SCIENTIFIC CULTURE
www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 11, No. 3.2, (2025), pp. 439-446
Open Access. Online & Print

DOI: 10.5281/zenodo.11322533

CONTEXTUAL AMPLIFICATION: A MULTILEVEL ANALYSIS OF SCHOOL LOCATION'S ROLE IN SHAPING HIGH SCHOOL TEACHER READINESS FOR BLENDED LEARNING

Đỗ Thu Hà[1], Đặng Thị Thu Huệ[2*], Phan Thị Bích Lợi[3], Nguyễn Thị Thu[4], Lê Anh Tuấn[5], Nguyễn Minh Đức[6]

[1]The Vietnam National Institute of Educational Sciences, Vietnam. Email: hadt@vnies.edu.vn, https://orcid.org/0009-0001-2898-9629
[2]The Vietnam National Institute of Educational Sciences, Vietnam. Email: huedtt@vnies.edu.vn, https://orcid.org/0009-0001-9112-5786
[3]Affiliation: The Vietnam National Institute of Educational Sciences, Vietnam. Email: loiptb@vnies.edu.vn, https://orcid.org/0009-0002-4684-5896
[4]Affiliation: The Vietnam National Institute of Educational Sciences, Vietnam. Email: thunt@vnies.edu.vn, https://orcid.org/0009-0001-3879-4323
[5]Affiliation: The Vietnam National Institute of Educational Sciences, Vietnam. Email: tuanla@vnies.edu.vn
[6]Affiliaton: The Vietnam National Institute of Educational Sciences, Vietnam. Email: ducnm@vnies.vn, https://orcid.org/0009-0000-5218-5498

Received: 25/07/2025
Accepted: 25/08/2025

Corresponding Author: Đặng Thị Thu Huệ
(Email: huedtt@vnies.edu.vn)

ABSTRACT

The post-pandemic educational landscape has established Blended Learning (BL) as a core instructional modality. However, its effective implementation in Vietnam remains challenging, marked by a significant disparity between urban and rural regions. This study proposes a multilevel analytical model to examine the interactive relationship between individual-level teacher readiness factors (perceived competence, perceived benefits) and school-level contextual factors (geographic location, leadership support). Using survey data from 1,834 high school teachers of elective subjects nationwide, this research employs Multilevel Structural Equation Modeling (MSEM) to determine whether the school context (urban vs. rural/mountainous) moderates the impact of individual readiness on teachers' technology integration levels. The central hypothesis is that systemic barriers in rural areas significantly diminish the returns on teacher readiness. The analysis reveals that teacher readiness is the most potent predictor of technology integration. However, the study's core finding is that this positive effect is significantly moderated by school location; the relationship is stronger in urban settings and markedly weaker in rural areas. These findings provide empirical evidence that teacher-centric intervention policies, without addressing environmental constraints, will be insufficiently effective. The paper offers critical implications for educational policymakers and school leaders, underscoring the necessity of a dual-ecosystem approach: investing in infrastructure concurrently with enhancing teacher capacity.

KEYWORDS: Blended Learning, Teacher Readiness, Digital Divide, Multilevel Analysis, Urban-Rural, TPACK, UTAUT.

1. INTRODUCTION

The COVID-19 pandemic accelerated the digital transformation in global education, shifting Blended Learning (BL) from a niche option to a core component of the "new normal" (Anthony Jnr, 2024; Nguyen & Ha Van, 2024). In Vietnam, this imperative has become particularly acute with the implementation of the 2018 General Education Program, a sweeping reform emphasizing the development of learners' competencies and qualities (Dao et al., 2025). Within this context, BL is not merely a situational response but a strategic tool to realize the new curriculum's objectives, especially for "elective subjects" at the high school level. Here, BL can address challenges such as shortages of specialized teachers or the need to provide diverse learning options for students across different regions. Specifically, BL enables schools in disadvantaged areas to connect students with expert teachers in urban centers through online learning components, thereby overcoming geographical barriers and optimizing human resources.

