



Redefining Professional Identity: Teachers' Experiences with the Merdeka Curriculum in Indonesia's 3T Regions

Rizka Nabilah

Universitas Hasanuddin, Indonesia

rzkabilahh@gmail.com

Article Info

Article history:

Received 30-06-2025

Revised 25-07-2025

Accepted 17-08-2025

Keyword:

Curriculum Reform;

Teacher Identity; 3T

Education;

Phenomenological Inquiry;

Adaptive Teaching; Rural

Schooling

ABSTRACT

This study explores how elementary school teachers in Indonesia's 3T (frontier, remote, and disadvantaged) regions experience the implementation of the Merdeka Curriculum. Using an interpretative phenomenological approach conducted over a six-month period (January–June 2024), the research centers on the subjective meanings teachers assign to curriculum change under conditions of structural disadvantage. Data were collected through in-depth interviews with twelve teachers and analyzed to uncover the emotional, professional, and contextual dimensions of their responses to educational reform. Findings highlight four thematic experiences: enduring infrastructural limitations, evolving professional identities, employing context-driven pedagogical adaptations, and sustaining moral and emotional commitment to students. These experiences reveal a layered process of reform implementation that extends beyond technical compliance, involving personal transformation and situated agency. Teachers navigate reform not as passive recipients, but as reflective practitioners who reshape their roles through resilience and innovation. The study contributes to curriculum research by emphasizing the lived realities and sense-making practices of educators in marginalized settings—areas often overlooked in mainstream policy narratives. Insights from this study underscore the importance of designing policies that are context-sensitive and attuned to the human aspects of teaching. By foregrounding the interpretative work teachers undertake, this research advances a more inclusive and empathetic understanding of educational transformation in under-resourced contexts.



©2024 Authors. Published by PT Mukhlisina Revolution Center.. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. (<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

In recent years, global shifts in educational reform have emphasized the need for learner-centered pedagogies and localized curriculum development, particularly in diverse and decentralized educational systems (Chen dkk., 2024a; Wang dkk., 2024a). Indonesia's implementation of the Merdeka Curriculum marks a significant step in this direction, aiming to foster student autonomy, contextual learning, and teacher innovation (Meng dkk., 2019). However, the adoption of such reform across heterogeneous socio-geographical regions has highlighted deep disparities in educational access and implementation capacity—especially in 3T areas (frontier, remote, and disadvantaged regions), where infrastructural limitations and professional isolation often prevail.

Curriculum reform, by its nature, is not merely a technical adjustment but a profound transformation of pedagogical identity, practice, and values (Vega dkk., 2023a; Yang & Hsu, 2020). For teachers, especially those in remote contexts, the shift involves reinterpreting their roles, responsibilities, and relationships with learners, often without sufficient systemic support. This phenomenon intersects not only with educational policy but also with the sociocultural realities of marginalization, resource scarcity, and the evolving identity of the teaching profession.

Understanding such experiences requires more than statistical indicators of reform success; it necessitates an exploration of the human dimension—the meanings teachers attach to their work, the challenges they internalize, and the adaptive strategies they develop (Pesovski dkk., 2024). These subjective experiences carry significant weight in shaping how educational reform is enacted and sustained in practice. Yet, such lived realities often remain absent from policy discourse and academic literature, which tend to privilege generalized outcomes over individual meaning-making.

There is, therefore, a compelling need to explore the experiential dimension of curriculum implementation in remote and under-resourced settings (Lin dkk., 2024; Pesovski dkk., 2024). A phenomenological approach offers the means to access these inner worlds, illuminating how educators in 3T areas live through, interpret, and give meaning to curricular change. Such exploration is crucial not only for understanding the implementation process in context but also for informing culturally responsive and context-sensitive educational policy development.

The exploration of teachers' lived experiences in curriculum implementation has emerged as a significant domain within educational research, particularly in contexts marked by systemic disparities and policy-driven transformations (Prystupa dkk., 2020). This line of inquiry seeks to understand not just what teachers do, but how they perceive, interpret, and assign meaning to their practices within specific socio-cultural and institutional landscapes. In the case of Indonesia's Merdeka Curriculum, such experiential inquiry becomes vital, especially in underserved regions where the conditions of teaching diverge starkly from urban educational environments.

