The three RAIS subdimensions were extremely strongly intercorrelated: technology self-efficacy correlated with interaction with students at r = .93, p < .01, and with ethical awareness at r = .91, p < .01. Interaction with students and ethical awareness were also very strongly correlated, r = .93, p < .01. Each subdimension showed near-perfect correlations with the overall RAIS composite, r_s = .97 to .98, _p < .01, supporting the internal coherence of the RAIS scale.

Overall TSE showed a strong positive correlation with overall DSE, r = .73, p < .01, and with overall RAIS, r = .69, p < .01. Overall DSE was also strongly correlated with overall RAIS, r = .75, p < .01.

Table 5.4

Regression Analysis Predicting the Effect of Readiness for Artificial Intelligence Applications and Digital Self Efficacy towards Teacher Self Efficacy (N =200)

Variable	B	SE	*β*	*p*	95% CI	
					LL	UL
RAIS	.33	.07	.34	.000	.38	.68
DSE	.54	.08	.48	.000	.19	.46
R^2	.58					
ΔR^2	.59			.000		
F	139.57			.000		

Note: RAIS=readiness for AI application scale, DSE= digital self-efficacy, SE=Standard Error, N=600, CI= Confidence Interval, UL= Upper Limit; LL= Lower Limit;
***p<0.001.

The multiple regression model analyzed the effect of readiness for AI applications (and digital self-efficacy predict Teacher Self-Efficacy (N = 200). The tables reported that the model is statistically significant with, F = 139.57, p < .001, indicating that readiness for AI application and digital self-efficacy jointly provide a strong prediction of teacher self-efficacy. Readiness for AI applications came out as a significant positive predictor of teacher self-efficacy (B = .33, SE = .07, β = .34, p < .001). This indicates that higher readiness to use AI applications is associated with higher levels of teacher self-efficacy. A one-unit increase in readiness for AI application leads to an estimated 0.33 unit increase in teacher self-efficacy, holding digital self-efficacy constant. Digital self-efficacy also shows a significant positive effect (B = .54, SE = .08, β = .48, p < .001). This suggests that teachers with stronger confidence in their digital abilities tend to report substantially higher self-efficacy. Compared to readiness for AI application and digital self-

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efficiacy has a stronger standardized effect (β = .48), indicating that digital self-efficacy is more influential predictor in this model. The model explained a substantial proportion of variance in the outcome variable, R^2 = .58, meaning that 58% of the variance in teacher self-efficacy is accounted for by readiness for AI application and digital self-efficacy together.

Table 5.5

Mediating Role Digital Self-Efficacy between Readiness for Artificial Intelligence Application and Teacher Self-Efficacy (N=300)

Path	B	SE	*β*	t	p	95% CI	
						LL	UL
RAIS → DSE (a)	.65	.05	.75	15.88	< .001	.57	.73
DSE → TSE (b)	.54	.08	.34	6.95	< .001	.38	.68
RAIS → TSE (c′)	.33	.07	.48	4.87	< .001	.19	.46
RAIS → DSE → TSE	.34	.05	.36			.25	.45

Note RAIS=readiness for AI application scale, DSE= digital self-efficacy, TSE=teacher self-efficacy, *CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit*

****p < .001*

A mediation analysis was conducted to examine whether digital self-efficacy (DSE) mediated the relationship between readiness for AI applications (RAIS) and teacher self-efficacy (TSE) using a sample of N = 300. 1. Path a, that is direct effect RAIS → DSE: RAIS significantly predicted DSE, B = 0.65, SE = 0.05, β = .75, t = 15.88, p < .001, 95% CI [0.57, 0.73]. This indicates that higher AI readiness is associated with higher digital self-efficacy. The effect is large. Path b, DSE → TSE: DSE significantly predicted TSE while controlling for RAIS, B = 0.54, SE = 0.08, β = .34, t = 6.95, p < .001, 95% CI [0.38, 0.68]. Teachers with higher digital self-efficacy reported higher general teaching efficacy.Path c', direct effect RAIS → TSE: After controlling for DSE, RAIS still significantly predicted TSE, B = 0.33, SE = 0.07, β = .48, t = 4.87, p < .001, 95% CI [0.19, 0.46]. 2.

