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Exploring The Mediating Role of Digital Literacy in Enhancing Economic Teacher Candidates' Readiness: Insight from Teacher Competence, Critical Thinking Skills, and Teaching Experience

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Sections Info	ABSTRACT
	Objective: Teacher readiness remains a critical issue in improving the quality of economics teacher education programs. This study aims to analyse the relationship between teacher competence, critical thinking skills, and teaching experience on the readiness of economics teacher candidates. Additionally, the study examines the mediating role of digital literacy in strengthening these relationships. **Method:** *This study employed a quantitative approach using covariance-based structural equation modelling (CB-SEM). Data were collected from 103 students of Economics Education Study Programs from both public and private universities in Java. The analysis was conducted using AMOS software version 30 to test the proposed hypotheses regarding the mediating effect of digital literacy on the relationships between teacher competence, critical thinking skills, teaching experience, and prospective teacher readiness.* **Results:** *The findings reveal that digital literacy plays a significant mediating role in enhancing the readiness of economics teacher candidates. In particular, digital literacy strengthens the relationship between teaching experience and prospective teacher readiness. Furthermore, competence and critical thinking skills also contribute positively to teacher readiness when supported by adequate digital literacy capabilities.* **Novelty:** *This study highlights digital literacy as a strategic mediator that integrates pedagogical competence, critical thinking, and teaching experience in preparing economics teacher candidates for digitally driven learning environments. The findings provide a new perspective for teacher education programs by emphasizing digital literacy development as a core component in strengthening prospective teacher readiness in the era of digital transformation.*

INTRODUCTION

In the rapidly evolving digital landscape, digital literacy has emerged as a critical competency for educators, particularly for prospective economics teachers (Huang, 2024). This transformational shift necessitates the integration of digital literacy skills within teacher education curricula to meet 21st-century demands (Grigorescu et al., 2021). However, the readiness of pre-service teachers remains a critical issue, determined by a combination of pedagogical competence, critical thinking skills, and practical teaching experience (Handayani et al., 2023). Research survey results indicate that fewer than 50% of students in education programs express an interest in pursuing a teaching career (Nagari et al., 2024). This challenge is further complicated by the fact that technology integration requires not only technical proficiency but also evaluative capabilities to assess the credibility of digital sources and implement innovative instructional strategies (Auziņa, 2018 ; Yang et al., 2022). This paper aims to explore the mediating role of digital literacy in enhancing the readiness of teacher candidates,

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focusing on the interplay between teacher competence, critical thinking skills, and teaching experience. Understanding this relationship is vital, as it contributes to the broader discourse on teacher preparation in the context of digital education.

The importance of digital literacy in education cannot be overstated. Digital literacy encompasses the ability to effectively use technology to communicate, collaborate, and solve problems (Fang et al., 2022). As the educational environment increasingly integrates technology, teachers must not only be proficient in using digital tools but also adept at fostering critical thinking among their students (Fajari et al., 2020). Research indicates that teachers who possess strong digital literacy skills are better equipped to engage students and enhance learning outcomes (Chama & A, 2023). Teachers with high digital literacy levels reported improved student engagement and achievement, highlighting the direct impact of these skills on educational outcomes. Recent studies further emphasize the necessity of digital literacy in teacher education. For instance, a study by (Falloon, 2020) found that integrating digital literacy training into teacher preparation programs significantly improved teachers' confidence and competence in using technology in the classroom. Similarly, a meta-analysis by (Lee & Chang, 2025) revealed that digital literacy is positively correlated with teachers' pedagogical effectiveness, suggesting that enhancing digital skills can lead to better teaching practices.

This study builds on existing literature that highlights the significance of teacher competence and critical thinking in shaping effective teaching practices. Teacher competence, defined as the combination of knowledge, skills, and attitudes necessary for effective teaching (Sutanto et al., 2023), is essential for delivering high-quality education. Furthermore, critical thinking skills enable teachers to analyse information, make informed decisions, and adapt their teaching strategies to meet diverse student needs (Ayu et al., 2024). A meta-analysis emphasizes that critical thinking is one of the most significant predictors of student success, yet the relationship between these factors and the role of digital literacy as a mediating variable remains underexplored (Rahayu et al., 2022).

Theoretical Framework and Hypothesis

This section integrates the theoretical foundations and previous empirical findings to build a conceptual model that explains the teaching readiness of prospective economics teachers. Social Learning Theory (SLT) and Technological Pedagogical Content Knowledge (TPACK) are references in developing a theoretical framework that places digital literacy as the main key in bridging competence, critical thinking skills, and teaching experience to the readiness of prospective teachers. This research argues that SLT Theory developed by Albert (Bandura, 1969; Bandura, 1971) and model of Technological Pedagogical and Content Knowledge (TPACK) can shape the readiness of prospective teachers in a digitally enriched learning environment. SLT Theory emphasizes the reciprocal interaction between personal factors, behaviour, and the environment. Within the framework of social learning, this process involves four key components: attention, retention, reproduction, and motivation (Jingwen et al., 2023).

Prospective teachers gain professional competence as a provision to become teachers not only through direct teaching but also by making observations, mentors, and

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also peers and exercises carried out. Digital literacy in the perspective of SLT emphasizes the existence of continuous digital practice, modelling the use of technology used in designing learning designs and through teaching experiences that provide a social and contextual environment of skills that were initially observed, designed, practiced until internalized. This SLT is equipped with the TPACK framework which includes content (CK), pedagogical knowledge (PK), and technological knowledge (TK). Within this framework, digital literacy is explicitly positioned as a core component of technological knowledge (TK). Prospective teachers with good digital literacy is better able to design meaningful learning activities because it can provide facilities in increasing student involvement and contribute more clearly to the level of teaching readiness. The integration of SLT and TPACK in this study provides a conceptual explanation of digital literacy as a socially acquired competency (through observation, interaction, and reinforcement activities during teaching experience) and the basic components of technological knowledge that interact in the TPACK model framework. This study contributes to the development of this theory by examining how economic education students, as pre-service teachers, require digital literacy and critical thinking as core professional competencies. Furthermore, it explores the influence of teaching experience and the social environment comprising lecturers, mentor teachers, and learning communities on their professional development.