Despite the recognized importance of understanding these subjective experiences, much of the existing literature remains anchored in quantitative frameworks or macro-level policy analysis (Prystupa dkk., 2020; Tang & Tang, 2024a). These approaches, while valuable for measuring outcomes and identifying trends, often fall short in capturing the nuanced realities and internal meaning-making processes of educators. For instance, previous studies have relied heavily on surveys or performance indicators, which may obscure the depth and complexity of teachers' emotional, professional, and cultural engagements with curriculum reform (Rahman dkk., 2023a).

Moreover, methodological challenges persist in accessing the deeper layers of experience that shape how individuals embody and respond to systemic change (Bhuttah dkk., 2024a; Zhang dkk., 2023). Traditional data collection tools frequently fail to penetrate the inner lifeworlds of participants, particularly when dealing with phenomena that are contextually situated and personally interpreted. As a result, existing research often overlooks the lived dimensions of curriculum enactment—dimensions that are especially salient in remote settings where educators operate under constrained conditions with limited institutional support.

This methodological gap underscores the inadequacy of prior approaches in fully grasping the essence of teachers' experiences in 3T regions (Hsiao dkk., 2023; Loder dkk., 2020; Meng dkk., 2019). It calls for a research design capable of revealing the interpretative and emotional textures of educational work, grounded in the voices and perspectives of those most directly affected. Phenomenology, with its commitment to meaning-centered inquiry, presents a powerful alternative for addressing this need.

In response to challenges associated with curriculum implementation in remote regions, most practical solutions have centered on standardized training modules, administrative interventions, and outcome-based performance metrics (Kharaba dkk., 2023; Le & Do, 2019). These strategies, while offering structural support, tend to overlook the subjective dimensions of teaching, particularly the emotional and cognitive processes through which educators internalize and respond to reform policies. Consequently, such approaches often fail to capture the richness of individual meaning-making, especially in socio-educational landscapes shaped by systemic marginalization.

Existing studies have largely adopted positivist methodologies that prioritize measurable indicators over experiential narratives. While useful for evaluating broad trends, these methods are limited in their ability to reveal the nuanced, contextualized realities faced by teachers in 3T areas (Bohari dkk., 2024; Fisher dkk., 2015). For example, survey-based research may identify that teachers

lack resources or training, but it rarely uncovers how these limitations are lived, interpreted, or resisted by the educators themselves (Tang & Tang, 2024a).

This gap highlights a critical limitation in current educational research: the insufficient attention to the lived, interpretive dimensions of teaching within under-resourced settings (Maini dkk., 2021; Vlachopoulos & Makri, 2017). What remains underexplored is how teachers in such contexts make sense of their professional identity, navigate curricular change, and develop adaptive strategies in response to systemic constraints. These experiential insights are essential for designing responsive and sustainable policy interventions that resonate with the realities on the ground.

A phenomenological approach offers a compelling alternative by foregrounding the voices and experiences of those directly involved in the phenomenon (Al Shloul dkk., 2024; Rahmah dkk., 2024). It allows for a deeper, more holistic understanding of how teachers experience curriculum reform—not simply as a policy directive, but as a lived process that reshapes their identities, practices, and sense of purpose. Such insight is indispensable for informing education reform efforts that are both contextually grounded and human-centered.

Previous studies have examined the implementation of curriculum reform in various settings, yet most have focused on structural outcomes or policy analysis. Research by (Vega dkk., 2023a) highlighted the challenges faced by rural teachers, but offered limited insight into their lived experiences and personal meanings (Rahman dkk., 2023b; Wang dkk., 2024b). Other investigations have utilized thematic analysis or narrative accounts, often lacking the depth provided by a phenomenological lens. The subjective realities of educators in remote areas, especially regarding how they interpret and adapt to the Merdeka Curriculum, remain underexplored. This study addresses that gap by centering the voices of teachers in 3T regions.

This research adopts an interpretative phenomenological approach to explore how teachers experience and make sense of curriculum reform in challenging contexts. This method was selected for its ability to uncover rich, detailed insights into personal meaning-making. It allows for a deeper understanding of how teachers construct their professional identity and respond emotionally and practically to policy changes (Chen dkk., 2024b; Vega dkk., 2023b). Through this approach, the study answers the central question: How do teachers in 3T areas experience the implementation of the Merdeka Curriculum? The findings are grounded in direct experiences and offer perspectives that are often absent in policy-driven literature.