The indirect effect of RAIS on TSE through DSE was significant, B = 0.34, SE = 0.05, β = .36, 95% CI [0.25, 0.45]. Because the 95% confidence interval does not include zero, the indirect effect is statistically significant. This was likely tested with bootstrapping, as is standard in mediation.

Because both the direct effect, c', and the indirect effect were significant, DSE partially mediated the relationship between RAIS and TSE. The total effect would be c = c' + ab = 0.33 + 0.34 = 0.67. Of the total effect, about 50.7% (0.34/0.67) was mediated through DSE.

In short teachers who are more ready to use AI applications tend to have higher digital self-efficacy, which in turn is linked to higher general teacher self-efficacy. However, AI readiness also has its own direct link to teacher self-efficacy even after accounting for digital skills. So DSE explains part but not all of why AI-ready teachers feel more efficacious.

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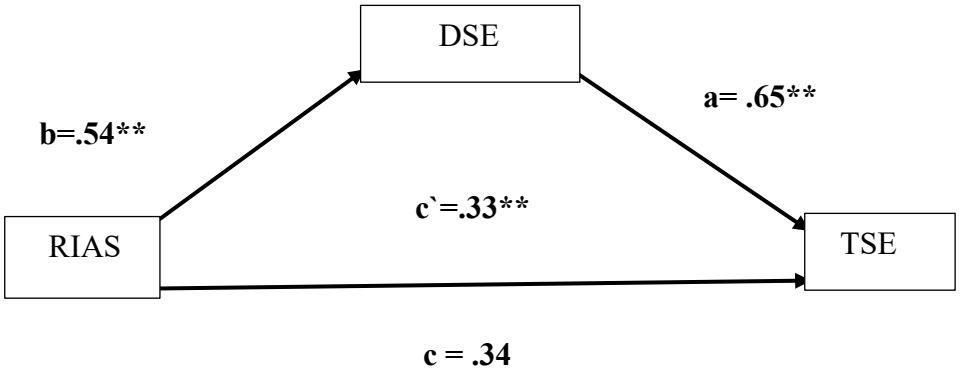


Table 5.6

Independent Samples T-test for Comparison of Study Variables on Genders (N = 200)

Variables	Gender				t	*p*	CI 95%		Cohen's
	Male		Female				LL	UL	
	M	SD	M	SD	(198)				d
RAIS	3.38	.99	3.47	1.02	-.67	.50	-.38	.18	.09
DSE	3.42	.82	3.43	.93	-.02	.97	-.24	.24	.01
TSE	3.48	.92	3.44	1.02	.33	.73	-.22	.31	.04

Note: = Mean; SD= Standard Deviation; P= Significance; LL= Lower Limit; UL = Upper Limit, RAIS=readiness for AI application scale, DSE= digital self-efficacy, TSE=teacher self-efficacy

Independent samples t-tests were conducted to compare male and female teachers on readiness for AI applications (RAIS), digital self-efficacy (DSE), and teacher self-efficacy (TSE). The sample included N = 200 participants. An independent samples t-test revealed no significant gender differences in RAIS, t(198) = -.67, p = .50, d = -.09; DSE, t(198) = -.02, p = .97, d = -.01 and TSE, t(198) = 0.33, p = .73, d = .04. Furthermore Cohn's d values as per Cohen (1988) .20 = small, .50 = medium, .80 = large, all d values reported are < |0.10|, that is negligible.

Discussion

The present study examined the relationship between Artificial Intelligence Readiness, Digital Self-Efficacy, and Teaching Self-Efficacy among faculty members working in higher education institutions. Furthermore, the study investigated whether Digital Self-Efficacy mediated the relationship between Artificial Intelligence Readiness and Teaching Self-Efficacy. The findings provided support for all four proposed hypotheses and highlighted the importance of AI readiness and digital competencies in enhancing educators' teaching confidence.