Teacher competence and Digital Literacy

In this study, the variable of teacher competence refers to the integration of pedagogical, professional, social, and personality (Dewan Perwakilan Rakyat Indonesia, 2005 ; Daga, 2022; Suban Waikelak et al., 2023). According to research, instructors who possess digital competency are better able to plan, carry out, and evaluate technology-enhanced learning activities (Handayani et al., 2023). Digital literacy is incorporated into the TPACK (Technological Pedagogical Content Knowledge) paradigm as an essential component of teacher competency, connecting knowledge with practical pedagogy. Digital literacy refers to an individual's capacity to reflect basic knowledge regarding the concepts and the significance of digital literacy in daily life (Sugiarto & Farid, 2023). It also encompasses the ability to access information online, specifically the skills required to search for and retrieve relevant information effectively via the internet (Nabilla, 2025) Furthermore, digital literacy involves the capacity for critical thinking toward information, reflecting a student's ability to analyse, evaluate, and assess the veracity and credibility of digital sources (Lestari et al., 2024). Additionally, it includes digital communication proficiency, which is the skill of utilizing various digital media to interact, share, and convey information clearly and accurately (Zayas & Rofi'ah, 2022). Collectively, these dimensions serve as a vital foundation in establishing the readiness of pre-service economic teachers to adapt to the demands of technology-based instruction.

Critical thinking skills and Digital Literacy

Critical thinking, as defined by (Heard et al., 2020; Bassham et al., 2019), is the ability to interpret, analyse, evaluate, and infer information logically. In the digital age, this competence extends toward assessing online information credibility and adapting

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teaching strategies accordingly (Furbani et al., 2025a). Studies demonstrate that teachers with higher critical thinking dispositions are more capable of integrating digital tools to facilitate inquiry-based learning and problem-solving activities (Nyeneng et al., 2022). Today's digital learning, the ability to think critically is very important in filtering information, choosing learning media and utilizing technology with integrity. Therefore, critical thinking is an important tool in developing digital literacy of prospective teachers.

Teaching experience and Digital Literacy

School Field Experience (locally known as Introduction to School Field or PLP) is a pivotal activity designed to prepare professional pre-service teachers within undergraduate education programs. This program entails assignments where students implement their learning outcomes through classroom observations, the development of instructional materials, and supervised teaching practices in schools (Risdiany, 2021). The teaching experience gained through this program facilitates students in the Education Study Program to practice and refine their pedagogical skills before entering the professional workforce (Zuzandi, 2019). Prospective teachers will gain experience to apply pedagogic and technological knowledge directly through teaching experience. The more often using technology in conducting teaching experiences, it can increase the digital literacy of prospective teachers.

Digital literacy and Teacher readiness

Digital literacy is a key element in the TPACK framework that effectively integrates technology, pedagogy and content. Prospective teachers who have a high level of digital literacy will be better prepared to face modern learning such as the use of digital media, online learning and innovative pedagogic. Readiness pertains to the potential capability or capacity to perform a specific task, encompassing both physical and mental dimensions. According to Thorndike (Wahab & Rosnawati, 2021) the Law of Readiness posits that an organism's satisfaction is derived from the activation of 'conduction units.' These units generate the underlying predispositions that drive an organism to either engage in or abstain from a particular action (Rachmawati, Sahid, Mahmud, et al., 2024).

Competence, Critical Thinking, and Teaching Experience on Teaching Readiness

High teaching readiness is not only through digital literacy but also through teacher competence, critical thinking skills and teaching experience. With these elements, it can form the readiness of prospective teachers to be more professional in designing, maximizing and evaluating learning more effectively. The integration of SLT and TPACK is a conceptual framework that underlies the existence of digital literacy as a correlational mediation variable between teacher competence, critical thinking, and teaching experience based on the teaching readiness of prospective economics teachers.

RESEARCH METHOD
Research Design

This study employs a Covariance-Based Structural Equation Modelling (CB-SEM) design, utilized to validate the research constructs and test the proposed hypotheses. The

application of CB-SEM is predicated on the assumption that the research data is normally distributed. This study extends previous literature regarding the teaching readiness of economic education students (Nagari et al., 2024; Handayani et al., 2024). Empirically, this research examines the relationships between teacher competence, critical thinking skills, and teaching experience and their influence on the teaching readiness of pre-service teachers within the Economic Education Study Program. Furthermore, it examines the mediating role of digital literacy, which represents a significant departure and novel contribution compared to prior studies. This methodological approach is appropriate given its alignment with the research characteristics and objectives. Finally, ethical standards were maintained as all respondents provided informed consent prior to completing the questionnaire.

Sampling and Data Collection

Data were collected through online questionnaires using a stratified random sampling technique. The research population comprised Economic Education students from universities located on the island of Java, including state universities (State University of Malang, State University of Surabaya, University of Jember, and State University of Yogyakarta) and private universities (UPGRIS Semarang and Universitas Bhineka PGRI Tulungagung). The focus on Java-based universities was motivated by the fact that Java hosts the largest concentration of higher education institutions in Indonesia and demonstrates relatively advanced educational infrastructure, including greater exposure to digital and AI-supported learning environments (Welch & Aziz, 2024). The population was selected to ensure a heterogeneous representation at the institutional level, particularly in terms of university status (public and private), governance structures, and learning environments.

At the same time, all participating universities are located on the island of Java and operate under a relatively homogeneous national policy framework, including standardized curriculum regulations, accreditation systems, and digital learning policies. The combination allows for meaningful variation among institutions while maintaining contextual comparability across the sample. Nevertheless, because the study is situated within a specific geographic and policy context, the findings should be interpreted with caution when generalizing to higher education institutions outside Java or to regions with substantially different infrastructural and educational conditions. The research instrument was developed via Google Forms and distributed through WhatsApp and other social media platforms. Ethical considerations were strictly observed; all respondents provided informed consent after being informed of the study's objectives and assured of response confidentiality. The collection phase was conducted in July 2025, yielding an initial total of 117 responses. Outlier screening was subsequently performed using Mahalanobis distance analysis within AMOS 30, resulting in 103 valid questionnaires retained for further statistical analysis.

Instruments

The research instrument comprised closed-ended questionnaires, where respondents were required to select from predefined response options. Measurement was conducted using a five-point Likert scale, designed to assess the variables of teacher competence, critical thinking skills, teaching experience, digital literacy, and the teaching readiness of

pre-service economic teachers. To ensure linguistic accuracy and conceptual equivalence, the instruments were adapted from previous literature and translated using the back-translation technique. The detailed operationalization of the instrument development is presented in the following table 1.

