

"Exploring the Use of Technology Pedagogical Content Knowledge Strategy (TPACK) in Javanese Language Learning in Elementary Schools: Design of Mixed Methods with IRAMUTEQ"

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Abstract:

The goal of this study is to examine the application of TPACK (Technological Pedagogical Content Knowledge) in teaching Javanese Language in elementary school, with an emphasis on the technology and instructional strategies used by the teachers. The research design adopted is a mixed method together with IRAMUTEQ as a data analysis tool. Data were collected by observing, interviewing, and analyzing documents. The study's results mean that teachers use different technologies in teaching the Javanese language, but they use the TPACK model to a limited extent only. Moreover, the teaching strategies most often change based on the school context and the student's characteristics. The study reveals prominent recommendations such as understanding and development of TPACK practices along with the creation of pedagogical strategies according to the specific requirements of students. The research expands the knowledge of technology integration in regional language teaching and guides the teachers on how to increase the quality of Javanese education in East Java, Indonesia.

Keywords: iramuteq, Javanese language, mixed method, pedagogical strategy, TPACK, technology.

References

- Aguilar, E. T., Brandalise, M. Â. T., & Silva, G. C. (2022). La utilización de Iramuteq en investigaciones educativas: una perspectiva cualicuantitativa para el análisis de datos textuales. *Studies in Education Sciences*, 3(3), 1059–1069. <https://doi.org/10.54019/SESV3N3-004>
- Albay, A., & Cetin, H. (2023). A mixed method research study on pre-service primary school teachers' mathematical disposition. *Journal on Mathematics Education*, 14(2), 311–338. <https://doi.org/10.22342/JME.V14I2.PP311-338>
- Ali, Z., Azam, R., & Saba, F. (2023). Technological Pedagogical and Content Knowledge of Pre-Service Elementary School Teachers in Karachi, Pakistan: A Quantitative Study. *Journal of Social Sciences Review*, 3(1), 678–688. <https://doi.org/10.54183/JSSR.V3I1.212>

- Amanda Maria. (2022). *Pesquisa Qualitativa E A Análise De Conteúdo Automatizada: Usando O Iramuteq*.
https://www.researchgate.net/publication/359445786_PESQUISA_QUALITATIVA_E_A_ANALISE_DE_CONTEUDO_AUTOMATIZADA_USANDO_O_IRAMUTEQ
- Batista, R. A. S., & Brandalise, M. Â. T. (2023). A utilização do software Iramuteq na análise de dados textuais em revisão sistemática de literatura. *Roteiro*, 48.
<https://doi.org/10.18593/r.v48.32352>
- Bayramberdiyev, N. B. (2022). Methodical Recommendation for the Use of Information Technology in Primary Classes. *Indonesian Journal of Innovation Studies*, 18.
<https://doi.org/10.21070/IJINS.V18I.607>
- Caeli, E. N., & Yadav, A. (2020). Unplugged Approaches to Computational Thinking: A Historical Perspective. *Techtrends*, 64(1), 29–36. <https://doi.org/10.1007/S11528-019-00410-5>
- Castañeda, L., & Villar-Onrubia, D. (2023). Beyond functionality: Building critical digital teaching competence among future primary education teachers. *Contemporary Educational Technology*, 15(1), ep397–ep397.
<https://doi.org/10.30935/CEDETECH/12599>
- Christodoulou, A., & Angeli, C. (2022). Adaptive Learning Techniques for a Personalized Educational Software in Developing Teachers' Technological Pedagogical Content Knowledge. *Frontiers in Education*, 7.
<https://doi.org/10.3389/FEDUC.2022.789397/PDF>
- Corrêa De Paula, M., Pinca, L., Gomes, S., Evangelista, J., & Santos, D. (2022a). O software IRaMuTeQ como recurso para a análise textual discursiva. *Revista Pesquisa Qualitativa*, 10(24), 213–232. <https://doi.org/10.33361/RPQ.2022.V.10.N.24.383>
- Corrêa De Paula, M., Pinca, L., Gomes, S., Evangelista, J., & Santos, D. (2022b). O software IRaMuTeQ como recurso para a análise textual discursiva. *Revista Pesquisa Qualitativa*, 10(24), 213–232. <https://doi.org/10.33361/RPQ.2022.V.10.N.24.383>
- Cortina, T. J. (2015). Reaching a broader population of students through “unplugged” activities. *Communications of The ACM*, 58(3), 25–27.
<https://doi.org/10.1145/2723671>
- Da Silva Bueno, R. W., Niess, M. L., Engin, R. A., Ballejo, C. C., & Lieban, D. (2023). Technological pedagogical content knowledge: Exploring new perspectives. *Australasian Journal of Educational Technology*, 39(1), 88–105.
<https://doi.org/10.14742/AJET.7970>
- da Silva Bueno, R. W., Niess, M. L., Engin, R. A., Ballejo, C. C., & Lieban, D. (2023). Technological pedagogical content knowledge: Exploring new perspectives. *Australasian Journal of Educational Technology*, 39(1), 88–105.
<https://doi.org/10.14742/AJET.7970>

