



School Innovation Climate And Educational Technology Integration Of Elementary Teachers: A Mediation Role Of Engagement To Professional Development

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Abstract: Integrating educational technology remains a crucial concern in elementary education. This research explored how engagement in professional development mediated the relationship between school innovation climate and educational technology usage. Using a non-experimental, descriptive-correlational design with path analysis, data were collected from 100 public and private elementary school teachers in Davao City, Philippines. The results revealed that engagement significantly mediates the relationship between the predictor and outcome variables. These findings are supported by Self-Determination Theory (Deci & Ryan, 1985), which emphasizes that autonomy-supportive environments foster intrinsic motivation and engagement. The study highlights how an innovative school climate can enhance teachers' motivation to participate in professional development, ultimately leading to greater technological integration. Future research may explore other motivational or contextual factors influencing technology use. Additionally, school leaders and policymakers are encouraged to cultivate innovation and promote sustained teacher development to support effective educational technology practices.

Index Terms - School innovation climate, professional development engagement, educational technology, and mediation.

I. INTRODUCTION

The integration of educational technology into classroom practice is a growing global priority amid the rapid digital transformation of education. International studies emphasize that a supportive and innovative school climate significantly influences how teachers adopt and use educational technologies. In Serbia, research revealed that an innovative school climate strongly predicts how technology is used in instruction, regardless of principal support (Ninković et al., 2023). In China, empowering leadership in international schools has been shown to increase teachers' innovative behavior, with professional development acting as a vital mediator (Su, 2024). In Malaysia, the innovative climate was found to fully mediate the effect of teacher autonomy on their innovative behavior (Mokhlis & Abdullah, 2024). Further, a cross-national study found that innovation in professional education settings is most effectively sustained when driven by design-focused teacher training and structured collaboration between institutions and school systems (Nelson & Thomeczek, 2006). These findings underscore the critical role of school climate, leadership, and sustained professional development in enhancing teachers' digital readiness and educational innovation worldwide.

In the Philippine setting, despite ongoing education reforms like the K-12 curriculum and digital initiatives, technology integration remains inconsistent. At the higher education level, a national study in the Philippines highlighted that many STEAM educators still rely on conventional tools, with professional development being a key factor influencing effective technology use (Morales et al., 2021). A study in Davao del Sur found that while public elementary school teachers displayed high digital competence, their ability to integrate technology effectively was significantly shaped by access to professional development opportunities (Camarillo, 2024). In Davao Region public schools, the school climate was found to directly influence instructional leadership and professional growth among Islamic education coordinators, further stressing the importance of supportive environments for technology-related reforms (Casinto, 2022). These findings confirm that innovation climates, teacher training, and institutional leadership are interrelated elements essential for advancing educational technology integration in Philippine schools.

However, a crucial gap persists in understanding how these factors interact, specifically, how school innovation climate and professional development engagement jointly influence educational technology integration. In the Davao Region, research often isolates these elements rather than examining their interconnection. For instance, studies have explored how professional development shapes ICT integration (Septimo & Cancio, 2024) and how leadership or organizational climate contributes to innovation and engagement (Galaro & Bauyt, 2024). However, few studies have empirically linked all these dimensions using a mediation model. A related study in the region emphasized how professional learning communities can mediate the relationship between leadership competence and teacher engagement, highlighting the importance of contextual school climate structures (Abendaño, 2024). This study addresses that gap by investigating the mediating role of teacher engagement in professional development within the relationship between innovative climate and technology use in elementary schools. The urgency of this study lies in its potential to inform localized, evidence-based interventions that can foster a culture of innovation, empower teachers, and ultimately enhance digital learning outcomes.

II. RESEARCH METHODOLOGY

This study employed a quantitative, non-experimental correlational research design to examine the relationships among school innovation climate, professional development engagement, and educational technology integration among elementary school teachers. Path analysis was utilized to explore both direct and indirect relationships, specifically the mediating role of professional development engagement. This design supports the identification of causal patterns among latent variables in non-manipulated educational environments (Preacher, 2008). The correlational approach also allowed the researchers to assess the degree of association among constructs without influencing participants (McLeod, 2018).