This article is structured as follows: The introduction outlines the problem and research gap (Matsuda dkk., 2024; Tang & Tang, 2024b). The next section describes the context of the Merdeka Curriculum and the conditions in 3T educational settings (Vogelzang dkk., 2019). The methodology section explains the phenomenological framework, data collection, and analysis procedures. This is followed by a detailed presentation of results, organized by emerging themes. The article concludes with a discussion of the implications of these findings and suggestions for policy and practice.

RESEARCH METHODS

Study Design

This study employed an interpretative phenomenological approach (IPA) to explore the lived experiences of elementary school teachers implementing the Merdeka Curriculum in 3T (frontier, remote, and disadvantaged) regions of Indonesia (Carreiras & Castro, 2012; Iosifides, 2016). The IPA framework was chosen due to its emphasis on capturing the depth of meaning embedded in participants' subjective experiences. This design allows for a nuanced understanding of how individuals interpret and make sense of significant events within their social and cultural contexts (Wang dkk., 2024a). In this study, IPA facilitated the interpretation of professional, emotional, and contextual meanings ascribed by teachers to their roles in curriculum implementation. The interpretative nature of this approach acknowledges the co-construction of meaning between the participant and the researcher and emphasizes the hermeneutic cycle in understanding the phenomena.

Participants

Participants consisted of twelve elementary school teachers (7 female, 5 male) working in rural and remote schools categorized within Indonesia's 3T classification (Iosifides, 2011, 2013). The purposive sampling technique was used to ensure participants had direct, relevant, and sustained experience with implementing the Merdeka Curriculum. Inclusion criteria required participants to have a minimum of two years of teaching experience in a 3T area and direct involvement in curriculum implementation activities. Teachers undergoing administrative roles without classroom teaching responsibilities were excluded. The average age of participants was 36 years, with a teaching experience range of 5 to 20 years, reflecting a broad spectrum of professional maturity and context-specific insight.

Data Collection

Data were collected through semi-structured in-depth interviews conducted in person over a period of three months. Each interview lasted between 60 to 90 minutes and was held in a private space within the school environment to ensure participant comfort and confidentiality (Daly, 2007; Longhofer dkk., 2012). An interview protocol was designed to guide discussions around key areas such as instructional adaptation, perceived professional identity, emotional challenges, and contextual innovations. Interviews were audio-recorded with participants' consent and supported by field notes (Yang & Hsu, 2020). The protocol was developed based on principles of phenomenological inquiry and was reviewed by two qualitative research experts prior to data collection.

Data Analysis

Interview data were transcribed verbatim and analyzed using interpretative phenomenological analysis (IPA). The analytic process involved iterative readings of transcripts, identification of emergent meaning units, and clustering of these into thematic categories (Fenton & Baxter, 2016; Murphy & Dingwall, 2017). Each transcript was examined individually before identifying patterns across cases. NVivo 12 software was used to assist in coding and theme development, although analytic decisions were grounded in the philosophical tenets of IPA. This process enabled the development of rich, descriptive themes that reflected the participants' perspectives and conveyed the essential structure of their lived experiences.

Ethical Considerations

Ethical approval was obtained from a recognized institutional ethics review board prior to data collection (Zhang dkk., 2023). Written informed consent was provided by all participants. Anonymity and confidentiality were maintained throughout the study by assigning pseudonyms and securely storing all digital and physical data. The research adhered to internationally accepted ethical guidelines for human subject research, including respect for autonomy, non-maleficence, and justice.