- Djulia, E., Brata, W. W. W., & Amrizal. (2022). Pre-service biology students technological pedagogical and content knowledge (TPCK) as prerequisite for professional biology teacher. *Nucleation and Atmospheric Aerosols*, 2659. <https://doi.org/10.1063/5.0121861>
- do Rosário Lima, V. M., Amaral-Rosa, M., & Ramos, M. G. (2023). Discursive Textual Analysis & Iramuteq: Potentials of the Blended Process. *Acta Scientiae*, 25(4), 1–25. <https://doi.org/10.17648/ACTA.SCIENTIAE.6994>
- Doyle, A., Seery, N., Gumaelius, L., Canty, D., & Hartell, E. (2019). Reconceptualising PCK research in D&T education: proposing a methodological framework to investigate enacted practice. *International Journal of Technology and Design Education*, 29(3), 473–491. <https://doi.org/10.1007/S10798-018-9456-1>
- Fernandes, S. F., de Freitas, R. J. M., da Silva, M. R. F., Leite, L. S., Trigueiro, J. G., Barreto, M. A. F., & Soares, T. C. M. (2023). Elementos Da Educação Interprofissional No Currículo Das Residências Multiprofissionais Em Saúde: Estudo Documental. *Texto & Contexto - Enfermagem*, 32. <https://doi.org/10.1590/1980-265X-TCE-2023-0105PT>
- Garcia-Carrion, R., Gomez, A., Molina, S., & Ionescu, V. (2017). Teacher Education in Schools as Learning Communities: Transforming High-Poverty Schools through Dialogic Learning. *Australian Journal of Teacher Education*, 42(4), 44–56. <https://doi.org/10.14221/AJTE.2017V42N4.4>
- Hayun, M., Lubis, M., Gunadi, R. A. A., & Lestari, M. D. (2023). The Analysis of TPACK's Ability to Increase the Professionalism of Elementary School Teachers in DKI Jakarta. *Al-Ishlah*, 15(1), 1136–1144. <https://doi.org/10.35445/ALISHLAH.V15I1.2369>
- Ismail, M. Z. M. A. B. (2023). Integration of Technological Pedagogical and Content Knowledge in 21st Century Learning. *Jurnal Penelitian Pendidikan IPA (JPPIPA)*, 9(5), 2363–2367. <https://doi.org/10.29303/JPPIPA.V9I5.3732>
- Khan, M. A. A. (2023). Teacher`s ICT training and impact of Teaching-Learning in Primary Education. *BIGM Journal of Policy Analysis*, 1(1). <https://doi.org/10.58718/POLICYANALYSIS1120235>
- Kibirige, I. (2023). Primary Teachers' Challenges in Implementing ICT in Science, Technology, Engineering, and Mathematics (STEM) in the Post-Pandemic Era in Uganda. *Education Sciences*, 13(4), 382–382. <https://doi.org/10.3390/EDUCSCI13040382>
- Magno, C. M. V., & Gonçalves, T. V. O. (2023). O testemunho em pesquisa narrativa e a análise textual discursiva associada ao IRAMUTEQ. *Amazônia*, 19(42). <https://doi.org/10.18542/AMAZRECM.V19I42.12980>
- Melo, U. M. B. de F., & Souza, L. O. de. (2023). Os potenciais do Iramuteq para análise de conteúdo de decisões judiciais. *Brazilian Journal of Development*, 9(1), 4886–4911. <https://doi.org/10.34117/BJDV9N1-336>

