WARARAT WONGKIA

Ph.D.
(Science and Technology Education)

CONTACT

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PROFESSIONAL EXPERIENCES

2012-now Lecturer at Institute for Innovative Learning, Mahidol University, Thailand

RESEARCH INTERESTS

- Natural Language, Prosodic and Speech Processing
- Artificial Intelligence with Applications
- Assistive Technologies for people with disabilities
- Computers and Mathematics with Applications
- Technology-Enhanced Learning
- Mathematics Education
- Computer Education
- Computational Thinking

EDUCATION

2006 – 2012 DOCTOR OF PHILOSOPHY (SCIENCE AND TECHNOLOGY EDUCATION)
Institute for Innovative Learning, Mahidol University, Thailand.

Dissertation: i-Math: An Alternative Gateway to Mathematics for Thai Visually Impaired

2005 – 2006 DIPLOMA (TEACHING SCIENCES)
Faculty of Social Science and Humanities, Mahidol University, Thailand

2001 – 2005 BACHELOR OF SCIENCE (MATHEMATICS)
Department of Mathematics, Faculty of Science, Mahidol University, Thailand

Projects:

- 2004 Computer-Aided Instruction in Mathematics for Grade 10 students
- 2005 Fourier Spectra of Leucine in Leptospiral Leucine-Rish Repeat (LiLRR) Protein Sequences
- 2005 Discrete Wavelet Transform of Leucine in Leptospiral Leucine-Rish Repeat (LiLRR) Protein Sequences

2000 – 1998 HIGH SCHOOL (SCIENCE- MATHEMATICS)
Bodindecha (Sing Singhaseni) school, Bangkok, Thailand

SCHOLARSHIPS

1998 – 2011 The Project for the Promotion of Science and Mathematics Talented Teacher (PSMT), supported by Institute for the Promotion of Teaching Science and Technology (IPST), Ministry of Education, Thailand.

SKILLS & QUALIFICATIONS

- Programming abilities in C++, Perl, XSLT, Java, and SWI-Prolog
- Fluent in Thai and English

ACADEMIC EXPERIENCE

I presented myself at

- **The 2nd International Conference on Education Technologies and Computers (ICETC 2015)**, Bangkok, Thailand, as an oral presenter and an author. (May 2015)
- **The 2nd International Conference on Innovation in Education (ICIE 2015)**, Nakhon Pathom, Thailand, as a poster presenter. (March 2015)
- **The 21st International Conference on Computers in Education (ICCE 2013)**, Bali, Indonesia, as an oral presenter and an author. (November 2013)
- **The 1st International Conference on Innovation in Education (ICIE 2012)**, Bangkok, Thailand, as a poster presenter. (December 2012)
- **The 17th International Conference on Learning, Hong Kong Institute of Education**, Hong Kong, as an oral presenter. (July 2010)
- **The 2nd International Conference on Computer Supported Education**, Valencia, Spain, as an oral presenter and an author. (April, 2010)
- **The 2009 IEEE Toronto International Conference-Science and Technology for Humanity**, Ontario, Canada, as an oral presenter and an author. (September, 2009)
- **The ICASE Asian Symposium 2007 on Science Education**, as a poster presenter. (November, 2007)

From May 2009 to April 2010, I was a visiting Ph.D. student at York University, Department of Computer Science and Engineering (CSE), Faculty of Science and Engineering, **York University**, Canada under supervision of Professor Nick Cercone. Fortunately, I had a good opportunity to sit-in many courses of Computer Science and Engineering:

- Introduction to the Theory of Computation
- Design and Analysis of Algorithm

- Functional & Logic Programming
- Human-Computer Interaction
- Computational Linguistics.

RESEARCH GRANTS

2013-2014 Interactive Mathematics Learning Media for Secondary-School Thai Visually Impaired Students, New Researcher Grant, Mahidol University (Act as a Principal investigator)

2015-2018 Automatic Thai Mathematical Speech Recognition, The Thailand Research Found (TRF) Grant for New Researcher (Act as a Principal investigator)

PUBLICATIONS

International Journal

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.

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), 765–814. doi.org/10.29333/iji.2019.12348a.

Jamhari & **Wongkia, W.** (2018). Experiencing the angle properties in a circle. *The Australian Mathematics Teacher, 74* (3), 24–33.

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.

Book Chapter

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 Proceedings

Noythathong, P., **Wongkia, W.**, & Laosinchai, P. (2020). Using matrix-board activities to help students perceive the visual representation of 2x2 matrix multiplication. *Proceedings of the 7th International Conference Materials on Education (ICE 2020)*, Nakorn Pathom, Thailand, 70–82. (6 June 2020)

Luengwattanachod, P., **Wongkia, W.**, & Laosinchai, P. (2020). High school students' understanding and retention of the connection between two ways of constructing an ellipse. *Proceedings of RSU International Research Conference 2020*, Bangkok, Thailand, 1133–1140. (1st May 2020)

Chantarapimon, P., Nokkaew, A., Laosinchai, P., & **Wongkia, W.** (2020). The logic gate board game for promoting intrinsic motivation and understanding in the science museum. *Journal of Physics: Conference series. 1521*, 042112. doi:10.1088/1742-6596/1521/4/042112.

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. *Proceedings of 2019 International Conference on Education, Psychology, and Social Science*, Japan, 328-335. (22-24 August 2019)

Pakdeeviroch, C., Nokkaew, A. & **Wongkia**, W. (2018). The investigation of Thai secondary students' perceptions of infinity. *Proceedings of the 8th ICME-East Asia Regional Conference on Mathematics Education, Vol 2*, Taipei, Taiwan: EARCOME, 204-214. (7-11 May 2018)

Jamhari & **Wongkia, W.** (2018). CircleBoard-Pro: concrete manipulative-based learning cycle unit for learning geometry. *AIP Conference Proceedings 1923*, 030021-1-030021-8. doi:10.1063/1.5019512**.**

Wongkia, W. & Naruedomkul, K. (May, 2015). Thai visually impaired students' requirements toward computer assisted mathematics learning. *Proceedings of the 2nd International Conference on Education Technologies and Computers (ICETC 2015)*, Thailand.

Wongkia, W. & Naruedomkul, K. (March, 2015). I-math in action: an interactive learning media for Thai visually impaired students. *Proceedings of the 2nd International Conference on Innovation in Education (ICIE 2015)*. Thailand, 361-363.

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. *Proceedings of the 2nd ASEAN Plus Three Graduate Research Congress (2nd AGRC)*, S31 Sukhumvit Hotel, Bangkok, Thailand.

Wongkia, W. & Naruedomkul, K. (November, 2013). Aim-Math: an audio-based interactive media for learning mathematics. *L. –H. et al. (Eds.) Proceedings of the 21st International Conference on Computers in Education. Indonesia: Asia-Pacific Society for Computers in Education*, Indonesia, 97–102.

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.

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)*, Spain, 239–244.

Wongkia, W., Naruedomkul, K., & Cercone, N. (2009, September). Better access to mathematics for visually impaired. *Proceedings of the 2009 IEEE Toronto International Conference-Science and Technology for Humanity*, Canada, 43–48.

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

National Proceedings

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 impairement (in Thai). *Proceedings of the 3rd National Conference on Education in the Digital Era: Challenges for Humanities and Social Sciences*, 151–163. (10 June 2019)