The first hypothesis proposed that Artificial Intelligence Readiness would positively predict Teaching Self-Efficacy. The findings supported this hypothesis, indicating that faculty members who reported greater readiness for AI applications also demonstrated higher levels of teaching self-efficacy. This finding suggests that educators who feel prepared to utilize AI technologies are more confident in their ability to engage students, implement instructional strategies, and manage classroom activities effectively. This result is consistent with previous studies demonstrating that technological readiness contributes positively to teachers' professional confidence and instructional effectiveness (Chiu et al., 2024; Alhwaiti, 2023). As higher education institutions increasingly adopt AI-supported technologies, faculty members who possess the knowledge and skills required for AI integrationmay feel better equipped to address instructional challenges and adapt to evolving educational demands. The finding also supports Bandura's Social

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Cognitive Theory (1986, 1997), which emphasizes that perceptions of competence contribute significantly to efficacy beliefs and subsequent performance.

The second hypothesis proposed that Artificial Intelligence Readiness would positively predict Digital Self-Efficacy. The findings revealed a strong positive relationship between these variables, indicating that faculty members who reported greater readiness for AI applications also possessed stronger confidence in their digital capabilities. This finding is theoretically meaningful because AI readiness requires familiarity with technological systems, digital tools, and technology-enhanced learning environments. The result is consistent with previous research suggesting that technological competence and readiness contribute to stronger digital efficacy beliefs (Ng et al., 2023). Faculty members who are comfortable using AI technologies are likely to experience successful interactions with digital systems, which strengthen their confidence in performing technology-related tasks. According to Social Cognitive Theory, mastery experiences represent one of the strongest sources of self-efficacy beliefs. Therefore, successful engagement with AI technologies may enhance educators' perceptions of digital competence and contribute to stronger digital self-efficacy.

The third hypothesis proposed that Digital Self-Efficacy would positively predict Teaching Self-Efficacy. The findings supported this hypothesis, demonstrating that faculty members with stronger digital self-efficacy reported higher levels of teaching self-efficacy. This finding suggests that confidence in using digital technologies contributes significantly to educators' perceptions of their teaching capabilities.

The result is consistent with previous studies indicating that digital self-efficacy facilitates technology integration, instructional innovation, and effective teaching practices (Hatlevik et al., 2018; Scherer et al., 2021). Faculty members who feel confident using digital tools may be more willing to adopt innovative teaching strategies, utilize educational technologies effectively, and engage students through technology-enhanced learning experiences. Consequently, confidence in digital abilities appears to play an important role in strengthening overall teaching effectiveness.

The fourth hypothesis proposed that Digital Self-Efficacy would mediate the relationship between Artificial Intelligence Readiness and Teaching Self-Efficacy. The mediation analysis supported this hypothesis, indicating that Digital Self-Efficacy served as a significant mechanism through which AI readiness influenced teaching self-efficacy. The indirect effect was statistically significant, demonstrating that faculty members who reported greater readiness for AI applications tended to develop stronger digital self-efficacy, which subsequently enhanced their teaching self-efficacy. The mediation finding is particularly important because it provides insight into the psychological process underlying the relationship between AI readiness and teaching effectiveness. While AI readiness directly contributes to teaching self-efficacy, a substantial portion of its influence operates through educators' confidence in their digital capabilities. This finding aligns closely with Bandura's Social Cognitive Theory, which proposes that efficacy beliefs function as cognitive mechanisms linking knowledge and competence to behavioral outcomes.

The mediation result also extends previous literature by identifying Digital Self-Efficacy as an important explanatory variable within AI-related educational research. Although previous studies have examined technology readiness and self-efficacy independently, relatively few investigations have explored how digital efficacy beliefs explain the influence of AI readiness on teaching outcomes. Therefore, the present study contributes to the growing literature on AI

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integration in higher education by demonstrating the importance of digital self-efficacy as a mediating mechanism.

Overall, the findings suggest that successful AI integration within higher education requires more than technological infrastructure alone.

Faculty members must possess the readiness, confidence, and digital competencies necessary to utilize AI technologies effectively. Universities seeking to promote technology-enhanced teaching should therefore focus on strengthening both AI readiness and digital self-efficacy through targeted professional development initiatives, technological training programs, and institutional support mechanisms.