Table 1. Research Instrument

Variable	Variable Indicators	Note
Teacher Competence	1. Pedagogical Competence 2. Social Competence 3. Professional Competence 4. Personality Competence	(Agustini et al., 2019a) (Handayani et al., 2023)
Critical Thinking Skills	1. Ability to raise vital questions and formulate them clearly and precisely	(Maknun, 2020)
	2. Gather and assess relevant information 3. Reach well-reasoned conclusions 4. Make accurate decisions 5. Evaluate the credibility of sources 6. Identify cause-and-effect relationships 7. Communicate effectively with others in finding solutions	
Teaching Experience (PLP)	8. Academic Experience 9. Non-academic experience (supervising extracurriculars) 10. School Administration 11. Module development activities	(Rosali et al., 2019).
Digital Literacy	1. Understanding of digital literacy 2. Ability to access information online 3. Ability to think about information 4. Ability to communicate digitally	(Nagari et al., 2023)
Readiness to Become a teacher	1. Physical Condition 2. Knowledge (cognitive aspect) 3. Work Attitude 4. Teaching Skills (psychomotor aspect)	(Murtiningsih, 2014)

Data Collection and Processing Stage

Data analysis was conducted using a two-stage procedure consisting of the measurement model and the structural model within a covariance-based structural equation modelling (CB-SEM) framework. CB-SEM was selected because the primary objective of this study was theory testing and model confirmation rather than prediction, and the proposed model was relatively parsimonious and grounded in established theoretical relationships. In the first stage, the measurement model was evaluated to assess overall model fit, as well as construct validity and reliability. Model fit was examined using several goodness-of-fit indices, including Chi-square/df, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Incremental Fit Index (IFI), and the Root Mean Square Error of Approximation (RMSEA). Following Hair et al. (2021), acceptable model fit is indicated by a Chi-square/df value of less than 5; GFI, CFI, TLI, and IFI values greater than 0.90, and RMSEA value below 0.08. Convergent validity, composite reliability (CR), and construct validity were also assessed at this stage. As CB-SEM assumes multivariate

normality, data normality was evaluated prior to model estimation by examining the skewness and kurtosis values, which indicated acceptable levels of univariate normality. In the second stage, the structural model was used to test the hypothesized relationship and estimate mediation effects. All statistical analyses were performed using IBM SPSS AMOS 30 for Windows.

RESULTS AND DISCUSSION
Results
Demographic Results
The demographic profile of the participants is based on responses from 103 Economic Education undergraduate students across several institutions. These include state universities specifically State University of Malang, State University of Surabaya, University of Jember, and State University of Yogyakarta (UNY)—and private universities, including UPGRIS (Semarang) and Universitas Bhineka PGRI Tulungagung. The detailed demographic characteristics of the respondents are presented in the following table 2.

Table 2. Research Demographics

	Description	Percentage
1	**Gender**	
	Male	16.2%
	Female	83.8%
2	**Batch (Entry Year)**	
	2021	39.4%
	2022	18.2%
	2023	42.4%
3	**University of Origin**	
	State University of Malang	37.4%
	State University of Surabaya	23.2%
	University of Jember	24.2%
	Yogyakarta State University	7%
	UPGRIS Semarang	5%
	Bhineka University PGRI Tulungagung	3.2%

Measurement Model Assessment
The measurement model was evaluated through confirmatory factor analysis (CFA) to assess construct validity and reliability. All observed indicators loaded significantly on their respective latent constructs, with standardized factor loadings exceeding the recommended threshold of 0.50, indicating adequate convergent validity (Hair et al., 2020)Composite reliability (CR) and Cronbach's alpha values for all constructs were above 0.70, confirming internal consistency reliability. Average variance extracted (AVE) values also met acceptable criteria, and discriminant validity was established as the square root of AVE for each construct exceeded its correlations with other constructs. Table 3 primarily reports data normality statistics rather than a comprehensive measurement model assessment. Therefore, its interpretation is limited to confirming that skewness and kurtosis values fall within acceptable ranges, supporting subsequent SEM analysis.

Table 3. Measurement Model Assessment

Variable	min	max	Skew	Q.C.	Kurtosis	Q.C.
TR6	1.000	4.716	-.300	-1.243	-.303	-.627
TR3	1.000	4.631	-.236	-.977	-.148	-.306
TR1	1.000	4.610	-.431	-1.785	-.488	-1.011
TR5	1.000	4.698	-.348	-1.443	-.444	-.920
TR9	1.000	4.457	-.261	-1.082	-.241	-.498
TR18	1.000	4.795	-.174	-.722	-.013	-.027
TR13	1.000	4.594	-.463	-1.918	-.561	-1.163
TR12	1.000	3.756	-.297	-1.229	-.744	-1.542
the4	1.000	4.896	-.206	-.854	-.295	-.612
10	1.000	4.832	-.222	-.921	-.134	-.277
CT3	1.000	3.527	-250	-1.037	-1.020	-2.112
DL12	1.000	4.496	-.505	-2.092	-.515	-1.066
DL8	1.000	3.654	-.422	-1.747	-.853	-1.767
DL5	1.000	4.734	-.313	-1.297	-.384	-.796
DL3	1.000	4.317	-.431	-1.787	-.490	-1.014
DL2	1.000	4.450	-.629	-2.604	-.490	-1.015
CT13	1.000	4.896	-.206	-.855	-.246	-.509
CT11	1.000	3.860	-.156	-.646	-.514	-1.065
CT4	1.000	4.772	-.290	-1.202	-.442	-.916
22	1.000	3.901	-.407	-1.688	-.089	-.185
TE20	1.000	4.812	-.259	-1.075	-.457	-.947
the17	1.000	3.611	-.321	-1.328	-.906	-1.877
TC12	1.000	4.753	-.283	-1.171	-.721	-1.493
TC8	1.000	4.680	-.339	-1.403	-.823	-1.706
TC7	1.000	4.716	-.313	-1.298	-.762	-1.579
Multivariate					127.725	17.640

Table 4. Construct reliability and validity

Code	Construct	Loading Factor	CR	AVE
Teacher Competence (TC)	TC 7	0.752	0.813	0.593
	TC 8	0.809		
	TC 12	0.747		
Critical Thinking (CT)	CT 3	0.711	0.883	0.655
	CT 4	0.852		
	CT 11	0.810		
	CT 13	0.856		
Teacher Experience (TE)	THE 4TH	0.773	0.880	0.594
	THE 10TH	0.779		
	THE 17TH	0.786		
	THE 20TH	0.805		
	THE 22	0.708		
Digital Literacy (DL)	DL 2	0.688	0.839	0.513
	DL 3	0.692		
	DL 5	0.680		
	DL 8	0.715		
	DL 12	0.796		

Code	Construct	Loading Factor	CR	AVE
Teacher Readiness (TR)	TR 1	0.731	0.899	0.527
	TR 3	0.690		
	TR 5	0.756		
	TR 6	0.743		
	TR 9	0.725		
	TR 12	0.700		
	TR 13	0.731		
	TR 18	0.730		