RESULTS**Navigating Curricular Change Amid Infrastructural Constraints**

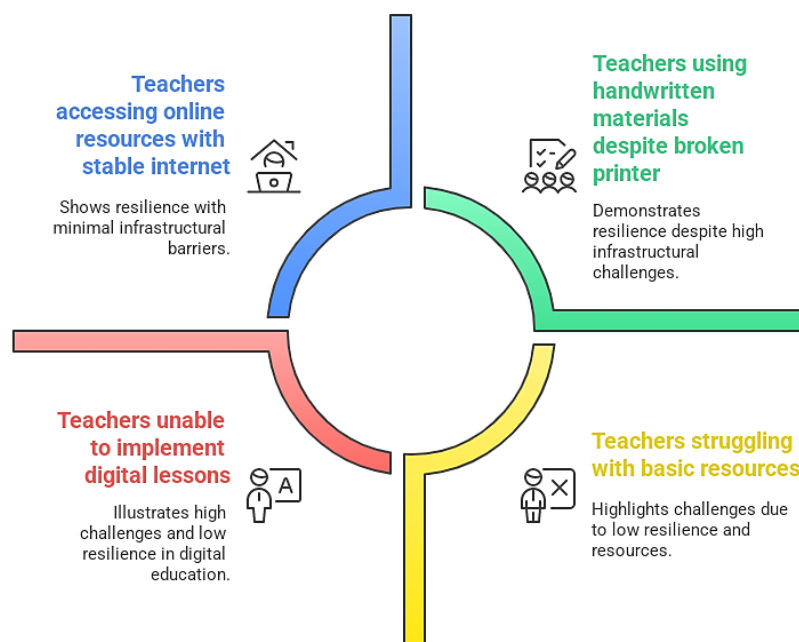
Teachers in 3T areas consistently described significant physical and logistical barriers that affected their ability to implement the Merdeka Curriculum. Limited access to internet, outdated teaching materials, and inadequate school facilities were recurrent challenges. Despite these constraints, teachers demonstrated a strong sense of resilience.

“Sometimes the electricity doesn't come for days. How can I play educational videos for my students or access the lesson plans online?” (P2)

“We share one printer with three schools, and it's broken more than it works. I often have to write everything by hand for the students.” (P6)

These infrastructural challenges were not merely technical limitations but were deeply embedded in the teachers' lived experiences of feeling excluded from national reforms.

Challenges and Resilience in Curriculum Implementation



The Struggle for Professional Identity in Marginalized Settings

Implementing a new curriculum was perceived by participants as a moment of professional testing and transformation. Several teachers expressed an initial sense of inadequacy due to lack of training or support, but over time, many developed a renewed professional identity.

“I didn’t understand what ‘project-based learning’ meant at first. I felt like a student again, lost and unsure. But I slowly figured it out—by experimenting and sharing ideas with colleagues.” (P4)

“When I see my students excited to lead their own projects, it reminds me why I became a teacher. It gives meaning to my work in this remote area.” (P9)

The Merdeka Curriculum acted both as a source of confusion and a catalyst for personal and professional growth, reshaping how teachers saw themselves within the educational system.

Adaptive Strategies and Localized Innovation

Participants shared various adaptive strategies to bridge the gap between the curriculum’s demands and the contextual realities of their teaching environments. Innovation was often improvised and resource-driven, grounded in local culture and environmental knowledge.

“We created our own learning materials using local stories and traditional games. It made the lessons more relatable for the children.” (P3)

“Since there is no internet, we record our lessons on a loudspeaker and play them for the whole class—at least that way, no one is left behind.” (P7)

These adaptations illustrate the teachers' agency in shaping curriculum delivery, emphasizing pedagogical creativity in under-resourced settings.

Emotional Burden and Moral Commitment

Teachers described the emotional labor involved in trying to meet the curriculum’s expectations while working in isolation and facing community skepticism. Yet, their narratives were consistently underpinned by a strong moral commitment to student development.

“Sometimes I cry at night. It’s hard to stay motivated when you feel forgotten. But my students are my hope, and I won’t give up on them.” (P1)

“They say teaching in the city is better, but I feel that being here, where the students need me most, is my calling.” (P8)

This theme captures the emotional complexity of their roles, marked by fatigue, hope, and a deep sense of responsibility.

The findings reveal a multilayered experience of implementing the Merdeka Curriculum in 3T regions: navigating systemic limitations, redefining professional identity, crafting context-responsive strategies, and enduring emotional strain. These themes illuminate how curriculum reform is not merely a policy event, but a deeply personal and situated process shaped by teachers’ lived realities.

DISCUSSION

The findings of this study reveal that elementary school teachers in 3T regions experience curriculum reform as a deeply personal and emotional journey shaped by structural limitations, adaptive resilience, and a redefined sense of professional identity (Al Shloul dkk., 2024). These lived experiences directly address the core research question regarding how teachers make meaning of implementing the Merdeka Curriculum in marginalized contexts.

The study contributes uniquely to answering this question by illuminating not only the practical challenges teachers face but also the existential and affective dimensions of their roles (Arslan & Turk, 2024). Teachers did not passively receive curriculum mandates; instead, they actively negotiated their meanings through acts of improvisation, emotional commitment, and cultural adaptation. Their narratives reflect a process of internal transformation, wherein curricular change is experienced not simply as policy compliance, but as a re-articulation of identity and purpose. These insights provide a textured, humanized understanding of curriculum implementation—an area previously dominated by metrics and generalizations.