Although policies and research often focus on enhancing "Teacher Readiness" as a key factor for successful technology integration (Al-araibi et al., 2019), a significant gap persists between teachers' innovative intentions and their actual classroom implementation, particularly in developing nations (Anthony Jnr, 2024; Pham et al, 2024; Tran et al., 2023). This discrepancy gives rise to a paradox: we invest in building the capacity of individual teachers, yet the resulting impact is often constrained by systemic barriers.

The concept of the "digital divide" helps to explain this paradox. The digital divide is not merely a disparity in access to devices and the Internet (a first-level divide) but a complex, multilevel phenomenon that also includes differences in digital skills, quality of use, and support systems (a second-level divide) (Büchi et al, 2015; Hargittai, 2002). The profound disparities in infrastructure, resources, and supportive environments between urban and rural areas in Vietnam are a clear manifestation of this second-level digital divide (Le et al., 2022a; Le et al., 2022b; UNESCO & UNICEF, 2021). Previous studies in Vietnam have highlighted specific challenges related to infrastructure and technical support in rural and mountainous regions (Pham et al., 2024; Tran, 2023).

The central problem of this study is that intervention policies focused solely on teachers will be insufficiently effective without accounting for the powerful moderating effect of the school's environmental context. Therefore, this study is designed to quantitatively test the interaction between individual-level and system-level factors.

The research questions are as follows:

1. To what extent do teacher-level factors (readiness, perceived benefits) and school-level factors (leadership support, geographic location) predict the level of technology integration?
2. How does the school's geographic context (urban vs. rural) moderate the relationship between individual teacher readiness and their actual technology integration practices?

2. THEORETICAL OVERVIEW AND HYPOTHESIS DEVELOPMENT

2.1. *From Technology Acceptance to Integration Competence*

Classic technology acceptance models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), have provided foundational frameworks for understanding users' intention to use technology. These models focus on individual psychological factors like performance expectancy, effort expectancy, and social influence. However, an inherent limitation of these models is that they often overlook a decisive factor in the educational context: the actual competence of teachers and the complex interplay of knowledge required to integrate technology effectively (Al-Adwan et al., 2024; Shen et al., 2024).

To address this limitation, the Technological Pedagogical Content Knowledge (TPACK) framework by Mishra and Koehler (2006) has been widely recognized globally as a more comprehensive approach to defining "teacher readiness." TPACK posits that true readiness is not just a positive attitude but the seamless integration of seven knowledge domains: Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), and their intersections (TPK, TCK, PCK), culminating in TPACK (Mishra & Koehler, 2006; Schmidt et al., 2009). In this study, the "Teacher Readiness" construct is theoretically reinterpreted as a proxy measure for "Perceived Technological and Innovative Competence," allowing the study's findings to be connected with the international scholarly literature on TPACK (Joshi, 2023; Li et al., 2021).

2.2. *Systemic Context and the Multilevel Digital Divide*

The final layer of this theoretical framework is the systemic context, conceptualized through the lens of the multilevel digital divide. The first-level digital divide refers to disparities in access to hardware and Internet connectivity, whereas the second-level digital divide pertains to disparities in skills, quality of use, and support systems such as technical assistance and professional learning communities (Hargittai, 2002; van Dijk, 2020).

The urban-rural divide in Vietnam is a stark manifestation of the second-level digital divide. Urban schools typically possess a more favorable ecosystem, including better infrastructure, more abundant resources, and stronger peer networks, which creates different conditions for technology adoption compared to rural schools (Li, 2025; Wu et al., 2025; Hohlfeld et al., 2008). This ecosystem not only provides favorable initial conditions but can also create a positive feedback loop: urban teachers who adopt technology are more likely to see its effectiveness, receive support and recognition from colleagues, and thereby further strengthen their motivation and skills. Conversely, barriers in rural areas can stifle initial efforts, creating a negative feedback loop that undermines the effectiveness of readiness.

2.3. Proposed models and hypotheses

Based on the synthesis of the above theoretical frameworks, this study proposes a Multi-Based on the synthesis of the above frameworks, this study proposes a Multilevel Technology Readiness and Acceptance Model (M-TRAM 2.0), which enhances traditional acceptance models (like UTAUT) by integrating the TPACK framework and adding a multilevel contextual factor to suit the research problem. This model situates individual factors within the school context and tests the following hypotheses:

Level 1 (Teacher Level)

H1: Teacher Readiness (Perceived Technological and Innovative Competence) will positively predict the level of Technology Integration.