- Monteiro, L., de Melo, R., Braga, B., de Sá, J., Monteiro, L., Cunha, M., Gêda, T., & Canuto, A. (2021). Alceste X Iramuteq: Comparative Analysis of the Use of CAQDAS in Qualitative Research. *Advances in Intelligent Systems and Computing, 1345 AISC*, 67–79. https://doi.org/10.1007/978-3-030-70187-1_6
- Montezano, L., Junior, P. R., Santana, R., & Silva, L. F. (2020). *Desafios De Servidores Públicos Do Distrito Federal Para Transferência De Treinamento No Trabalho: Análise Qualitativa Com Uso Do Iramuteq*. 163–175. <https://doi.org/10.36367/NTQR.4.2020.163-175>
- Montezano, L., Resende Junior, P. C., Santana, R., & da Silva, L. F. (2021a). Use of IRAMUTEQ in the Analysis of Qualitative Data on the Perception About Transfer of Training in the Brazilian Federal District's Public Sector. *Advances in Intelligent Systems and Computing, 1345 AISC*, 100–115. https://doi.org/10.1007/978-3-030-70187-1_8
- Montezano, L., Resende Junior, P. C., Santana, R., & da Silva, L. F. (2021b). Use of IRAMUTEQ in the Analysis of Qualitative Data on the Perception About Transfer of Training in the Brazilian Federal District's Public Sector. *Advances in Intelligent Systems and Computing, 1345 AISC*, 100–115. https://doi.org/10.1007/978-3-030-70187-1_8
- Pappa, C. I., Georgiou, D., & Pittich, D. (2023). Technology education in primary schools: addressing teachers' perceptions, perceived barriers, and needs. *International Journal of Technology and Design Education, 34*(2), 1–19. <https://doi.org/10.1007/S10798-023-09828-8>
- Salleh Hudin, S. (2023). A Systematic Review of the Challenges in Teaching Programming for Primary Schools' Students. *Online Journal for TVET Practitioners, 8*(1). <https://doi.org/10.30880/OJTP.2023.08.01.008>
- Salvador, P. T. C. de O., Gomes, A. T. de L., Rodrigues, C. C. F. M., Chiavone, F. B. T., Alves, K. Y. A., Bezerril, M. D. S., & Santos, V. E. P. (2018). Uso do software iramuteq nas pesquisas brasileiras da área da saúde: uma scoping review. *Revista Brasileira Em Promoção Da Saúde, 31*, 1–9. <https://doi.org/10.5020/18061230.2018.8645>
- Seliverstova, I. V., Lyakh, J. A., & Zaitseva, O. V. (2022). Influence of external factors on the information needs of general education teachers. *Perspektivy Nauki i Obrazovaniâ, 60*(6), 698–716. <https://doi.org/10.32744/PSE.2022.6.42>
- Shvardak, M. (2023). Digital interactive technologies in educational process of primary school. *Naukovij Žurnal Hortic'koï Nacional'noi Akademii, 2023–8*, 39–48. <https://doi.org/10.51706/2707-3076-2023-8-3>
- Soares, S. S. S., da Costa, C. C. P., Carvalho, E. C., Queiroz, A. B. A., Peres, P. L. P., & Souza, N. V. D. D. O. (2022). Teaching Iramuteq for use in qualitative research according to YouTube videos: an exploratory-descriptive study. *Revista Da Escola de Enfermagem, 56*. <https://doi.org/10.1590/1980-220X-REEUSP-2021-0396>

- Subrata, H. (2022a). Implementation of 21st Century Learning Principles on Local Content Of Javanese Elementary Schools in East Java. *RA JOURNAL OF APPLIED RESEARCH*, 08(12). <https://doi.org/10.47191/RAJAR/V8I12.01>
- Subrata, H. (2022b). Use of Contextual Learning Approach to Improving Speech Writing Skills in Primary School. *Proceedings of the International Joint Conference on Arts and Humanities 2021 (IJCAH 2021)*, 618. <https://doi.org/10.2991/assehr.k.211223.219>
- Subrata, H., . Rachmadiyah, P., Indrawati, D., & Abidin, Z. (2024). TPCK Investigation of Javanese Language Learning in Indonesian Elementary Schools: Application of Technology and a Pedagogical Approach. *International Journal of Multidisciplinary Research and Analysis*, 07(01). <https://doi.org/10.47191/IJMRA/V7-I01-27>
- Ustilaitė, S., Poteliūnienė, S., Juškevičienė, A., & Sabaliauskas, S. (2023). How do Primary School Teachers Create Meaningful Learning Environment to Motivate Students? *Pedagogika*, 149(1), 53–81. <https://doi.org/10.15823/P.2023.149.3>
- Washbrooke, S. (2023). Teaching and learning with innovative technologies and practices at primary school level. *Pacific Journal of Technology Enhanced Learning*, 5(1), 3–4. <https://doi.org/10.24135/PJTEL.V5I1.165>
- Zhan, Z., He, W., Yi, X., & Ma, S. (2022). Effect of Unplugged Programming Teaching Aids on Children's Computational Thinking and Classroom Interaction: with Respect to Piaget's Four Stages Theory. *Journal of Educational Computing Research*, 60(5), 1277–1300. <https://doi.org/10.1177/07356331211057143>