In relation to prior research, these findings align with the interpretive dimensions emphasized in the work of (Bhuttah dkk., 2024b), who also noted the importance of understanding curriculum reform through the lens of teacher subjectivity. However, unlike studies that stop at identifying barriers (Bohari dkk., 2024), this research extends the discourse by offering insight into how meaning is constructed in the face of adversity. The data affirm theoretical positions within interpretive phenomenology (Chen dkk., 2024b), which view human experience as always situated and meaning-laden. In this regard, the teachers’ strategies and emotional labor not only reinforce but enrich the theoretical understanding of professional agency in low-resource educational contexts.

Implications of the Findings

The findings of this study hold significant implications for educational policy and teacher development, particularly in contexts marked by geographical isolation and limited resources (De Carvalho dkk., 2024; De Silva dkk., 2022). From a phenomenological standpoint, the emotional labor and adaptive ingenuity of teachers in 3T areas reflect not only their professional dedication but also the socio-cultural narratives of resilience and marginality. These experiences point to the urgent need for policy frameworks that acknowledge the lived realities of educators and offer flexible, context-sensitive implementation strategies. More broadly, the study suggests that meaningful curriculum reform must go beyond structural alignment and actively engage with the identities, values, and local knowledge systems of the teaching workforce. Recognizing these dimensions is essential for building inclusive educational systems that resonate with the communities they serve.

Limitations of the Study

This study is bounded by several limitations that may influence the transferability of its findings (Aleksandrovich dkk., 2024; Ferns dkk., 2024). The research was conducted in a specific socio-geographic context—Indonesia’s 3T regions—which presents unique structural and cultural dynamics. While the purposive sampling method ensured rich, experience-based data, the small sample size typical of phenomenological studies limits the generalizability of results. Additionally, as

with all interpretative research, the meanings derived are shaped through the lens of both participant and researcher subjectivity. These limitations do not undermine the study's validity but rather frame its findings as contextually grounded insights that invite deeper exploration, rather than universal conclusions.

Future Research Directions

Building on the present findings, future studies may expand this line of inquiry by examining the experiences of teachers across different regional or institutional contexts, allowing for comparative phenomenological analyses (Martín-Sánchez dkk., 2022; Olivera Zaldua dkk., 2015). Investigations could also explore how policy makers and school leaders interpret and mediate curriculum reforms, offering a multi-perspective understanding of implementation processes. Longitudinal phenomenological research may further reveal how teachers' perceptions evolve over time as they continue to adapt to educational change. Ultimately, the study paves the way for a more empathetic and participatory discourse in curriculum studies—one that places lived experience at the heart of educational transformation.

CONCLUSION

This study explored the lived experiences of elementary school teachers implementing the Merdeka Curriculum in Indonesia's 3T regions, focusing on how they interpret and respond to educational reform within marginalized contexts. The findings revealed that teachers face structural challenges, yet actively construct meaning through emotional resilience, professional identity negotiation, and localized pedagogical adaptations. These insights highlight the limitations of conventional reform approaches that overlook subjective experiences and contextual realities. By applying an interpretative phenomenological approach, this study contributes a deeper, human-centered understanding of curriculum implementation in under-resourced settings. It addresses existing research gaps by emphasizing the internal processes and agency of teachers as central to policy enactment. Future studies may extend this work by exploring comparative experiences across diverse regions or involving multiple stakeholders in the curriculum reform ecosystem.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article. All opinions, interpretations, and conclusions expressed are solely those of the authors and are presented with academic independence. The funding sponsor had no role in the design of the study; in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

REFERENCES

- Al Shloul, T., Mazhar, T., Abbas, Q., Iqbal, M., Ghadi, Y. Y., Shahzad, T., Mallek, F., & Hamam, H. (2024). Role of activity-based learning and ChatGPT on students' performance in education. *Computers and Education: Artificial Intelligence*, 6. Scopus. <https://doi.org/10.1016/j.caeai.2024.100219>
- Aleksandrovich, S. I., Ramazan, T., Utegaliyeva, R., Sarimbayeva, B., Keubassova, G., Bissalyeva, R., Syman, K., & Abdikarimova, G. (2024). Transformative applications in biology education: A case study on the efficacy of adaptive learning with numerical insights. *Caspian Journal of Environmental Sciences*, 22(2), 395–408. Scopus. <https://doi.org/10.22124/CJES.2024.7731>
- Arslan, A., & Turk, M. (2024). Wikipedia as an academic service-learning tool in science and technology: Higher education case from Siberia. *Journal of Community Genetics*, 15(2), 147–161. Scopus. <https://doi.org/10.1007/s12687-023-00692-6>