The study was conducted in Davao City, Philippines, involving 100 public and private elementary school teachers. Purposive sampling was used, with selection criteria including full-time teaching status, at least one year of teaching experience, and active involvement in school-based professional development programs. Data was collected using a structured survey questionnaire composed of three adapted instruments. The School Innovation Climate Scale was adapted from the validated scale developed by Fraser (1982). This scale measures perceived levels of support, openness, and innovation within the school. In the current study, this instrument yielded a Cronbach's alpha of 0.87, indicating strong internal consistency. To measure professional development engagement, the researchers adapted the tool developed by Easterly (2019), which captures teacher motivation, participation, and reflection in professional learning. The adapted version demonstrated high reliability, with a Cronbach's alpha of 0.89. The level of educational technology integration was assessed using the Level of Technology Implementation (LoTi) Questionnaire, initially developed by Moersch (1995). This framework categorizes the depth of technology integration across teaching practices. The tool was also pilot tested locally and produced a Cronbach's alpha of 0.88 in this study.

All ethical considerations were adhered to in accordance with the Philippine Health Research Ethics Board's (PHREB) National Ethical Guidelines for Health and Health-Related Research and the Data Privacy Act of 2012. Participants were informed of the voluntary nature of their participation and assured that they could withdraw at any point without consequence. Informed consent was obtained prior to data collection.

Descriptive statistics were used to summarize mean scores and demographic information for data analysis. Pearson's correlation was employed to examine the strength and direction of relationships between variables. Path analysis and bootstrapping procedures were conducted to test for mediation, enabling a robust examination of indirect effects (Fritz, 2007; Preacher, 2008). These methods ensured a rigorous and credible analysis aligned with the study's objectives.

III. RESULTS AND DISCUSSION

3.1 Results of Descriptive Statistics of Study Variables

The findings in Table 1 show that the respondents reported a very high level of perceived school innovation climate ($M = 4.47$), indicating that their schools foster supportive, collaborative, and change-oriented environments. This result aligns with the findings of Gabutan et al. (2024), who emphasized that a favorable school climate and effective leadership are strong predictors of teachers' innovativeness in public schools. Similarly, Moralista (2016) revealed that elementary teachers in Iloilo perceived their teaching innovation practices as very high, attributing this to an enabling school environment. Maca (2019) also supported this result, noting that school-based management practices promoted transparency, collaboration, and grassroots innovation across Philippine public schools. In contrast, Cardenas (2016) found no significant relationship between school climate and student outcomes in Koronadal City, suggesting that a favorable climate does not always translate to measurable academic performance. Likewise, Bual and Madrigal (2021) reported only moderately satisfactory ratings for school climate among Catholic school teachers in Antique, indicating that innovation climates can vary significantly depending on school type and context.

Table 1. Descriptive Levels

	Mean	Descriptive Level
School Innovation Climate	4.47	Very High
Educational Technology Integration	4.60	Very High
Engagement to Professional Development	4.53	Very High

The mean score for educational technology integration ($M = 4.60$) was also interpreted as very high, suggesting that teachers actively and effectively use technology in their teaching practices. This finding is consistent with Alegre (2023), who reported that highly motivated teachers demonstrate strong technology use when supported by school culture. In the same vein, Maloloy-on and Arnado (2023) found that continuous professional development enhances teachers' integration of technology, especially in flexible learning environments. Similarly, Moersch (1995), the creator of the Level of Technology Implementation (LoTi) framework, emphasizes that higher LoTi levels are associated with learner-centered digital instruction. However, contrasting evidence from Rudio et al. (2020) showed that while student-teachers in a Philippine university demonstrated positive perceptions toward tech use, actual integration in practicum settings was limited. Additionally, Quejada and Orale (2018) highlighted challenges in remote Samar schools, where a lack of infrastructure and teaching resources hindered tech integration.