H2: Perceived Benefits of BL will positively predict the level of Technology Integration.

Level 2 (School Level)

H3: Leadership support will positively predict the level of Technology Integration.

H4: The location of the school (Urban) will be positively related to the level of Technology Integration.

Cross-Level Interaction (Moderation)

H5: The positive relationship between Teacher Readiness (Level 1) and Technology Integration (Level 1) will be significantly stronger in urban schools (Level 2) than in rural schools (Level 2). This is the central hypothesis of the study.

3. METHOD

3.1. Participants and Procedure

This study employed a cross-sectional survey design with data from 1,834 teachers of elective subjects at high schools in Vietnam. A stratified cluster sampling method was applied across five provinces/cities representing geographical and economic diversity (Hanoi, Hoa Binh, Ha Tinh, Binh Phuoc, Soc Trang), including urban, rural, and mountainous areas. Data were collected from September 23, 2024, to October 6, 2024, via an online questionnaire distributed through official educational management channels, ensuring the sample's representativeness.

3.2. Measures

The main constructs in the model were operationalized using specific items from the survey, measured on a 5-point Likert scale:

Dependency variable: Technology Integration (4 items, e.g., "Designing lessons using Software"; α = 0.92).

Level 1 Independent Variable (Teachers): Teacher Readiness (3 items, e.g., "Ready to innovate teaching methods"; α = 0.91) and Perception of Benefits (4 items, e.g., "Students develop self-learning and IT skills"; α = 0.88).

Level 2 Independence Variable (School): Leadership Support (2 items, e.g., "School Leaders Always Support Innovation"; α = 0.89) and School Location (binary coded: 1 = Urban, 0 = Rural/Mountainous).

Control variables: Teacher demographic characteristics (Gender, Years of Service, Education Level) were included in the model to control for their influence.

3.3. Data Analytics Strategy

Due to the nested data structure (teachers within schools), Multilevel Structural Equation Modeling (MSEM) was used for data analysis (Heck & Thomas, 2015; Barile, 2015). MSEM allows for the simultaneous testing of relationships at different levels and cross-level interaction effects, while also correcting for measurement error by using latent variables.

The analysis process involved two steps: (1) Validating the measurement model using Confirmatory Factor Analysis (CFA) to ensure the validity and reliability of the scales; and (2) Testing the structural model to evaluate the research hypotheses.

4. RESULT

4.1. Sample Characteristics

The sample (N = 1834) consisted of 39.9% teachers from urban areas and 60.1% from rural/mountainous areas. The proportion of female teachers (66.6%) was higher than male teachers (33.4%). The majority of teachers had 10 to under 20 years of experience (59.5%) and held a Bachelor's degree (78.6%). Details are presented in Table 1.

Table 1: Demographic Characteristics of the Sample (N=1834).

Character	Classify	Frequency (n)	Rate (%)
School Location	Town	732	39.9
	Rural/Mountainous	1102	60.1
Gender	South	612	33.4
	Female	1222	66.6
Teaching seniority	Less than 10 years	191	10.4
	From 10 to less than 20 years	1092	59.5
	20 years or more	551	30.0
Education	Bachelor	1441	78.6
	Postgraduate	393	21.4

4.2. Measurement Model

CFA results indicated that the four-factor measurement model fit the data well ($\chi^2/df < 3$, CFI > 0.95, TLI > 0.95, RMSEA < 0.06, SRMR < 0.08). Table 2 shows that all scales met the standard criteria for composite reliability (CR) and average variance extracted (AVE), confirming convergent and discriminant validity.

Table 2: Reliability and Validity of Scales.

