



Assistant Professor Dr. Wararat Wongkia

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SHORT PROFESSIONAL BIO:

Assistant Professor Dr. Wararat Wongkia is a dedicated educator and researcher specializing in Science and Technology Education at the Institute for Innovative Learning, Mahidol University. She holds a Ph.D. in Science and Technology Education from Mahidol University and has extensive expertise in technology-enhanced learning, mathematics education, computational thinking, and computer education. Her research focuses on the intersection of digital learning, adaptive educational systems, and inclusive learning environments.

Dr. Wararat Wongkia has led numerous research projects, including the development of self-regulated personalized online learning systems to enhance mathematics education for secondary school students. She has also contributed to the creation of assistive technologies, such as interactive mathematical learning tools for visually impaired students. Her work has been widely published in high-impact journals and international conferences.

In addition to her research, Dr. Wararat Wongkia plays a crucial role in curriculum development and academic administration, serving as the Secretariat for Graduate Programs in Science and Technology Education, Institute for Innovative Learning, Mahidol University. She actively mentors graduate students, guiding them in innovative research and pedagogy. Her teaching approach integrates modern technology to create engaging, student-centered learning experiences.

PUBLICATION PROFILE: [Google Scholar](#)



FULL BIO

EDUCATION:

Degree	Degree Name	University	Year
Ph.D.	Science and Technology Education	Mahidol University	2012
Diploma	Teaching Science	Mahidol University	2007
M.Sc.	Mathematics	Mahidol University	2006

INTERESTING RESEARCH TOPICS OR SPECIALTIES:

1. Computers and Mathematics with Applications
2. Technology-Enhanced Learning
3. Mathematics Education
4. Computer Education
5. Computational Thinking

ACADEMIC APPOINTMENT AND TEACHING:

2020–Present	Assistant Professor, Science and Technology Education Program, Institute for Innovative Learning, Mahidol University
2021–2026	Secretariat for Graduate Programmes in Science and Technology Education, Institute for Innovative Learning, Mahidol University
2013–2015	Secretariat for Graduate Programmes in Science and Technology Education, Institute for Innovative Learning, Mahidol University
2012–2020	Instructor, Science and Technology Education Program, Institute for Innovative Learning, Mahidol University

AWARD AND CERTIFICATE:

1. Education Profession

2022	Online Teaching Honorable Mention Award for a Blended Learning Course , Type Online Course Development and Delivery (Full Course) for Academic Year 2021 from Mahidol University
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2. Research

2024	Two Best Conference Paper Awards from the 7 th IEEE Eurasian Conference on Educational Innovation 2024
2023	Best Conference Paper Award from the 6 th IEEE Eurasian Conference on Educational Innovation 2023
2015	Popular Vote for Poster Presentation Award from the 1 st International Conference on Innovation in Education 2012

RESEARCH EXPERIENCES:

2023–2025	A Development of Self-Regulated-Based Personalized Online Learning System to Promote Thai Secondary School Student Performance of
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Mathematics (Principal Investigator) granted by Royal Golden Jubilee (R.G.J.) Ph.D. program Congress 23 from the National Research Council of Thailand

- 2020-2021 **Professional Development Workshop for the Development and Management of Coding Classrooms for 21st century Learners** (Investigator) granted by The Digital Economy Promotion Agency, Thailand and Institute for Innovative Learning, Mahidol University
- 2015-2018 **Automatic Thai Mathematical Speech Recognition** (Principal investigator) granted for a New Researcher by The Thailand Research Found (TRF)
- 2013-2014 **Interactive Mathematics Learning Media for Secondary-School Thai Visually Impaired Students** (Principal investigator) granted for a New Researcher Grant by Mahidol University

RESEARCH VISITING SCHOLAR:

- 2009-2010 **Artificial Intelligence and Machine Learning under supervision of Professor Nick Cercone** at Department of Computer Science and Engineering (CSE), Faculty of Science and Engineering, York University, Canada

PUBLICATIONS:

International Papers

1. Pokhrel, T. R., Laosinchai, P.*, Sriwattanarohtai, N., & **Wongkia, W.** (2026). Construction strategy to conceptualize group theory in an abstract algebra course of undergraduate mathematics. *Mathematic Teaching Research Journal*, 18(3), 98–121. <https://mtrj.common.gc.cuny.edu/>
2. Ingkavara, T., Panjaburee, P.*, **Wongkia, W.**, & Yasri, P. (2026). Effects of a self-regulated personalised ubiquitous learning system on students mathematics learning achievement and behavioural patterns. *International Journal of Mobile Learning and Organisation*, 20(3-4), 376–401. <https://doi.org/10.1504/IJMLO.2026.10070733>
3. Ingkavara, T., Panjaburee, P.*, & **Wongkia, W.** (2024). Design and Assessment of a Personalized Online Mathematics Learning System with Self-Regulated Learning Features: An Educational Design Research. *International Journal of Information and Education Technology*, 14(3), 464–475. <https://doi.org/10.18178/ijiet.2024.14.3.2067> (Q2 SCOPUS)
4. Zhao, J., Panjaburee, P.*, Hwang, G. & **Wongkia, W.** (2024). Effects of a self-regulated-based gamified virtual reality system on students' English learning performance and affection. *Interactive Learning Environments*, 32(9), 5509–5536. <https://doi.org/10.1080/10494820.2023.2219702> (Q1, SCOPUS)
5. **Wongkia, W.** & Poonpaiboonpipat, W.* (2022). Aim-Math: A ubiquitous mathematics learning tool for blind and visually impaired students. *International Journal of Mobile Learning and Organisation*, 16(1), 1–19. (Q1, SCOPUS)



6. Pawa, S., Laosinchai, P., Nokkaew, A., & **Wongkia, W.*** (2020). Students' conception of set theory through a board game and an active-learning unit. *International Journal of Innovation in Science and Mathematics Education*, 28(1), 1–15. (Q3, SCOPUS)
7. Pakdeeviroch, C., Nokkaew, A.*, & **Wongkia, W.** (2019). Capturing conceptual development through the embodied-based experience in infinite sets comparison. *International Journal of Instruction*, 12(3), 795–814. <https://doi.org/10.29333/iji.2019.12348a>. (Q2, SCOPUS)
8. Jamhari & **Wongkia, W.*** (2018). Experiencing the angle properties in a circle. *The Australian Mathematics Teacher*, 74(3), 24–33. (EBSCO)
9. **Wongkia, W.**, Naruedomkul, K.*, & Cercone, N. (2012). I-Math: Automatic Math Reader for Thai Blind and Visually Impaired Students. *Computers and Mathematics with Applications* 64(6), 2128–2140. (Q1, SCOPUS)

National Papers

1. Pokhrel, T. R., Laosinchai, P., Sriwattanothai, N., & **Wongkia, W.** (2026). An Innovative Activity for Learning Groups of Symmetries in Abstract Algebra. *Journal of Mathematics Education*, 6(1), 1–7. <https://doi.org/10.3126/jme.v6i1.95911> (Nepal Journals Online (NepJOL))
2. Pokhrel, T. R., Laosinchai, P., Sriwattanothai, N., & **Wongkia, W.** (2025). Innovative Pedagogical Plan to Conceptualize the Axiomatic Concept of Group Theory. *Academic Journal of Mathematics Education*, 8(1), 69–84. <https://doi.org/10.3126/ajme.v8i1.95324> (Nepal Journals Online (NepJOL))
3. Yaowiwat, M., Poonpaiboonpipat, W., & **Wongkia, W.*** (2024). Research on Thai students' misconceptions in mathematics: a systematic literature review. *Journal of Education and Innovation*, 26(3), 59–85. Retrieved from https://so06.tci-thaijo.org/index.php/edujournal_nu/article/view/264989 (Thai Citation Index (TCI) tier 1)
4. Noythathong, P., **Wongkia, W.**, & Laosinchai, P.* (2021). Grade-11 students' understanding of matrix multiplication after participating in matrix transformation activities according to Pirie-Kieren's model: A Case Study. *Journal of Rangsit University: Teaching & Learning*, 15(2), 112–127. (Thai Citation Index (TCI) tier 1)

Book Chapter

1. **Wongkia, W.**, Naruedomkul, K.*, & Cercone, N. (2013). I-Math: an intelligent accessible mathematics system for people with visual impairment. N. Cercone and K. Naruedomkul (Eds.) *Computational Approaches to Assistive Technologies for People with Disabilities*, 83–108, IOS Press, Amsterdam. doi:10.3233/978-1-61499-258-5-83.