The findings of the present study contribute to the growing body of knowledge regarding artificial intelligence adoption in educational settings and provide empirical evidence supporting the role of efficacy beliefs in explaining technology-related educational outcomes. As AI technologies continue to transform higher education, understanding the factors that influence educators' readiness and confidence will remain essential for ensuring successful implementation and sustainable educational innovation.

Practical Implications

The findings of the present study offer several important practical implications for higher education institutions. First, the significant relationship between Artificial Intelligence Readiness and Teaching Self-Efficacy suggests that universities should invest in initiatives that enhance faculty preparedness for AI integration. Professional development programs focusing on AI literacy, AI-supported instructional design, and responsible AI usage may increase educators' confidence and effectiveness in teaching.

Second, the strong association between Artificial Intelligence Readiness and Digital Self-Efficacy highlights the importance of developing faculty members' digital competencies. Institutions should provide continuous training opportunities that strengthen technological skills and familiarize educators with emerging digital tools. Such initiatives may facilitate successful adaptation to rapidly evolving educational technologies.

Third, the mediating role of Digital Self-Efficacy suggests that faculty development programs should not only focus on technical knowledge but also emphasize confidence-building Workshops involving hands-on training, collaborative learning activities, and practical technology applications may help faculty members develop stronger digital efficacy beliefs and improve teaching outcomes.

Finally, policymakers and university administrators should recognize that effective AI implementation requires both technological infrastructure and human readiness. Providing adequate institutional support, technological resources, and training opportunities may facilitate successful integration of AI technologies within higher education environments.

Limitations

Despite its contributions, the present study has several limitations that should be considered when interpreting the findings.

First, the study employed a cross-sectional research design, which limits the ability to establish causal relationships among the variables. Although significant associations were observed, longitudinal studies are needed to examine how AI readiness, digital self-efficacy, and teaching self-efficacy develop over time.

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Second, the study relied on self-report measures. Participants' responses may have been influenced by social desirability bias or subjective perceptions. Future research may benefit from incorporating objective assessments of technological competence and teaching effectiveness.

Third, participants were recruited using convenience sampling. Although this approach facilitated data collection, it may limit the generalizability of the findings. Future studies should consider probability sampling techniques to improve representativeness.

Fourth, the study focused exclusively on faculty members working in higher education institutions. Consequently, the findings may not generalize to school teachers, trainers, or educators working in other educational contexts.

Future Research Directions

Several directions for future research emerge from the present findings.

First, future studies should employ longitudinal research designs to examine how AI readiness influences digital self-efficacy and teaching self-efficacy over extended periods. Such studies would provide stronger evidence regarding causal relationships among the variables.

Second, researchers may investigate additional mediating and moderating variables that influence the relationship between AI readiness and teaching outcomes. Variables such as technology acceptance, organizational support, innovation readiness, and digital literacy may provide further insights into the mechanisms underlying successful AI integration.

Third, comparative studies across different educational sectors, countries, and cultural contexts would enhance understanding of how contextual factors influence AI adoption and teaching effectiveness.

Finally, qualitative and mixed-method research approaches may provide deeper insights into faculty experiences, challenges, and perceptions regarding the use of artificial intelligence in higher education.

Conclusion

The present study examined the relationship between Artificial Intelligence Readiness, Digital Self-Efficacy, and Teaching Self-Efficacy among faculty members in higher education institutions. Consistent with Bandura's Social Cognitive Theory, the findings demonstrated that faculty readiness for AI applications positively predicted both Digital Self-Efficacy and Teaching Self-Efficacy. Furthermore, Digital Self-Efficacy emerged as a significant predictor of Teaching Self-Efficacy and partially mediated the relationship between Artificial Intelligence Readiness and Teaching Self-Efficacy.

These findings suggest that faculty members who are prepared to utilize AI technologies are more likely to develop confidence in their digital capabilities and teaching competencies. As higher education institutions continue to adopt AI-supported technologies, strengthening faculty readiness and digital self-efficacy will become increasingly important for promoting effective teaching and successful educational innovation.

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