- Bhuttah, T. M., Xusheng, Q., Abid, M. N., & Sharma, S. (2024a). Enhancing student critical thinking and learning outcomes through innovative pedagogical approaches in higher education: The mediating role of inclusive leadership. *Scientific Reports*, 14(1). Scopus. <https://doi.org/10.1038/s41598-024-75379-0>
- Bhuttah, T. M., Xusheng, Q., Abid, M. N., & Sharma, S. (2024b). Enhancing student critical thinking and learning outcomes through innovative pedagogical approaches in higher education: The mediating role of inclusive leadership. *Scientific Reports*, 14(1). Scopus. <https://doi.org/10.1038/s41598-024-75379-0>
- Bohari, A., Wider, W., Udang, L. N., Jiang, L., Tanucan, J. C. M., & Lajuma, S. (2024). Transformational leadership's role in shaping Education 4.0 within higher education. *Journal of Infrastructure, Policy and Development*, 8(8). Scopus. <https://doi.org/10.24294/jipd.v8i8.4900>
- Carreiras, H., & Castro, C. (2012). *Qualitative methods in military studies: Research experiences and challenges* (hlm. 194). Taylor and Francis; Scopus. <https://doi.org/10.4324/9780203099223>
- Chen, M., Mohammadi, M., & Izadpanah, S. (2024a). Language learning through music on the academic achievement, creative thinking, and self-esteem of the English as a foreign language (EFL) learners. *Acta Psychologica*, 247. Scopus. <https://doi.org/10.1016/j.actpsy.2024.104318>
- Chen, M., Mohammadi, M., & Izadpanah, S. (2024b). Language learning through music on the academic achievement, creative thinking, and self-esteem of the English as a foreign language (EFL) learners. *Acta Psychologica*, 247. Scopus. <https://doi.org/10.1016/j.actpsy.2024.104318>
- Daly, K. J. (2007). *Qualitative methods for family studies & human development* (hlm. 293). SAGE Publications Inc.; Scopus. <https://doi.org/10.4135/9781452224800>
- De Carvalho, F. C., Geschwind, L., Weurlander, M., & Mendonça, M. (2024). Understanding student participation in a Mozambican university: The student perspective. *Journal of Further and Higher Education*, 48(9–10), 897–908. Scopus. <https://doi.org/10.1080/0309877X.2024.2413886>
- De Silva, S. R., Gates, M. G., & Waczek, A. D. (2022). Utilization of an Online Education Module and Standardized Patient Simulation Experience to Improve Nursing Student Learning Outcomes With Heart Failure Patients. *Nursing Education Perspectives*, 43(3), 178–180. Scopus. <https://doi.org/10.1097/01.NEP.0000000000000782>
- Fenton, N. E., & Baxter, J. (2016). *Practicing Qualitative Methods in Health Geographies* (hlm. 266). Taylor and Francis; Scopus. <https://doi.org/10.4324/9781315601946>
- Ferns, J., Hawkins, N., Little, A., & Hamiduzzaman, M. (2024). The escape room experience: Exploring new ways to deliver interprofessional education. *Innovations in Education and Teaching International*, 61(3), 516–527. Scopus. <https://doi.org/10.1080/14703297.2022.2158900>
- Fisher, J. M., Gordon, A. L., Maclulich, A. M. J., Tullo, E., Davis, D. H. J., Blundell, A., Field, R. H., & Teodorczuk, A. (2015). Towards an understanding of why undergraduate teaching about delirium does not guarantee gold-standard practice-results from a UK national survey. *Age and Ageing*, 44(1), 166–170. Scopus. <https://doi.org/10.1093/AGEING/AFU154>
- Hsiao, T.-C., Chuang, Y.-H., Chang, C.-Y., Chen, T.-L., Zhang, H.-B., & Chang, J.-C. (2023). Combining Building Block Process With Computational Thinking Improves Learning Outcomes of Python Programming With Peer Assessment. *SAGE Open*, 13(4). Scopus. <https://doi.org/10.1177/21582440231217715>
- Iosifides, T. (2011). *Qualitative methods in migration studies: A critical realist perspective* (hlm. 266). Ashgate Publishing Ltd; Scopus. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84899389680&partnerID=40&md5=35186fde14469e33457eba07ebfb205a>