International Conference Proceedings

1. Nurazizah, Ketpichainarong, W., Thipyarat, S., & **Wongkia, W.*** Integrating digital and physical learning: The development of 'Tax Tycoon' for tax education in middle school students. In *2026 14th International Conference on Information and Education Technology (ICIET)*, Koriyama, Japan, 2026, pp. 389-393, <https://doi.org/10.1109/ICIET69664.2026.11561605>.



2. Maung, H., **Wongkia, W.**, Laosinchai, P. & Sriwattanarohtai, N. (2025). Enhancing algorithmic thinking through graph-theoretic unplugged activities. *The 2025 10th International STEM Education Conference (iSTEM-Ed)*, Pattaya, Thailand, 2025, pp. 1–6, doi: 10.1109/iSTEM-Ed65612.2025.11129443.
3. **Wongkia, W.**, & Chaowicharat, E.* (2024, January 26–28). Thai speech to mathematical expressions. *In Proceedings of the Eurasian Conference on Educational Innovation 2024 (ECEI 2024)*, Bangkok, Thailand, p. 345–350, [https://doi: 10.1109/ECEI60433.2024.10510826](https://doi.org/10.1109/ECEI60433.2024.10510826).
4. Shang, Y., Sajjapanroj, S.*, Laosinchai, P. & **Wongkia, W.** (2024, January 26–28). Enhancing Grammatical Accuracy in EFL Students: A Game-Based Approach Utilizing Peer Response Displayed through an Interactive Application. *In Proceedings of the Eurasian Conference on Educational Innovation 2024 (ECEI 2024)*, Bangkok, Thailand, p. 180–184, [https://doi: 10.1109/ECEI60433.2024.10510820](https://doi.org/10.1109/ECEI60433.2024.10510820).
5. Ingkavara, T., Panjaburee, P.* & **Wongkia, W.** (2023, December). Using the self-regulated based personalized online learning system for learning factorization in mathematics. *In Proceedings. Shih, J-L., Kashihara, A., Chen, W., Chen, W., Ogata, H., Baker, R., Chang, B., Dianati, S., Madathil, J., Yousef, A. M. F., Yang, Y. & Zarzour, H. (eds.). Asia-Pacific Society for Computers in Education*, p. 537–542.
6. Ingkavara, T., **Wongkia, W.**, & Panjaburee, P.* (2023). Trends of adaptive/personalized learning and intelligent tutoring systems in mathematics: A review of academic publications from 2010 to 2022. *Engineering Proceedings*, 55(1), 34. <https://doi.org/10.3390/engproc2023055034>
7. Ali, T. A., **Wongkia, W.**, & Laosinchai, P.* (2023). A hybrid board game for learning blockchain mechanisms. *In Proceedings of 11th International Conference on Information and Education Technology (ICIET2023)* (pp. 177–181). Fujisawa, Japan. [https://doi: 10.1109/ICIET56899.2023.10111490](https://doi.org/10.1109/ICIET56899.2023.10111490). (IEEE)
8. Noythathong, P., **Wongkia, W.**, & Laosinchai, P.* (2020). Using matrix-board activities to help students perceive the visual representation of 2x2 matrix multiplication. *In Proceedings of the 7th International Conference Materials on Education (ICME 2020)* (pp. 70–82). Nakorn Pathom, Thailand.
9. Luengwattanachod, P., **Wongkia, W.**, & Laosinchai, P.* (2020). High school students' understanding and retention of the connection between two ways of constructing an ellipse. *In Proceedings of RSU International Research Conference 2020* (pp. 1133–1140), Bangkok, Thailand.
10. Chantarapimon, P., Nokkaew, A., Laosinchai, P., & **Wongkia, W.*** (2020). The logic gate board game for promoting intrinsic motivation and understanding in the science museum. In *A. Mudzakir (Ed.), Journal of Physics: Conference Series 1521: International Conference on Mathematics and Science Education 2019* (pp. 1–7). Faculty of Math and Science Education, Universitas Pendidikan. UK: IOP Publishing. (SCOPUS)