Table 5. Fornell-Larcker Discriminant Validity

Construct	AVE	TC	CT	THE	DL	TR
TC	0.593	**0.770**				
CT	0.655	0.364	**0.809**			
THE	0.594	0.308	0.413	**0.771**		
DL	0.513	0.261	0.318	0.281	**0.716**	
TR	0.527	0.335	0.408	0.414	0.318	**0.726**

Structural Model

This study employed covariance-based structural equation modelling (CB-SEM) using AMOS 30 to test the proposed theoretical model (Hair et al., 2020). The selection of CB-SEM is closely aligned with the theoretical orientation of this study, which integrates Social Learning Theory (SLT) and the Technological Pedagogical Content Knowledge (TPACK) framework as its foundational lenses. Both theories emphasize structured relationships among latent constructs and require confirmatory testing to evaluate theoretically driven hypotheses. Specifically, CB-SEM is appropriate because this study aims to confirm the mediating mechanism of digital literacy—conceptualized as a manifestation of technological knowledge (TK) within TPACK—rather than merely predicting teacher readiness.

Preliminary data screening confirmed acceptable univariate and multivariate normality, satisfying key assumptions of CB-SEM. Although the sample size is moderate (n = 103), prior methodological literature indicates that CB-SEM remains robust for theory-testing models with adequate indicator reliability and model parsimony (Hair et al., 2021a). For the Confirmatory Factor Analysis (CFA) model presented in Figure 1, the fit indices yielded the following results: $ChiSq/df = 1.102$, $CFI = 0.982$, $TLI = 0.946$, $RMSEA = 0.032$, and $PCFI = 0.888$[4]. These indices indicate a model fit that aligns with established benchmarks and references (Narmaditya et al., 2024).
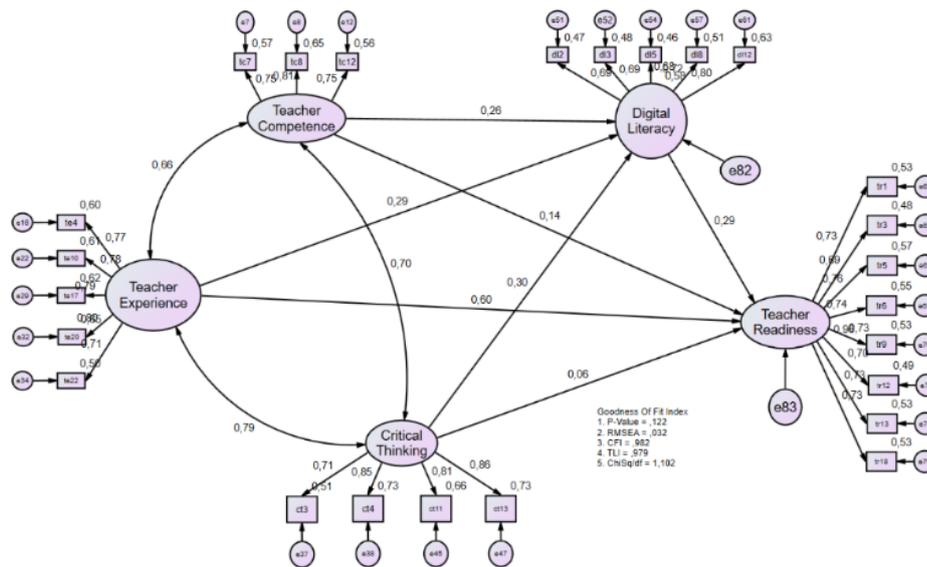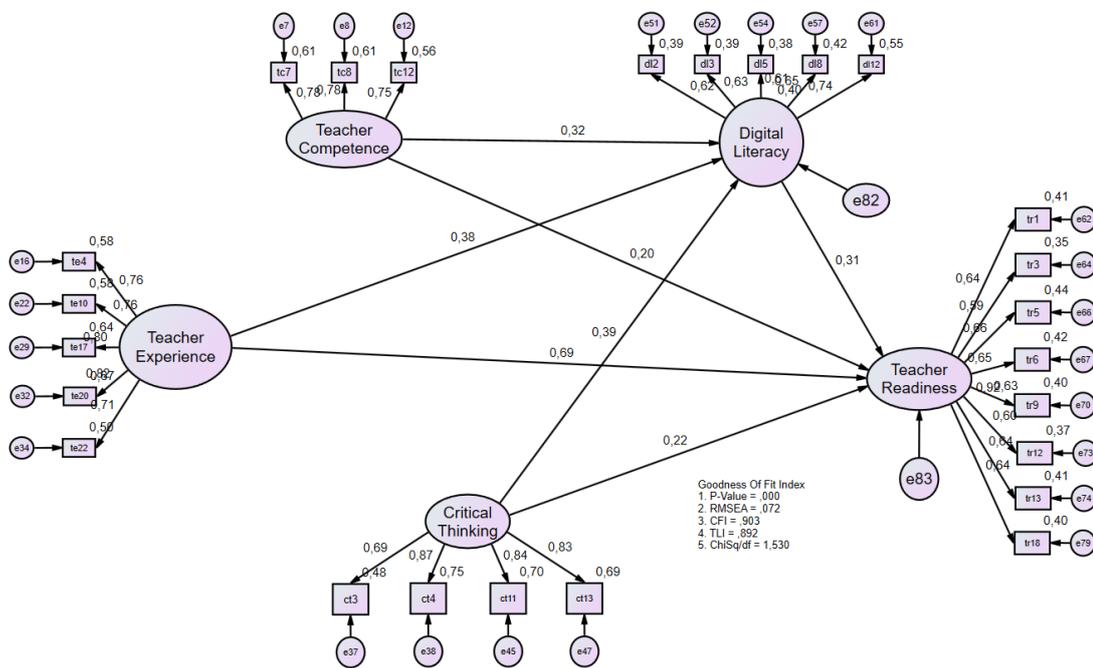
Figure 1. CFA Model

Figure 2. Structural Model

As illustrated in Figure 2, the fit indices yielded results ($ChiSq/df = $1.530, $CFI =$ $0.903, $TLI = $0.892, $RMSEA = $0.072, and $PCFI = $0.888), which indicate a model fit in accordance with established references (Narmaditya et al., 2024). Figure 2 presents the structural model with standardized path coefficients, where the numerical values on each path represent standardized regression weights indicating the magnitude and direction of the hypothesized relationships. Figure 2 presents the structural model with standardized path coefficients. The numerical values on the arrows represent

standardized regression weights, illustrating the strength and direction of relationships between constructs.