Lastly, professional development received a very high rating ($M = 4.53$), indicating that teachers are highly engaged in growth and learning activities. This mirrors findings by Easterly and Myers (2019), who showed that strong engagement in professional development correlates with higher instructional technology self-efficacy. Aliste and Basaños (2024) also observed high engagement levels among Filipino elementary teachers, especially in emotional and cognitive domains. Ingay (2019) further noted that school leaders' commitment to teacher growth enhances morale and professional motivation. In contrast, Gonzales et al. (2020) found that while many teachers possess basic research skills, overall professional development support remains insufficient in rural areas. Similarly, Dalanon et al. (2018) found that while teachers perform well, management competencies and access to training were not equally distributed, suggesting disparities in developmental opportunities across school contexts.

These results collectively highlight that the sampled teachers perceive their schools as innovative-rich, tech-integrated, and professional-growth-oriented environments. Nonetheless, contrasting findings from other regions point to the need for localized, context-sensitive approaches to sustaining these strengths across diverse educational settings.

3.2 Relationship Between Variables

Table 2. Relationship Between Variables

	Educational Technology Integration			
	r	p-value	Decision on H ₀	Interpretation
School Innovation Climate	.692	.000	Reject	Significant
Engagement to Professional Development	.703	.000	Reject	Significant
	Engagement to Professional Development			
	r	p-value	Decision on H ₀	Interpretation
School Innovation Climate	.663	.000	Reject	Significant

The findings reveal a strong positive correlation between school innovation climate and educational technology integration ($r = .692$, $p = .000$). This suggests that schools that foster innovation, collaboration, and openness to change are more likely to support teachers in effectively using educational technologies. Several studies support this relationship. Maca (2019) emphasized that school-based management and shared governance fostered grassroots innovation, particularly in integrating new teaching technologies. Similarly, Castillo (2018) revealed that leadership support and school climate in Davao Oriental were crucial in ICT adoption among provincial teachers. Ortega and Palarisan (2021) also found that psychological climates for innovation among principals had a direct effect on technology-related initiatives. However, Tomaro (2018) noted that despite policy-level support, some schools still struggled with ICT implementation due to infrastructure and readiness gaps. Likewise, Cardenas (2016) found no significant link between perceived school climate and digital learning outcomes, highlighting that innovation alone does not guarantee successful technology adoption.

There is also a significant and strong correlation between engagement in professional development and educational technology integration ($r = .703$, $p = .000$). This indicates that teachers who actively participate in training and development activities are more likely to integrate technology into their practice. Supporting this, Easterly and Myers (2019) found that higher engagement in professional development led to increased self-efficacy and use of instructional technology. Palaca (2025) emphasized that teacher participation in school-based development programs, such as LAC sessions and INSET, improves tech adoption. Similarly, Yanoc (2024) confirmed that professional learning significantly influenced technological competence among school heads. In contrast, Gonzales et al. (2020) found that many teachers lacked strong research and tech-related development support, especially in rural settings. Dalanon et al. (2018) likewise reported basic proficiency in teacher competencies where access to training was inconsistent, underscoring the uneven nature of development programs across the Philippines.

Lastly, the study reveals a significant positive relationship between school innovation climate and engagement in professional development ($r = .663$, $p = .000$). This suggests that teachers in innovative school environments are more likely to engage in learning activities that foster their growth. Fraser and Rentoul (1982) originally proposed this connection, arguing that an open, innovative climate promotes teacher motivation. Bual and Madrigal (2021) validated this link in Catholic schools in Antique, where better school climates corresponded to more active leadership and development engagement. Gabutan et al. (2024) also found that school climate and leadership styles predicted teachers' willingness to innovate and attend training. In contrast, Victoria (2017) showed that even with contextualized innovations, participation in training still varied depending on the institution's structural support. Additionally, Bual and Madrigal (2021) found that while the climate was generally positive, some schools lacked sufficient leadership to mobilize consistent professional development.

Together, these findings suggest that fostering a strong innovation culture and providing consistent professional development are mutually reinforcing strategies that significantly contribute to improved technology integration in schools.