- Iosifides, T. (2013). *Qualitative methods in migration studies: A critical realist perspective* (hlm. 266). Ashgate Publishing Ltd; Scopus. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84937431428&partnerID=40&md5=e7232946792f346d5332eb816cf2037b>
- Iosifides, T. (2016). *Qualitative Methods in Migration Studies: A Critical Realist Perspective* (hlm. 266). Taylor and Francis; Scopus. <https://doi.org/10.4324/9781315603124>
- Kharaba, Z., AlAhmad, M. M., Ahmed Elnour, A., Abou Hajal, A., Abumweis, S., & Ghattas, M. A. (2023). Are we ready yet for digital transformation? Virtual versus on-campus OSCE as assessment tools in pharmacy education. A randomized controlled head-to-head comparative assessment. *Saudi Pharmaceutical Journal*, 31(3), 359–369. Scopus. <https://doi.org/10.1016/j.jsps.2023.01.004>
- Le, T. Q., & Do, T. T. A. (2019). Active teaching techniques for engineering students to ensure the learning outcomes of training programs by CDIO approach. *International Journal on Advanced Science, Engineering and Information Technology*, 9(1), 266–273. Scopus. <https://doi.org/10.18517/ijaseit.9.1.7959>
- Lin, G. S. S., Foong, C. C., & Kumaresan, R. (2024). From outdated to outstanding: An institution's journey in reforming the dental materials science curriculum and lessons learned. *BMC Medical Education*, 24(1). Scopus. <https://doi.org/10.1186/s12909-024-06223-2>
- Loder, C. M., Minadeo, L., Jimenez, L., Luna, Z., Ross, L., Rosenbloom, N., Stalburg, C. M., & Harris, L. H. (2020). Bridging the Expertise of Advocates and Academics to Identify Reproductive Justice Learning Outcomes. *Teaching and Learning in Medicine*, 32(1), 11–22. Scopus. <https://doi.org/10.1080/10401334.2019.1631168>
- Longhofer, J., Floersch, J., & Hoy, J. (2012). *Qualitative Methods for Practice Research* (hlm. 224). Oxford University Press; Scopus. <https://doi.org/10.1093/acprof:oso/9780195398472.001.0001>
- Maini, R., Sehgal, S., & Agrawal, G. (2021). Today's digital natives: An exploratory study on students' engagement and satisfaction towards virtual classes amid COVID-19 pandemic. *International Journal of Information and Learning Technology*, 38(5), 454–472. Scopus. <https://doi.org/10.1108/IJILT-03-2021-0055>
- Martín-Sánchez, A., González-Gómez, D., & Jeong, J. S. (2022). Service Learning as an Education for Sustainable Development (ESD) Teaching Strategy: Design, Implementation, and Evaluation in a STEM University Course. *Sustainability (Switzerland)*, 14(12). Scopus. <https://doi.org/10.3390/su14126965>
- Matsuda, Y., Falcon, A., Porter, A., Royer, A., Mohnkern, L., Vergara, D., & Valiente, Y. (2024). Implementation of problem-based learning modules in an introduction to public health course. *Frontiers in Public Health*, 12. Scopus. <https://doi.org/10.3389/fpubh.2024.1405227>
- Meng, J., Jin, Y., Lee, Y.-I., & Kim, S. (2019). Can Google Analytics Certification Cultivate PR Students' Competency in Digital Analytics? A Longitudinal Pedagogical Research. *Journalism and Mass Communication Educator*, 74(4), 388–406. Scopus. <https://doi.org/10.1177/1077695818816916>
- Murphy, E., & Dingwall, R. (2017). *Qualitative methods and health policy research* (hlm. 230). Taylor and Francis; Scopus. <https://doi.org/10.4324/9781315127873>
- Olivera Zaldua, M., Sánchez Vigil, J. M., & Marcos Recio, J. C. (2015). Photo-history: A model for teaching innovation using photographs. *Ibersid*, 9, 21–28. Scopus.
- Pesovski, I., Santos, R., Henriques, R., & Trajkovik, V. (2024). Generative AI for Customizable Learning Experiences. *Sustainability (Switzerland)*, 16(7). Scopus. <https://doi.org/10.3390/su16073034>
- Prystupa, Y., Kryshchanovych, S., Danylevych, M., Lapychak, I., Kryshchanovych, M., Sikorskyi, P., Podolyak, Z., & Basarab, V. (2020). Features of formation the professional competence of