Construct	Cronbach's Alpha (α)	Aggregate Reliability (CR)	Average Extract Variance (AVE)
Teacher Readiness	0.91	0.92	0.79
Perceived Benefits	0.88	0.89	0.67
Leadership Support	0.89	0.90	0.81
Technology Integration	0.92	0.93	0.76

4.2. Hypothesis Testing

The MSEM analysis results (Table 3) provide evidence for testing the hypotheses. At the teacher level, Teacher Readiness ($\beta = 0.34$, $p < 0.001$) and Perceived Benefits ($\beta = 0.09$, $p < 0.01$) both positively predicted Technology Integration, supporting H1 and H2. At the school level, Leadership Support ($\beta = 0.21$, $p < 0.001$) and Urban School Location ($\beta = 0.14$, $p < 0.001$) both had positive effects, supporting H3 and H4.

Most importantly, the cross-level interaction effect between Teacher Readiness and School Location was statistically significant ($\beta = 0.15$, $p < 0.01$), strongly supporting H5. A simple slope analysis revealed that the relationship between readiness and technology integration was very strong in urban schools but significantly weaker in rural schools. The model explained 35% of the variance at the teacher level and 52% of the variance at the school level.

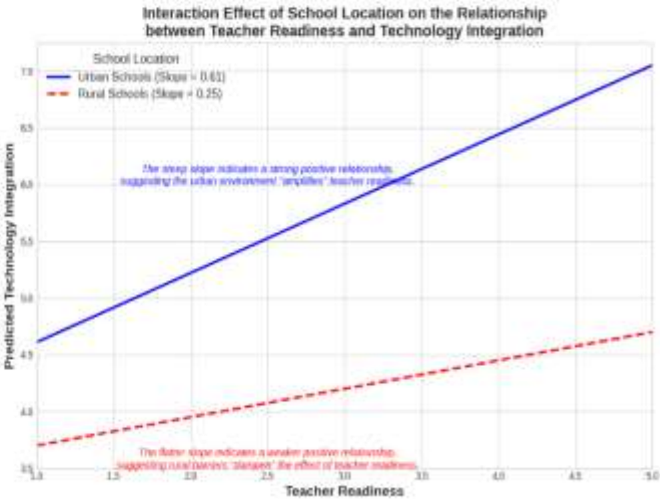

Figure 1: Moderating Effect of School Location on the Relationship between Teacher Readiness and Technology Integration.

Table 3: MSEM Results Predicting Technology Integration.

Predictive path	B	SE	β	p
Fixed Effects				
Control (Level 1)				
Gender (Female=1)	0.02	0.05	0.01	>0.05
Experience	-0.01	0.04	-0.01	>0.05
Qualification (Postgraduate=1)	0.08	0.06	0.03	>0.05
Main independent variable				
Teacher Readiness (Level1) -> Tech Integration	0.39	0.04	0.34	<0.001
Perceived Benefits (Level 1) -> Tech Integration	0.12	0.04	0.09	<0.01
Leadership Support (Level 2) -> Tech Integration	0.23	0.05	0.21	<0.001
School Location (Urban=1) (Level 2) -> Tech Integration	0.18	0.05	0.14	<0.001
Cross-Level Interaction Effect				
Teacher Readiness * School Location -> Tech Integration	0.28	0.09	0.15	<0.01
Explained Variance (R2)				
Level 1 (Within-teacher)			0.35	
Level 2 (Between-school)			0.52	

5. DISCUSSION

5.1. Key findings

This study confirms that teachers' intrinsic factors, particularly their readiness for innovation and belief in their technological competence, are the most powerful drivers of technology integration. This finding is consistent with international research, which emphasizes that teacher beliefs, attitudes, and skills are the primary determinants of the success of educational technology initiatives (Miranda & Russell, 2012; Tondeur et al., 2017).

Another noteworthy point is that the demographic control variables, such as gender, years of service, and education level, showed no statistically significant impact on technology integration. This may imply that in the current era of digital transformation, factors related to intrinsic competence (readiness), perception (benefits), and the supportive environment (leadership, infrastructure) have become more critical, transcending traditional demographic differences. A readiness to innovate and a conducive environment are decisive for all teachers, regardless of age, experience, or gender (Amankwah et al., 2022; Yapıcı & Mirici, 2023; Andaya et al., 2025).