3.2 Mediating Effect of Empowerment on the Relationship Between Transformational Leadership and Service Quality of School Principals

Table 3. Mediating Effect

			Estimate	Std. Error	p-value	Decision on H_0	Interpretation
School Innovation Climate	→	Engagement to Professional Development	0.436	0.053	0.000	Reject	Significant
Engagement to Professional Development	→	Educational Technology Integration	0.633	0.039	0.000	Reject	Significant
School Innovation Climate	→	Educational Technology Integration	0.466	0.054	0.000	Reject	Significant

Table 3 presents the path estimates and statistical significance of the mediating relationships among school innovation climate, engagement in professional development, and educational technology integration. The results show that a school innovation climate has a significant positive effect on professional development engagement ($\beta = 0.436$, $p = 0.000$), indicating that schools with a more supportive, open, and innovative environment tend to encourage higher teacher participation in professional growth activities. This is supported by Fraser and Rentoul (1982), who originally linked innovative climates to teacher motivation and engagement. Similarly, Gabutan et al. (2024) and Bual and Madrigal (2021) found that collaborative and empowering school environments significantly increased teacher professional activity and leadership. Conversely, Victoria (2017) and Dalanon et al. (2018) reported that participation in professional development remains inconsistent in less structured or rural school systems, despite positive perceptions of school climate.

The next pathway shows that engagement in professional development significantly influences educational technology integration ($\beta = 0.633$, $p = 0.000$). This suggests that teachers who are more actively involved in professional learning are better equipped and more likely to incorporate technology in their instructional practices. This finding aligns with the work of Easterly and Myers (2019), who emphasized that professional development enhances instructional technology self-efficacy. Yanoc (2024) also found that technological competence and innovation among school heads improved significantly with professional learning. Additionally, Palaca (2025) identified that school-led development programs, such as Learning Action Cells (LACs), are instrumental in improving ICT use. However, Gonzales et al. (2020) and Rudio et al. (2020) highlighted barriers, including limited training accessibility and inconsistent practicum application, especially in resource-constrained settings.

Finally, the direct path between school innovation climate and educational technology integration remains significant ($\beta = 0.466$, $p = 0.000$), even with the mediating variable included. This implies partial mediation, where professional development engagement explains part, but not all, of the relationship between innovative climate and technology use. This reflects the complex nature of how school environments impact teaching practices. As Castillo (2018) and Maca (2019) argue, innovation-driven leadership and school-level autonomy promote not only development activities but also direct pedagogical change. However, Tomaro (2018) noted that even innovative environments, integration may still fall short without systemic support like infrastructure and policy alignment.

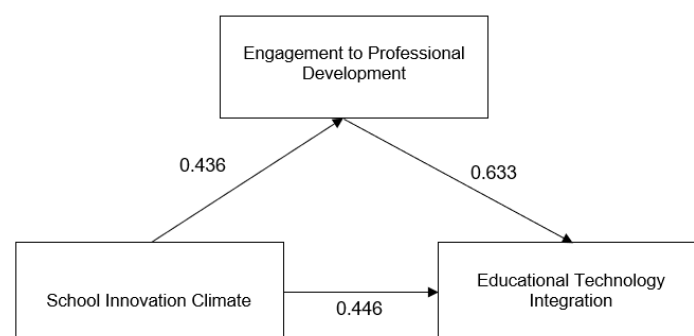


Figure 1. Path Analysis Showing the Variables of the Study

The path diagram illustrates a partial mediation model, where engagement in professional development partially mediates the relationship between school innovation climate and educational technology integration. The model includes three significant standardized path coefficients derived from the mediation analysis: (1) school innovation climate $\rightarrow$ professional development engagement ($\beta = 0.436$), (2) professional development engagement $\rightarrow$ educational technology integration ($\beta = 0.633$), and (3) school innovation climate $\rightarrow$ educational technology integration ($\beta = 0.446$).