The structural model demonstrated an acceptable fit to the data based on multiple goodness-of-fit indices (Narmaditya et al., 2024), indicating that the theoretically derived model adequately represents the observed relationships among constructs. This finding supports the conceptual integration of SLT and TPACK proposed in the Introduction, wherein teacher competence, critical thinking skills, and teaching experience serve as antecedent conditions shaping teacher readiness.

The direct path analysis revealed that teacher competence and critical thinking skills have significant positive effects on teacher readiness. These results are theoretically consistent with TPACK, as pedagogical and cognitive capacities enable prospective teachers to translate content knowledge into effective instructional practices. Teaching experience, however, did not show a significant direct effect on readiness when digital literacy was included in the model, suggesting that experiential learning alone is insufficient unless accompanied by the development of technological knowledge. This pattern aligns with SLT, which posits that learning outcomes are strengthened when experience is reinforced through meaningful interaction with tools and social contexts (Bandura, 1969b).

Hypothesis Testing

In Table 6, the initial evaluation reveals that the regression weights for the endogenous variables are significant with (p<0.05). his indicates that all inter-variable relationships within the research model are statistically significant. First, teacher competence (TC) has a significant positive effect on digital literacy (DL) with an estimate of 0.224 (p = 0.024), indicating that higher teacher competence correlates with better digital literacy skills among pre-service economics teachers. Second, critical thinking skills (CT) also exert a significant influence on digital literacy with an estimate of 0.252 (p = 0.012). This result confirms that students' analytical and evaluative skills strengthen their ability to utilize digital resources.

Furthermore, teaching experience (TE) is proven to have a significant positive effect on digital literacy with an estimate of 0.280 (p = 0.016), meaning that more frequent involvement in teaching experiences leads to better mastery of using digital technology for pedagogical purposes. Additionally, digital literacy (DL) significantly influences teaching readiness (TR) with an estimate of 0.309 (p = 0.004), demonstrating that digital literacy is a vital factor in enhancing pre-service teachers' readiness to meet the demands of 21st-century learning. Other variables with a direct influence on teacher readiness include critical thinking skills (CT) with an estimate of 0.142 (p = 0.032), teaching experience (TE) with the highest estimate of 0.511 (p < 0.001), and teacher competence (TC) with an estimate of 0.143 (p = 0.035).

Overall, these findings confirm that the three independent variables (teacher competence, critical thinking skills, and teaching experience) have a direct effect on both digital literacy and teaching readiness. On the other hand, digital literacy is proven to be a mediating variable that strengthens these relationships, thereby affirming its strategic role in developing the readiness of pre-service economics teachers.

Table 6. Path analysis and Hypothesis testing

Relationship			Estimate	S.E.	C.R.	P	Decision
DL	<---	TC	.224	.099	2.254	.024	Significant
DL	<---	CT	.252	.100	2.521	.012	Significant
DL	<---	THE	.280	.116	2.414	.016	Significant
TR	<---	DL	.309	.107	2.873	.004	Significant
TR	<---	CT	.142	.066	2.150	.032	Significant
TR	<---	THE	.511	.096	5.311	***	Significant
TR	<---	TC	.143	.068	2.110	.035	Significant

Notes: *** = significant at p = 0.001

Mediation Effect Test
Mediation effects were examined using bootstrapping procedures with 5,000 resamples, following established recommendations for indirect effect testing (Hair et al., 2021a). In line with the mediation typology proposed by Zhao, Lynch, and Chen (2010), mediation was classified based on the statistical significance of both direct and indirect paths, allowing for clear distinctions between full mediation, partial mediation, and no mediation.

The results in Table 7 indicate that digital literacy fully mediates the relationship between teaching experience and teacher readiness. When digital literacy was introduced into the model, the direct effect of teaching experience on readiness became non-significant, while the indirect effect through digital literacy remained significant. This finding demonstrates that teaching experience contributes to readiness only insofar as it enhances prospective teachers' ability to acquire and apply digital skills. A mediation effect occurs when a mediating variable alters the relationship between the independent and dependent variables (Hair et al., 2021b).

Conversely, digital literacy partially mediates the relationships between teacher competence and readiness, as well as between critical thinking skills and readiness. In these cases, both direct and indirect effects were significant, suggesting that competence and critical thinking influence readiness both independently and through their contribution to digital literacy. These mediation patterns empirically substantiate the theoretical assumption articulated in the Introduction that digital literacy operates as a key mechanism linking foundational teacher attributes to professional readiness. Furthermore, partial mediation is identified when both the direct and indirect effects through the mediator remain statistically significant (Rachmawati, Sahid, & Mahmud, 2024). The results indicate varying levels of mediation across the tested paths.

Table 7. Mediation Test

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-Value	Decision
			Lower Bound	Upper Bound		
CT → DL → TR	0.223 (0.052)	0.122	0.007	0.303	0.077	No Effect
TC → DL → TR	0.204 (0.012)	0.098	0.019	0.281	0.024	Partial Mediation

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-Value	Decision
			Lower Bound	Upper Bound		
THE → DL → TR	0.692 (0.066)	0.117	0.029	0.291	0.020	Full Mediation

Notes: Value of indirect effects by bootstrapping standardized indirect effect estimate

Discussion

Teacher Competence and Digital Literacy

Based on the empirical findings, teacher competence significantly influences the digital literacy of pre-service economics teachers. This underscores the critical importance of pedagogical, professional, and social competencies in digital development. These results align with the Technological Pedagogical Content Knowledge (TPACK) framework (Agustini et al., 2019a) which emphasizes the integration of technological, pedagogical, and content knowledge. With higher levels of teacher competence, pre-service teachers are better equipped to implement digital platforms across instructional activities, ranging from planning and execution to evaluating learning outcomes. Digital literacy as part of teachers' professional competence is very important in preparing prospective teachers to face the demands of 21st-century learning (G. F. Anggraini et al., 2023) (Spante et al., 2018). With adequate competence, prospective teachers can optimize digital resources to improve the quality of teaching and learning.

This research demonstrates the significance and urgency of digital literacy for pre-service teachers in the 21st-century learning era. Such mastery pertains to the exploration and development of teaching materials, the enhancement of learning interactions, and the attainment of effective learning outcomes. Furthermore, other research indicates that educators with superior teacher competence will demonstrate higher proficiency in planning, implementing, and evaluating technology-enhanced learning activities. These competent educators are better equipped to engage students effectively and enhance overall learning achievement through the strategic use of digital tools. This suggests that enhancing pedagogical and professional skills directly leads to more effective and innovative teaching practices in the digital era.