However, the core and most significant contribution of this study is the confirmation of the moderating effect. The issue is not that rural teachers are less ready, but that their readiness yields a lower "return" in teaching practice. The urban environment, with its superior infrastructure, available resources, and supportive peer networks, acts as an "amplifier," allowing teacher readiness to be fully translated into technology integration behavior. Conversely, the rural environment, with its numerous systemic barriers, attenuates the potential of teacher readiness.

This finding places the Vietnamese context within a broader trend observed in developing countries. Studies in China (Li, 2025; Shen et al., 2024), Taiwan (Wang, 2013), and Indonesia (Baharuddin & Burhan, 2025) have also shown similar patterns, where rural schools face significant disadvantages in resources and support, hindering technology integration.

The study also underscores the critical role of support from school leadership. This is not just moral support but also concrete assistance in terms of resources, policy, and the creation of a school culture that encourages innovation. This result resonates with international studies showing that school leadership is a crucial mediating factor, helping to translate macro-level policies into effective micro-level practices in the classroom (Raygan & Moradkhani, 2022; Tondeur et al., 2017).

5.2. Implications for Policy and Practice

The most important policy implication from this study is the need to shift from a “teacher-focused” intervention strategy to an “ecosystem approach.” Merely organizing training courses to enhance teacher capacity, while necessary, will not be sufficient to create sustainable change if their working environment remains unchanged. A dual strategy is imperative: (1) Continue to invest in high-quality professional development programs to enhance teachers' readiness and TPACK competence; (2) Concurrently, there must be a decisive and targeted investment strategy to improve the technological ecosystem in rural and mountainous schools. This includes ensuring internet connectivity, providing adequate equipment, building on-site technical support teams, and fostering professional learning communities. These findings provide strong empirical evidence for the Vietnamese Ministry of Education and Training and local administrative bodies to adjust policies, ensuring that investments in digital transformation are allocated equitably and effectively.

6. CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

This study provides robust quantitative evidence that effective technology integration in education is a product of the complex interaction between individual agency and environmental context. By using MSEM, the study has quantified the role of the urban environment as a "contextual amplifier" for the effectiveness of teacher readiness. This core finding moves the discourse beyond a simple acknowledgment of the urban-rural digital divide, offering a mechanistic explanation for how this divide perpetuates educational inequality. The attenuation of returns on teacher readiness in rural settings suggests a systemic inefficiency; even when individual capacity is high, the environmental context can act as a significant bottleneck, preventing this potential from being fully realized in pedagogical practice. This insight reframes the problem from one of individual teacher deficits to one of systemic environmental constraints, highlighting that a teacher's ability to innovate is not solely a matter of personal will or skill, but is profoundly enabled or disabled by the ecosystem in which they operate. Theoretically, this research contributes to the literature by proposing and validating the M-TRAM 2.0 model, which integrates the psychological drivers of UTAUT and the competency-based framework of TPACK with a critical, context-sensitive layer derived from digital divide research. This multilevel perspective offers a more holistic and ecologically valid model for understanding technology adoption in stratified educational systems, particularly in developing nations where regional disparities are pronounced.

Despite its contributions, this study has several limitations that warrant consideration. First, the cross-sectional design, while effective for identifying associations, precludes causal inferences. This limitation is particularly salient as it prevents an examination of the dynamic interplay between readiness and integration over time. It is plausible that a negative feedback loop exists, where initial difficulties with technology in a resource-poor environment gradually erode a teacher's readiness and self-efficacy—a dynamic process that a single snapshot in time cannot capture. Second, the reliance on self-report data for all constructs introduces the potential for common method and social desirability biases, which may inflate the observed associations. Teachers might overstate their readiness or the extent of their technology integration to align with professional expectations. Third, the initial survey instrument did not include a direct, validated measure of the quality and frequency of professional development (PD) participation. High-quality, sustained PD is a critical component of a supportive ecosystem, and its omission means that the "location" variable may be acting as a proxy for unmeasured factors like access to better PD, potentially confounding the results.