The observed partial mediation effect of professional development engagement supports the framework of Self-Determination Theory (SDT), developed by Deci and Ryan (1985), which emphasizes the importance of fulfilling basic psychological needs, autonomy, competence, and relatedness, to foster intrinsic motivation and engagement. In this study, a supportive school innovation climate likely nurtures these needs: autonomy through freedom to explore new technologies, competence via structured professional development, and relatedness through collaborative learning environments. These motivational factors, in turn, promote meaningful engagement in professional development and ultimately lead to greater integration of educational technology.

Furthermore, the significant direct path from school innovation climate to technology integration suggests that environmental factors can also directly enhance teachers' motivation and efficacy, reinforcing SDT's assertion that contextual support is essential for internalizing behaviors.

In sum, these results validate that professional development engagement serves as a meaningful mediator in the relationship between innovation climate and technology integration. However, the persistence of a substantial direct effect suggests that school innovation itself also drives technological adoption, reinforcing the importance of both structural and individual capacity-building in educational reform. Furthermore, the mediation model supports a multi-layered framework in which a supportive innovation climate not only fosters development engagement but also independently drives technology use. These findings underscore the need for school leaders to invest in both cultivating an innovative culture and providing structured, accessible professional development to ensure effective technology integration.

IV. CONCLUSION

This study offers strong evidence that professional development engagement serves as a significant, though partial, mediator between school innovation climate and educational technology integration. The results indicate that while innovation-supportive environments directly promote the use of technology in teaching, they also work indirectly by motivating teachers to engage in professional learning opportunities that enhance their digital competence. These findings resonate with Self-Determination Theory (Deci & Ryan, 1985), which posits that intrinsic motivation is fostered when individuals experience autonomy, competence, and relatedness. In this context, innovative school climates nurture autonomy and connectedness, while professional development builds competence, together creating the psychological conditions necessary for sustained and self-directed technology use. The continued significance of the direct path further underscores the influence of institutional culture, suggesting that both structural support and individual capacity-building are essential. Therefore, educational leaders should prioritize creating environments that not only encourage innovation but also invest in empowering, need-satisfying professional development to drive meaningful and lasting technology integration.

V. RECOMMENDATION

Based on the findings and in alignment with Self-Determination Theory (Deci & Ryan, 1985) and the Sustainable Development Goals, particularly SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure), it is recommended that school leaders actively cultivate an innovation-driven school culture that supports teacher autonomy, collaboration, and continuous learning. This can be achieved by institutionalizing professional development programs that are teacher-centered, technology-enhanced, and contextually relevant, such as peer-led Learning Action Cells (LACs), digital skills workshops, and coaching cycles that address both pedagogy and technology integration. To ensure equitable access, educational stakeholders should invest in infrastructure and digital resources, particularly in underserved areas, enabling all teachers to engage meaningfully with technology. These efforts will not only strengthen teachers' competence and motivation but also contribute to building resilient, inclusive, and future-ready education systems in support of the global education and innovation agenda.

VI. ACKNOWLEDGMENT

The authors gratefully acknowledge the support of the participating schools, teachers, and administrators whose cooperation made this study possible, and above all, to the Almighty God.