Critical Thinking Skills and Digital Literacy

Critical thinking skills have been proven to contribute significantly to the readiness of prospective economics teachers to adopt digital literacy. Results indicate that the analytical, evaluative, and reflective abilities possessed by prospective teachers strengthen the effective and efficient use of digital technology.

This is in line with Bloom's theory (Elliot W. Eisner, 2000; Engelhart et al., 1956; Gonsalves, 2024; Nurmatova & Altun, 2023; Pujawan et al., 2022), which places critical thinking skills at a high cognitive level necessary for problem solving and decision making in the context of digital learning. Digital literacy involves not only technical skills, but also the critical ability to assess digital information sources and use them ethically and effectively (Furbani et al., 2025b; Salido et al., 2025). Therefore, developing critical thinking skills is key to improving prospective teachers' readiness to face the challenges of digital learning.

Teaching Experience and Digital Literacy

Teaching experience also plays an important role in the readiness of prospective economics teachers to integrate digital literacy into their teaching practices. CB-SEM data shows that more teaching experience correlates positively with higher levels of digital literacy. Teaching experience provides teachers with the opportunity to develop effective learning strategies, including the use of digital technology. Experienced teachers tend to be more adaptive to technological changes and able to overcome obstacles in the application of digital literacy(T. Anggraini et al., 2024). Thus, teaching experience is a supporting factor that strengthens prospective teachers' readiness to implement digital literacy optimally.

Mediation Role of Digital Literacy

Teacher readiness is an endogenous variable influenced by teacher competence, critical thinking skills, and teaching experience. Results indicate that these three variables simultaneously increase teacher readiness in adopting and implementing digital literacy. Parasuraman's (2000) theory of technology readiness (Technology Readiness Index) asserts that an individual's readiness to use technology is influenced by attitude, knowledge, and previous experience (Mao et al., 2026; Zhang, 2026). In the context of education, the readiness of prospective teachers is very important to ensure that they are able to use digital technology effectively in learning, thereby improving the quality of education and the relevance of learning to the needs of the times.

The findings of this study reinforce the central role of digital literacy as a theoretical and practical bridge between individual teacher attributes and professional readiness. From a Social Learning Theory perspective, the full mediation effect observed in the teaching experience–readiness relationship suggests that experiential learning during teaching practicum becomes meaningful only when prospective teachers actively observe, model, and receive reinforcement in the use of digital technologies (Bandura, 1977, 1986). Teaching experience thus provides a social and contextual arena in which digital literacy is cultivated, rather than a direct determinant of readiness.

Within the TPACK framework, these results empirically position digital literacy as a core component of technological knowledge (TK) that interacts dynamically with pedagogical and content knowledge ((Koehler et al., 2011). The partial mediation effects found for teacher competence and critical thinking skills indicate that while these attributes directly enhance readiness, their influence is significantly strengthened when integrated with digital capabilities. Competent and critically reflective teacher candidates are better equipped to evaluate digital tools, adapt instructional strategies, and design meaningful learning experiences—key outcomes emphasized in TPACK-oriented teacher education (Agustini et al., 2019b).

Importantly, these findings resonate with the Indonesian educational reform agenda, particularly the Merdeka Belajar policy, which encourages flexible, technology-integrated, and student-cantered learning environments (Damiati et al., 2024). The results suggest that teacher education programs should move beyond isolated skill training by embedding digital literacy development within teaching practicums, fostering critical reflection on digital pedagogy, and providing structured digital mentorship. Such

integrative approaches are likely to enhance the readiness of prospective economics teachers to meet the evolving demands of 21st-century education.

CONCLUSION

Fundamental Finding: This study confirms that teacher competence, critical thinking skills, and teaching experience are essential determinants of the readiness of pre-service economics teachers. The findings demonstrate that these three variables significantly influence both digital literacy mastery and teaching readiness. Moreover, digital literacy plays a crucial mediating role in strengthening the relationship between these factors and teacher readiness, particularly in the link between teaching experience and readiness. These results indicate that higher levels of digital literacy enable prospective teachers to better adapt to the demands and challenges of 21st-century learning environments. **Implication**: The implications of this study highlight the importance of integrating digital literacy development into teacher education curricula. Strengthening digital literacy can support the effective integration of pedagogical competence, critical thinking skills, and teaching experience with technological capabilities. Therefore, efforts to enhance the quality of economics teacher education should prioritize not only traditional pedagogical training but also the development of digital competencies that align with the evolving demands of digitally driven education systems. **Limitation**: This study is limited by the sample size and its focus on students from Economics Education Study Programs at universities in Java. Consequently, the findings may not fully represent teacher candidates from other regions, disciplines, or educational contexts. **Future Research**: Future studies are encouraged to expand the scope of research by involving larger and more diverse samples across different regions and teacher education programs. Further research may also explore additional variables, such as technological pedagogical knowledge, learning motivation, or institutional support, to provide a more comprehensive understanding of factors influencing prospective teacher readiness in the digital era.

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REFERENCES

Agustini, K., Santyasa, I. W., & Ratminingsih, N. M. (2019a). Analysis of Competence on "TPACK": 21st Century Teacher Professional Development. *Journal of Physics:*

Conference Series, *1387*(1). https://doi.org/10.1088/1742-6596/1387/1/012035

Agustini, K., Santyasa, I. W., & Ratminingsih, N. M. (2019b). Analysis of Competence on
    "TPACK": 21st Century Teacher Professional Development. *Journal of Physics:
    Conference Series*, *1387*(1). https://doi.org/10.1088/1742-6596/1387/1/012035

Anggraini, G. F., Sunendar, D., & Rahman. (2023). Meta-Analysis: Basic Education
    Literacy Issues in The 21st Century. *Pedagogia : Jurnal Pendidikan*, *12*(2), 137–153.
    https://doi.org/10.21070/pedagogia.v12i2.1489

Anggraini, T., Ahmad, M., & Hanafi, I. (2024). Digital Literacy and Teaching Experience
    as Predictors of Pedagogical Competence in the Digital Era. *Tarbawi: Jurnal Keilmuan
    Manajemen   Pendidikan*,   *10*(02),   295–306.
    https://doi.org/10.32678/tarbawi.v10i02.10795

Auziņa, A. (2018). Teacher Competences for Facing Challenges of Globalisation in
    Education. *Journal of Education Culture and Society*, *9*(2), 24–37.
    https://doi.org/10.15503/jecs20182.24.37

Ayu, N., Novitasari, D., & Shofwan, I. (2024). *The Effect of Educators ' Pedagogical
    Competence on the Critical Thinking Ability of Equivalency Education Learners*. *18*(1), 36–
    44.