11. Chantatapimon, P., Nokkaew, A., Laosinchai, P., & **Wongkia, W.*** (2019). Logic-Design: a board game to motivate children to learn logic gate learning for children in a science museum. In *Proceedings of 2019 International Conference on Education, Psychology, and Social Science* (pp. 328–335). Japan.
12. Pakdeeviroch, C., Nokkaew, A.*, & **Wongkia, W.** (2018). The investigation of Thai secondary students' perceptions of infinity. In *Proceedings of the 8th ICME-East Asia Regional Conference on Mathematics Education (EARCOME), vol.2* (pp. 204–214), Taipei, Taiwan
13. Jamhari & **Wongkia, W.*** (2018) CircleBoard-Pro: Concrete Manipulative-Based Learning Cycle Unit for Learning Geometry. In C. Yuenyong, T. Sangradit, & S. Chatmaneerungcharoen (Eds.), *AIP Conference Proceedings: International Conference for Science Educators and Teachers (ISET) 2017* (pp. 030021-1–030021-8); 6-8 June 2017, Phuket, Thailand. Taiwan: AIP Publishing. (SCOPUS)
14. **Wongkia, W.** & Naruedomkul, K.* (May, 2015). Thai visually impaired students' requirements toward computer assisted mathematics learning. In *Proceedings of the 2nd International Conference on Education Technologies and Computers (ICETC 2015)*, Thailand.
15. **Wongkia, W.** & Naruedomkul, K.* (March, 2015). I-math in action: an interactive learning media for Thai visually impaired students. In *Proceedings of the 2nd International Conference on Innovation in Education (ICIE 2015)* (pp. 361–363). Thailand.
16. Kinley, **Wongkia, W.**, & Laosinhai, P.* (2014, 5–7 February). Employing contextual examples and graphing activities to enhance students' understanding of the relationship between differentiation and integration in calculus. In *Proceedings of the 2nd ASEAN Plus Three Graduate Research Congress (2nd AGRC)*, S31 Sukhumvit Hotel, Bangkok, Thailand.
17. **Wongkia, W.** & Naruedomkul, K.* (November, 2013). Aim-Math: an audio-based interactive media for learning mathematics. In L. –H. et al. (Eds.) *Proceedings of the 21st International Conference on Computers in Education. Indonesia: Asia-Pacific Society for Computers in Education* (pp. 97–102), Indonesia. (SCOPUS)
18. **Wongkia, W.**, Naruedomkul, K.*, & Cercone, N. (2010, 6-9 July). Automatic Math Reader for Blind and Visually Impaired Students. Oral presentation at the 17th International Conference on Learning, Hong Kong Institute of Education, Hong Kong.
19. **Wongkia, W.**, Naruedomkul, K.*, & Cercone, N. (2010, April). Thai visually impaired's requirements to access mathematics via an automatic math reader. *Proceedings of the 2nd International Conference on Computer Supported Education (CSEDU2010)* (pp. 239–244), Spain.
20. **Wongkia, W.**, Naruedomkul, K., & Cercone, N. (2009, September). Better access to mathematics for visually impaired. In *Proceedings of the 2009 IEEE Toronto International Conference-Science and Technology for Humanity* (pp. 43–48), Canada.



21. **Wongkia, W.**, Panijpan, B.*, & Kruatong, T., (2007, November). Enhancing grade 7 students' understanding of patterns and relations: the tower of Hanoi problem. In *Proceeding of ICASE Asian Symposium*, Thailand.

National Proceedings

1. Lion, A., Niyompol, W.*, & **Wongkia, W.** (2019). Comparison of using donut math stick and abacus in addition and subtraction process of third grade students with visual impairment (in Thai). In *Proceedings of the 3rd National Conference on Education in the Digital Era: Challenges for Humanities and Social Sciences* (pp. 151–163).