REFERENCES

- Abendaño, M. D. O. (2024). Patterns of relationships between college teachers' leadership competence and work engagement in selected private higher education institutions in Davao Region: The mediating impact of school as professional learning community. *European Journal of Theoretical and Applied Sciences*. DOI: 10.59324/ejtas.2024.2(1).57
- Alegre, E. M. (2023). Technology-driven education: Analyzing the synergy among innovation, motivation, and student engagement. *International Journal of Membrane Science and Technology*. <https://doi.org/10.15379/ijmst.v10i2.1507>.
- Aliste, D. P., & Basañes, R. A. (2024). Assessing teachers' engagement in public elementary schools in the Philippines. *FMDB Transactions on Sustainable Techno Learning*. <https://doi.org/10.69888/ftstl.2024.000207>
- Bual, J. M., & Madrigal, D. V. (2021). Correlating the school climate and teacher leadership of Catholic schools in Antique, Philippines. *Asian Journal of Education and Social Studies*. <https://doi.org/10.9734/ajess/2021/v21i430514>
- Camarillo, J. (2024). Digital Competence In Relation To The Technology Integration Of Public Elementary School Teachers In Davao Del Sur Division. *International Journal of Research Publication and Reviews*. <https://doi.org/10.55248/gengpi.5.0624.1435>.
- Cardenas, H. J. C. (2016). School climate, teachers' efficiency and learning outcomes in Koronadal City Schools Division, Philippines. *Journal of Modern Education Review*, 6(1), 19–25. [https://doi.org/10.15341/JMER\(2155-7993\)/01.06.2016/003](https://doi.org/10.15341/JMER(2155-7993)/01.06.2016/003)
- Casinto, C. D. (2022). Does School Climate Matter in Inclusive Education? A Case of Instructional Leadership in the Philippines. *International Journal of Social Sciences & Educational Studies*, 9(1), 91–106. <https://doi.org/10.23918/ijsses.v9i1p91>
- Castillo, L. S. V. (2018). Call of duty: A case study of ICT integration in Philippine provincial public schools in San Isidro Davao Oriental post K-12 implementation. *JPAIR Multidisciplinary Research*, 30(1), 1–16. <https://doi.org/10.7719/JPAIR.V30I1.551>
- Dalanon, J., Diano, L. M., Belarmino, M., Hayama, R., Miyagi, M., & Matsuka, Y. (2018). A Philippine rural school's organizational climate, teachers' performance, and management competencies. *International Journal of Research - GRANTHAALAYAH*, 6(1), 248–265. <https://doi.org/10.29121/granthaalayah.v6.i1.2018.1613>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum. <https://doi.org/10.1007/978-1-4899-2271-7>
- Easterly, T., & Myers, B. E. (2019). Exploring the relationship between teacher engagement in professional development and self-efficacy in instructional technology. *Journal of Agricultural Education*, 60(1), 1–15. <https://doi.org/10.5032/jae.2019.01001>
- Easterly, T., & Myers, B. E. (2019). Professional Development Engagement and Career Satisfaction of Agriscience Teachers. *Journal of Agricultural Education*, 60(2), 69–84. <https://doi.org/10.5032/jae.2019.02069>
- Fraser and Rentoul, (1982). Face and online classes. *Int. High. Educ.* 45:100710.
- Fraser, B. J., & Rentoul, A. J. (1982). Relationships between school-level and classroom-level environment. *Journal of Educational Psychology*, 74(5), 594–604. <https://doi.org/10.1037/0022-0663.74.5.594>
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, 18(3), 233–239. <https://doi.org/10.1111/j.1467-9280.2007.01882.x>
- Gabutan, J., Parpa, J., & Du, E. (2024). School heads' leadership quality, organizational climate, and learning environment as predictors of teachers' innovativeness. *Journal of Interdisciplinary Perspectives*. <https://doi.org/10.69569/jip.2024.0274>
- Galorio, I., & Bauyot, M. (2024). Cultivating Resilience: Multiple Case Study of School Heads' Leadership in Integrated Senior High Schools. *Asian Journal of Education and Social Studies*. <https://doi.org/10.9734/ajess/2024/v50i61420>.
- Gonzales, I. G., Corpuz, D. A., & Dellosa, R. M. (2020). Research capabilities of public elementary school teachers and management support of the Schools Division of Nueva Vizcaya, Philippines. *Humanities and Social Sciences Review*, 8(4), 258–266. <https://doi.org/10.18510/hssr.2020.8427>
- Ingay, A. B. (2019). Leadership practice of elementary school heads as determinants of teachers' morale in Davao Region, Philippines. *International Journal of Management Excellence*, 13(2). <https://doi.org/10.17722/IJME.V13I2.1104>
- Maca, M. (2019). School-based management in the Philippines: Fostering innovations in the public education system. *Romblon State University Research Journal*. <https://doi.org/10.58780/rsurj.v2i1.10>