These limitations directly inform a forward-looking agenda for future research. To address the issue of causality, future research should employ a longitudinal design, tracking a cohort of teachers over several years to better capture the dynamics of readiness and integration. Such a design could reveal how initial levels of readiness evolve in response to contextual supports and barriers, providing direct evidence for the hypothesized feedback loops. To mitigate measurement concerns, studies should triangulate self-report data with more objective measures, such as classroom observations to assess pedagogical practices or the analysis of digital artifacts (e.g., lesson plans, student work) to evaluate the quality of technology integration. Finally, to build a more comprehensive model, future surveys must incorporate a validated scale for professional development. This would allow researchers to explicitly model the mediating role of PD in the relationship between school context, teacher readiness, and technology integration, offering a more nuanced understanding of the mechanisms at play.

Acknowledgments: We would like to extend our sincere thanks to all the education administrators and teachers who participated in this study. This article is part of the ministerial project "Implementing Blended Learning in Teaching Elective Subjects in Upper secondary Schools", code: B2024.VKG.03. This project is funded by the Ministry of Education and Training of Vietnam under Decision No. 1393/QD-BGDDT dated May 16, 2023 of the Minister of Education and Training.

REFERENCES

Al-Adwan, A. S., Meet, R. K., Anand, S., Shukla, G. P., Alsharif, R., & Dabbaghia, M. (2024). Understanding continuous use intention of technology among higher education teachers in emerging economy: evidence from integrated TAM, TPACK, and UTAUT model. Studies in Higher Education, 50(3), 505–524. https://doi.org/10.1080/03075079.2024.2343955

Al-araibi, A.A.M., Mahrin, M.N.b. & Yusoff, R.C.M (2019). Technological aspect factors of E-learning readiness in higher education institutions: Delphi technique. Educ Inf Technol 24, 567–590. https://doi.org/10.1007/s10639-018-9780-9

Amankwah, F., Sarfo, F. K., Aboagye, M. O., Konin, D., & Dzakpasu, R. K. (2022). Concerns of university teachers about the adoption of the Moodle learning management system in a Ghanaian University campus. Education Inquiry, 15(3), 312–332. https://doi.org/10.1080/20004508.2022.2109849

Andaya, J., Isugan, G., Mahinay, M., (2025). Assessing ICT competence among public secondary school teachers of Mabinay National High School, Division of Negros Oriental. International Journal of the Humanities and Social Sciences, 4(2), 891–907. https://doi.org/10.69651/PIJHSS040286

Anthony Jnr, B. (2024). Examining Blended Learning Adoption Towards Improving Learning Performance in Institutions of Higher Education. Tech Know Learn 29, 1401–1435. https://doi.org/10.1007/s10758-023-09712-3

Baharuddin, & Burhan. (2025). Urban and rural teacher perspectives on Indonesian educational reform: challenges and policy implications. Cogent Education, 12(1). https://doi.org/10.1080/2331186X.2025.2497142

Barile, John P. (2015). Multilevel Structural Equation Modeling. in Leonard A. Jason, and David S. Glenwick (eds), Handbook of Methodological Approaches to Community-Based Research: Qualitative, Quantitative, and Mixed Methods. New York.

Büchi, M., Just, N., & Latzer, M. (2015). Modeling the second-level digital divide: A five-country study of social differences in Internet use. New Media & Society, 18(11), 2703-2722. https://doi.org/10.1177/1461444815604154

Dao, Chinh; Do, Ha; Dang, Hue; Phan, Loi (2025). Current state and proposals for blended learning in teaching elective subjects in high schools: Dataset from Vietnam. Mendeley Data, V1. https://doi.org/10.17632/gp4mvt542h.1

Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. First Monday, 7 (4). https://doi.org/10.5210/fm.v7i4.942

Heck, R. H., & Thomas, S. L. (2015). An introduction to multilevel modeling techniques: MLM and SEM approaches using Mplus (3rd Edition). Routledge. Taylor&Francis Group.