Bandura, A. (1969a). Social-Learning Theory of Identificatory Processes. In *Handbook of
    socialization theory and research* (Vol. 213, p. 262).

Bandura, A. (1969b). Social-Learning Theory of Identificatory Processes. In *Handbook of
    socialization theory and research* (Vol. 213, p. 262).

Bandura, A. (1971). Social learning theory. In *Elgar Encyclopedia of Cross-Cultural
    Management* (pp. 1–46). https://doi.org/10.4337/9781803928180.ch33

Bassham, G., Irwin, W., Nardone, H., & Wallace, J. M. (2019). *Critical Thinking A student's
    Introduction*.

Chama, A., & A, S. (2023). Digital Literacy Skills of Teachers: A Study on ICT Use and
    Purposes. *Qeios, CC-BY 4.0*, (June 2023). https://doi.org/10.32388/hgcsud

Daga, A. T. (2022). Penguatan Peran Guru Dalam Implementasi Kebijakan Merdeka
    Belajar Di Sekolah Dasar. *ELSE (Elementary School Education Journal) Jurnal
    Pendidikan Dan Pembelajaran Sekolah Dasar*, *6*(1), 1–24.

Damiati, M., Junaedi, N., & Asbari, M. (2024). Prinsip Pembelajaran dalam Kurikulum
    Merdeka. *Journal of Information Systems and Management (JISMA)*, *3*(2), 11–16.

Dewan Perwakilan Rakyat Indonesia. (2005). Undang-Undang (UU) tentang Guru dan

Dosen Nomor 14. *Dewan Perwakilan Rakyat Indonesia*, 2.

Elliot W. Eisner. (2000). *Benjamin Bloom (1913-99)*.

Engelhart, M. D., Furst, E. J., & Krathwohl, D. R. (1956). *Taxonomy Of Educational Objectives The Classification of Educational Goals Handbook Cognitive Domain Longmans*.

Fajari, L. E. W., Sarwanto, & Chumdari. (2020). Student Critical Thinking Skills and Learning Motivation in Elementary Students. *Journal of Physics: Conference Series*, *1440*(1), 12104. https://doi.org/10.1088/1742-6596/1440/1/012104

Falloon, G. (2020). From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Educational Technology Research and Development*, *68*(5), 2449–2472. https://doi.org/10.1007/s11423-020-09767-4

Fang, Y., Paine, L., & Huang, R. (2022). Continuity and change: Chinese lesson study redefined in the context of key competencies-based reform. *International Journal for Lesson and Learning Studies*, *11*(2), 49–59. https://doi.org/10.1108/IJLLS-04-2022-0057

Furbani, W., Purnawanti, F., Dewi, A. E. R., Sari, N., & Thoriq. (2025a). Digital Literacy and Critical Thinking Skills of Students in the Era Industry 4.0. *Jurnal Wawasan Dan Aksara (JUWARA)*, *5*(1), 136–148.

Furbani, W., Purnawanti, F., Dewi, A. E. R., Sari, N., & Thoriq, T. (2025b). Digital Literacy and Critical Thinking Skills of Students in the Era Industry 4.0. *Juwara: Jurnal Wawasan Dan Aksara*, *5*(1), 136–148. https://doi.org/10.58740/juwara.v5i1.382

Gonsalves, C. (2024). Generative AI's Impact on Critical Thinking: Revisiting Bloom's Taxonomy. *Journal of Marketing Education*. https://doi.org/10.1177/02734753241305980

Grigorescu, A., Pelinescu, E., Ion, A. E., & Dutcas, M. F. (2021). Human capital in digital economy: An empirical analysis of central and Eastern European countries from the European Union. *Sustainability (Switzerland)*, *13*(4), 1–21. https://doi.org/10.3390/su13042020

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021a). *Evaluation of Formative Measurement Models*. https://doi.org/10.1007/978-3-030-80519-7_5

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021b). *Evaluation of Formative Measurement Models*. https://doi.org/10.1007/978-3-030-80519-7_5

Hair, J. F., Page, M., & Brunsveld, N. (2020). Essentials of Business Research Methods. In

Essentials of Business Research Methods (Fourth Edi). Routledge.
https://doi.org/10.4324/9781315704562

Handayani, S., Hussin, M., & Norman, H. (2023). Technological Pedagogical Content
Knowledge (TPACK) Model in teaching: A Review and Bibliometric Analysis.
Pegem Journal of Education and Instruction, *13*(3), 176–190.
https://doi.org/10.47750/pegegog.13.03.19

Handayani, S., Hussin, M., & Norman, H. (2024). Evaluating teaching readiness using the
TPACK model: factor, reliability and validity analyses for Indonesian economics
teacher candidates. *Perspektivy Nauki i Obrazovania*, *68*(2), 679–698.
https://doi.org/10.32744/pse.2024.2.41

Heard, J., Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020). Critical Thinking:
Definition and Structure. *Australian Council for Educational Research*, *3*(February), 1–
7.

Huang, D. (2024). Methods and approaches to strengthen the cultivation of digital literacy
and technical abilities of teachers. *2024 International Conference on Social Science,
Education and Management (ICSSEM 2024) Methods*, (Icssem), 34–39.
https://doi.org/10.25236/icssem.2024.007

Jingwen, Z., Talib, M. A., Jiajian, W., Cuiping, J., Xia, S., Lin, J., Lumpur, K., Talib, A.,
Jiajian, W., & Cuiping, J. (2023). Effects of Career Planning Education on Career
Readiness Among Undergraduates Based on Social Learning Theory. *Jurnal
Pendidikan Bitara UPSI*, *16*(16), 93–99.
https://doi.org/10.37134/bitara.vol16.sp2.9.2023

Koehler, M. J., Mishra, P., Bouck, E. C., DeSchryver, M., Kereluik, K., Shin, T. S., & Wolf,
L. G. (2011). Deep-play: Developing TPACK for 21st century teachers. *International
Journal of Learning Technology*, *6*(2), 146. https://doi.org/10.1504/ijlt.2011.042646

Lee, D. C., & Chang, C. Y. (2025). Evaluating self-directed learning competencies in digital
learning environments: A meta-analysis. *Education and Information Technologies*,
30(6), 6847–6868. https://doi.org/10.1007/s10639-024-13083-2

Lestari, S., Nurmalisa, Y., & Mentari, A. (2024). Pengaruh Literasi Digital dan Minat Baca
Terhadap Motivasi Belajar Generasi Z. *HEMAT: Journal of Humanities Education
Management Accounting and Transportation*, *1*(1), 22–30.