- Maloloy-on, M., & Arnado, A. (2023). Elementary school teachers' proficiency: Philippine professional standards under flexible teaching modality. *International Journal of Membrane Science and Technology*. <https://doi.org/10.15379/ijmst.v10i2.1286>
- McLeod, S. (2018). Correlation definitions, examples & interpretation. *Simply Psychology*. <https://www.simplypsychology.org/correlation.html>
- Moersch, C. (1995). Levels of Technology Implementation (LoTi): A Framework for Measuring Classroom Technology Use. *Learning & Leading with Technology*, 24, 52-56.
- Mokhlis, N., & Abdullah, A. G. K. (2024). Teachers' autonomy and innovative work behavior: The mediating role of school innovation climate. *International Journal of Evaluation and Research in Education (IJERE)*, 13(4). DOI: 10.11591/ijere.v13i4.27697
- Morales, M., Avilla, R., Butron, B., Ayuste, T., Masangcay, D., & Laureano, R. (2021). Technology Integration Traditions, Transitions, and Best Practices in Philippine Higher STEAM Education. *Philippine Journal of Science*. <https://doi.org/10.56899/150.05.36>.
- Moralista, R. (2016). Innovation in teaching among elementary teachers at Coto Elementary School, District of Lambunao East, Division of Iloilo, Philippines. *The Journal of Social Sciences and Humanities*, 2(1). https://www.academia.edu/98406025/Innovation_in_Teaching_among_Elementary_Teachers_at_Coto_Elementary_School_District_of_Lambunao_East_Division_of_Iloilo_Philippines
- Nelson, W., & Thomeczek, M. (2006). Design as a Focus for Technology Integration. *Computers in the Schools*, 23, 104 - 93. https://doi.org/10.1300/J025v23n03_06.
- Ninković, S., Knežević Florić, O., & Momčilović, M. (2023). Multilevel analysis of the effects of principal support and innovative school climate on the integration of technology in learning activities. *Computers & Education*, 202, 104833. <https://doi.org/10.1016/j.compedu.2023.104833>
- Palaca, S. T. (2025). School initiatives and stakeholders' involvement. *International Journal for Multidisciplinary Research*. <https://doi.org/10.36948/ijfmr.2025.v07i01.35912>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- Quejada, A. B., & Orale, R. L. (2018). Lived experiences of elementary teachers in a remote school in Samar, Philippines. *International Journal of Multidisciplinary Research and Development*, 3(2), 1–13. https://www.researchgate.net/publication/327232303_Lived_Experiences_of_Elementary_Teachers_in_a_Remote_School_in_Samar_Philippines
- Rudio, V. O., Carreon, R. D., & Ocampo, E. S. (2020). Student teachers' perceptions toward elementary education student teaching program in the Philippines. *Universal Journal of Educational Research*, 8(12), 7036–7046. <https://doi.org/10.13189/ujer.2020.081271>
- Septimo, V., & Cancio, B. (2024). Teaching Competence and Information and Communication Technology Integration (ICT) of Private Schools in Davao City. *International Journal of Innovative Science and Research Technology (IJISRT)*. <https://doi.org/10.38124/ijisrt/ijisrt24apr1670>.
- Su, Y. (2024). The Relationship Between Empowering Leadership and Teachers' Innovation Behavior Among Teachers in International Schools of Beijing City, China . *Uniglobal Journal of Social Sciences and Humanities*, 3(2), 120–130. <https://doi.org/10.53797/ujssh.v3i2.12.2024>
- Tomaro, Q. P. V. (2018). ICT integration in the educational system of the Philippines. *Jurnal Governansi Pendidikan Publik*, 5(3), 259–282. <https://doi.org/10.18196/JGPP.5399>
- Victoria, E. L. M. (2017). NSTP-CWTS of the higher education system: The Philippine experience. *International Research Journal*, 9(9), 48–68. <https://doi.org/10.7719/irj.v9i9.492>
- Yanoc, M. E. (2024). School heads' technological competence, innovativeness and school performance. *International Multidisciplinary Research Journal*. <https://doi.org/10.54476/ioer-imrj/986836>