- future managers of physical culture and sports. *Journal of Physical Education and Sport*, 20, 441–446. Scopus. <https://doi.org/10.7752/jpes.2020.s1064>
- Rahmah, L., Purwanta, E., Wijayanti, W., & Suhardiman, S. (2024). Navigating the Curriculum Landscape: The Impact of Curriculum 2013 and Merdeka Curriculum on Teachers' and Students' Learning Outcomes in Indonesia. *Journal of Ecohumanism*, 3(6), 917–930. Scopus. <https://doi.org/10.62754/joe.v3i6.4061>
- Rahman, R. A., Masrom, S., Samad, N. H. A., Daud, R. M., & Mutia, E. (2023a). Machine learning prediction of video-based learning with technology acceptance model. *Indonesian Journal of Electrical Engineering and Computer Science*, 29(3), 1560–1566. Scopus. <https://doi.org/10.11591/ijeecs.v29.i3.pp1560-1566>
- Rahman, R. A., Masrom, S., Samad, N. H. A., Daud, R. M., & Mutia, E. (2023b). Machine learning prediction of video-based learning with technology acceptance model. *Indonesian Journal of Electrical Engineering and Computer Science*, 29(3), 1560–1566. Scopus. <https://doi.org/10.11591/ijeecs.v29.i3.pp1560-1566>
- Tang, S.-C., & Tang, L.-C. (2024a). Exploring the impact of digital concept mapping methods on nurse students' learning anxiety, learning motivation. *Evaluation and Program Planning*, 106. Scopus. <https://doi.org/10.1016/j.evalprogplan.2024.102466>
- Tang, S.-C., & Tang, L.-C. (2024b). Exploring the impact of digital concept mapping methods on nurse students' learning anxiety, learning motivation. *Evaluation and Program Planning*, 106. Scopus. <https://doi.org/10.1016/j.evalprogplan.2024.102466>
- Vega, N. D., Basri, M., & Nur, S. (2023a). Integrating mobile-assisted learning for a dynamic blended approach in higher education. *Indonesian Journal of Electrical Engineering and Computer Science*, 32(2), 819–827. Scopus. <https://doi.org/10.11591/ijeecs.v32.i2.pp819-827>
- Vega, N. D., Basri, M., & Nur, S. (2023b). Integrating mobile-assisted learning for a dynamic blended approach in higher education. *Indonesian Journal of Electrical Engineering and Computer Science*, 32(2), 819–827. Scopus. <https://doi.org/10.11591/ijeecs.v32.i2.pp819-827>
- Vlachopoulos, D., & Makri, A. (2017). The effect of games and simulations on higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education*, 14(1). Scopus. <https://doi.org/10.1186/s41239-017-0062-1>
- Vogelzang, J., Admiraal, W. F., & van Driel, J. H. (2019). Scrum methodology as an effective scaffold to promote students' learning and motivation in context-based secondary chemistry education. *Eurasia Journal of Mathematics, Science and Technology Education*, 15(12). Scopus. <https://doi.org/10.29333/ejmste/109941>
- Wang, S., Sun, Z., Li, M., Zhang, H., & Metwally, A. H. S. (2024a). Leveraging TikTok for active learning in management education: An extended technology acceptance model approach. *International Journal of Management Education*, 22(3). Scopus. <https://doi.org/10.1016/j.ijme.2024.101009>
- Wang, S., Sun, Z., Li, M., Zhang, H., & Metwally, A. H. S. (2024b). Leveraging TikTok for active learning in management education: An extended technology acceptance model approach. *International Journal of Management Education*, 22(3). Scopus. <https://doi.org/10.1016/j.ijme.2024.101009>
- Yang, C.-M., & Hsu, T.-F. (2020). Integrating design thinking into a packaging design course to improve students' creative self-efficacy and flow experience. *Sustainability (Switzerland)*, 12(15). Scopus. <https://doi.org/10.3390/SU12155929>
- Zhang, X., Sun, J., & Deng, Y. (2023). Design and Application of Intelligent Classroom for English Language and Literature Based on Artificial Intelligence Technology. *Applied Artificial Intelligence*, 37(1). Scopus. <https://doi.org/10.1080/08839514.2023.2216051>