Maknun, J. (2020). Implementation of Guided Inquiry Learning Model to Improve
Understanding Physics Concepts and Critical Thinking Skill of Vocational High
School Students. *International Education Studies*, *13*(6), 117.
https://doi.org/10.5539/ies.v13n6p117

Mao, Z., Tong, S., Jiang, C., Yan, S., & Bai, Y. (2026). How university teachers' digital

literacy influences their innovative ability: a system dynamics theoretical modeling and simulation study. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1665337

NABILLA, G. D. (2025). Pengaruh Pengalaman Magang, Literasi Digital, Dan Modal Psikologis Terhadap Kesiapan Kerja. In *Fakultas Ekonomi Dan Bisnis Universitas Dinamika* (Vol. 11, Number 1).

Nagari, P. M., Handayani, S., Wati, A. P., & Abd Rahman, A. B. (2024). Are the Undergraduate Students Ready for K-economy? *KnE Social Sciences*, *2024*, 52–68. https://doi.org/10.18502/kss.v9i21.16663

Nagari, P. M., Sahid, S., & Hussin, M. (2023). Critical Success Factors for Enhancing Digital Literacy Among Undergraduate Students. *Pegem Journal of Education and Instruction*, *13*(4), 249–259. https://doi.org/10.47750/pegegog.13.04.30

Narmaditya, B. S., Sahid, S., & Hussin, M. (2024). The linkage between lecturer competencies and students economic behavior: The mediating role of digital and economic literacy. *Social Sciences and Humanities Open*, *10*(June), 100971. https://doi.org/10.1016/j.ssaho.2024.100971

Nurmatova, S., & Altun, M. (2023). A Comprehensive Review of Bloom's Taxonomy Integration to Enhancing Novice EFL Educators' Pedagogical Impact. *Arab World English Journal*, *14*(3), 380–388. https://doi.org/10.24093/awej/vol14no3.24

Nyeneng, I. D. P., Suyanto, E., Andra, D., & Elokanita, H. N. (2022). *Measuring Critical Thinking Skills with Online Instrument in Circular Motion Concept*. *10*(1). https://doi.org/10.20527/bipf.v10i1.11185

Pujawan, I. G. N., Rediani, N. N., Antara, I. G. W. S., Putri, N. N. C. A., & Bayu, G. W. (2022). Revised Bloom Taxonomy-Oriented Learning Activities To Develop Scientific Literacy And Creative Thinking Skills. *Jurnal Pendidikan IPA Indonesia*, *11*(1), 47–60. https://doi.org/10.15294/jpii.v11i1.34628

Rachmawati, D., Sahid, S., & Mahmud, M. I. (2024). Empowering Futures: Unveiling the Impact of Career Readiness on Job Seeker and Creator Through Self-Efficacy. *Journal on Efficiency and Responsibility in Education and Science*, *17*(4), 299–313. https://doi.org/10.7160/eriesj.2024.170403

Rachmawati, D., Sahid, S., Mahmud, M. I., & Buang, N. A. (2024). Enhancing student career readiness: a two-decade systematic literature review. *International Journal of Evaluation and Research in Education*, *13*(3), 1301–1310. https://doi.org/10.11591/ijere.v13i3.26485

Rahayu, S., Isnaeni, W., Masturi, M., & Semarang, U. N. (2022). *Journal of Innovative Science Education Critical Thinking Skills and Digital Literacy of High School Students in Science*

Learning Using E-Learning with STEM Vision. 11(37).

Risdiany, H. (2021). Pengembangan Profesionalisme Guru Dalam Mewujudkan Kualitas Pendidikan. *Jurnal AL-HIKMAH*, *3*(2), 194–202.

Rosali, E. S., Hadi, M. I., & Noviyanti, R. W. (2019). *Analisis Kesiapan Mahasiswa Pendidikan Geografi Dalam*. (December 2019), 76–85.

Salido, A., Syarif, I., Sitepu, M. S., Suparjan, Wana, P. R., Taufika, R., & Melisa, R. (2025). Integrating critical thinking and artificial intelligence in higher education: A bibliometric and systematic review of skills and strategies. In *Social Sciences and Humanities Open* (Vol. 12). Elsevier Ltd. https://doi.org/10.1016/j.ssaho.2025.101924

Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, *5*(1), 1–21. https://doi.org/10.1080/2331186X.2018.1519143

Suban Waikelak, K., Imam Mukhlis, & Wahyono, H. (2023). Analysis of Learning Systems Perspective of Economic Learning Programs. *International Journal Of Humanities Education and Social Sciences (IJHESS)*, 2(5), 1753–1760. https://doi.org/10.55227/ijhess.v2i5.481

Sugiarto, & Farid, A. (2023). Literasi Digital Sebagai Jalan Penguatan Pendidikan Karakter Di Era Society 5.0. *Cetta: Jurnal Ilmu Pendidikan*, *6*(3), 580–597. https://doi.org/10.37329/cetta.v6i3.2603

Sutanto, L., Subhekti, E. F., Sukoco, B. M., & Madyawati, S. P. (2023). Teacher Competency Development With Csct Model And PISA Framework Integration. *Airlangga Development Journal*, (4), 43–53.

Wahab, G., & Rosnawati. (2021). Teori-teori belajar dan pembelajaran. In *Paper Knowledge . Toward a Media History of Documents* (Vol. 3, Number April).

Welch, A., & Aziz, E. A. (2024). *Higher Education in Indonesia BT - International Handbook on Education in Southeast Asia* (L. P. Symaco & M. Hayden, Eds.; pp. 357–386). Springer Nature Singapore. https://doi.org/10.1007/978-981-16-8136-3_41-2

Yang, L., Martínez-Abad, F., & García-Holgado, A. (2022). Exploring factors influencing pre-service and in-service teachers´ perception of digital competencies in the Chinese region of Anhui. *Education and Information Technologies*, *27*(9), 12469–12494. https://doi.org/10.1007/s10639-022-11085-6

Zayas, J. D. M., & Rofi'ah, N. (2022). the Effect of Digital Literacy Skills on Improving Teacher Creativity. *INSECTA: Integrative Science Education and Teaching Activity Journal*, *3*(2), 168–174. https://doi.org/10.21154/insecta.v3i2.5100

Zhang, X. (2026). Leveraging social media for science education in China: teachers' integration practices, perceived benefits, and implementation barriers. *Research in Science and Technological Education*. https://doi.org/10.1080/02635143.2026.2620036

Zuzandi. (2019). Pengembangan Profesi Dan Karir Guru. *Ilmiah Manajemen Pendidik*, *13*(2), 88–99.

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