Hohlfeld, T.N., Ritzhaupt, A.D., Barron, A.E., & Kemker, K. (2008). Examining the digital divide in K-12 public schools: Four-year trends for supporting ICT literacy in Florida. Comput. Educ., 51, 1648-1663. http://dx.doi.org/10.1016/j.compedu.2008.04.002 https://doi.org/10.1111/j.1467-8535.2011.01228.x

Joshi, S. (2023). TPACK and Teachers’ Self-Efficacy: A Systematic Review. Canadian Journal of Learning and Technology / Revue canadienne de l’apprentissage et de la technologie, 49(2), 1–23. https://doi.org/10.21432/cjlt28280

Le, A. V., et al. (2022a). Technology in education in Vietnam: A case study. UNESCO. https://doi.org/10.54676/GPDF600

Le, A. V., et al. (2022b). Exploring online learning of school students in Vietnam during COVID-19 pandemic. Vietnam Journal of Educational Sciences, 18(03). http://vjes.vnies.edu.vn/en/exploring-online-learning-school-students-vietnam-during-covid-19-pandemic

Li, M. (2025). Exploring the digital divide in primary education: A comparative study of urban and rural mathematics teachers’ TPACK and attitudes towards technology integration in post-pandemic China. Education and Information Technologies 30, 1913–1945. https://doi.org/10.1007/s10639-024-12890-x

Li, W., Gao, W., Fu, W., Chen, Y. (2021). A Moderated Mediation Model of the Relationship Between Primary and Secondary School Teachers’ Digital Competence and Online Teaching Behavior. Front. Educ. 6:744950. https://doi.org/10.3389/feduc.2021.744950

Miranda, H. P., & Russell, M. (2012). Understanding Factors Associated with Teacher-Directed Student Use of Technology in Elementary Classrooms: A Structural Equation Modeling Approach. British Journal of Educational Technology, 43, 652-666.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Nguyen, H. T. T., & Ha Van, L. (2024). Challenges and implications of blended learning adoption in the age of communication technology: A case study of Vietnamese universities during the COVID-19 pandemic. rEFLections, 31(3), 1144–1177. https://doi.org/10.61508/refl.v31i3.276777

Pham, T. T. N., Tan Choon Keong, Lee Kean Wah (2024). Issues and Challenges in Using ICT for Teaching English in Vietnam. Computer-Assisted Language Learning Electronic Journal, 20(3), 140-155. https://callej.org/index.php/journal/article/view/287

Raygan, A., Moradkhani, S. (2022). Factors influencing technology integration in an EFL context: investigating EFL teachers' attitudes, TPACK level, and educational climate. Comput. Assist. Lang. Learn. 35, 1789–1810. https://doi.org/10.1080/09588221.2020.1839106

Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers. Journal of Research on Technology in Education, 42(2), 123–149. https://doi.org/10.1080/15391523.2009.10782544

Shen, W., Lin, X. F., Chiu, T. K. F., Chen, X., Xie, S., Chen, R., & Jiang, N. (2024). How school support and teacher perception affect teachers’ technology integration: A multilevel mediation model analysis. Education and Information Technologies, 29(18), 25069–25091. https://doi.org/10.1007/s10639-024-12802-z

Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers’ pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. Educational Technology Research and Development, 65(3), 555–575.

https://doi.org/10.1007/s11423-016-9481-2

Tran, M. T., Pham, N. T., & Dinh, T. B. H. (2023). Teachers’ Attitudes towards the Use of Information and Communication Technology in Teaching English: Impacts of Teachers’ Characteristics. Asia CALL Online Journal, 14(1), 61–84. https://doi.org/10.54855/acoj.231415

UNESCO & UNICEF (2021). Situation analysis on the effects of and responses to COVID-19 on the education sector in Asia: Viet Nam case study. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000379519

Van Dijk, J. A. G. M. (2020). The digital divide. Polity Press.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly: Management Information Systems, 27(3), 425-478. https://doi.org/10.2307/30036540

Wang, P. Y. (2013). Examining the Digital Divide between Rural and Urban Schools: Technology Availability, Teachers' Integration Level and Students' Perception. Journal of Curriculum and Teaching, 2 (2), 127–139. https://doi.org/10.5430/jct.v2n2p127

Yapıcı, E. & Mirici, İ. H (2023). An investigation of TPACK-practical for teaching English as a foreign language. e-Kafkas Journal of Educational Research, 10, 532- 554. https://doi.org/10.30900/kafkasegt.1357635