

Personal Information

First Name: MONAMORN
Last Name: PRECHARATTANA
Date of Birth: June 04, 1984
Place of Birth: Bangkok, Thailand
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UKPSF Level: Senior Fellow (Reference No. PR 326684)



Research Interests

My research centers on **technology-enhanced learning**, with a particular focus on educational games and simulations, Virtual Reality (VR/XR), ubiquitous learning, flipped and blended learning, personalized and adaptive learning, and AI-supported learning systems. These technologies serve as a core foundation for designing and investigating innovative learning environments across diverse disciplinary contexts. My interdisciplinary research spans **Physics, Engineering, Biology, Medicine, Nursing, Business and Marketing, English Language Education, Design Thinking, Computational Thinking, STEM/STEAM Education, and Coding/Robotics Education**.

Education

2007-2011	Mahidol University, Thailand	
	<i>Degree:</i>	Ph.D. (Physics), (GPA 3.73)
	<i>Dissertation:</i>	A Biophysical Cellular Automata Model of CD4 ⁺ T Cell Dynamics in HIV/AIDS Infection: Stochastic Approach
	<i>Advisor:</i>	Assoc. Prof. Wannapong Triampo, Ph.D.
	<i>Grant:</i>	The Strategic Scholarships for Frontier Research Network, for Ph.D. Program, Commission on Higher Education (CHE), Thailand
2006-2007	Kasetsart University, Thailand	
	<i>Degree:</i>	Grad.Dip. (Teaching Science Profession), (GPA 3.85)
	<i>Senior project:</i>	Enhancing of Achievement in Physics for the Mattayom 4 Students through a Mastery of Learning
	<i>Advisor:</i>	Asst. Prof. Narumol Yutakhom, Ph.D. Pongprapan Pongsophon, Ph.D.
	<i>Grant:</i>	The Project for Promotion of Science and Mathematics Teacher, Institute for the Promotion of Teaching Science and Technology (IPST), Thailand
2002-2006	Kasetsart University, Thailand	
	<i>Degree:</i>	B.Sc. with 2 nd class honors (Physics), (GPA 3.38)
	<i>Senior project:</i>	Probability of Finding Strange Quarks in Stars, or Strange Stars

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Advisor: Maneenate Wechakama, M.Sc.
Grant: The Project for Promotion of Science and Mathematics Teacher, Institute for the Promotion of Teaching Science and Technology (IPST), Thailand

Academic Position

2011-Present Assistant Professor at Institute for Innovative Learning, Mahidol University, Thailand
 2026-Present Program Secretary, Doctor of Philosophy Program in Learning Innovation (International Program – 100% Online), Institute for Innovative Learning, Mahidol University

Awards

2026 > “iGEAR Learning System: A Personalized Learning Platform with Hands-on STEM Gear Kit” was awarded the Gold Medal Invention Award and the NRCT Special Award: Excellent Invention at the 9th China (Shanghai) International Invention & Innovation Expo 2026 in Shanghai, People’s Republic of China.
 > “Wireless Sensor-based Newborn Intramuscular Injection Training Manikin” was awarded the “Very Good” Award for Invention and Innovation under the National Research Awards by the National Research Council of Thailand (NRCT) 2026.
 2025 > Best teacher award, Institute for innovative learning, Mahidol University
 > International Innovation Award, Gold Award. “Wireless Sensor-based Newborn Intramuscular Injection Training Manikin” award by WorldInvent Singapore 2025 (WoSG)
 > National Research Award: Inventor Award 2025 “STEM Learning Kit for creating and learning aerodynamic principles with an embedded system that can identify coordinates” award by the National Research Council of Thailand.
 > Best international publications award, Institute for innovative learning, Mahidol University.
 2023 > Mahidol Science Innovative Educator Award 2023 by Science Faculty, Mahidol University.
 > MU SDGs Award 2023. Honorable Mention by Environment and Sustainable Development Department, Mahidol University.
 > First prize for excellence in teaching and learning management strategies applied to coding by College of Lifelong Education, Chiang Mai University.
 2022 > Innovation Project Proposal Writing Award, Good Level. Competition Category: Artificial Intelligence Technology and Equipment Development. Thailand Research Expo 2022 by the National Research Council of Thailand.
 > Innovation Award for Graduate Studies, Good Level. Competition Category: Artificial Intelligence Technology and Equipment Development. Thailand Research Expo 2022 by the National Research Council of Thailand.
 > Innovation Award, Gold Medal Level. Competition Category: Artificial Intelligence Technology and Equipment Development. Thailand Research Expo 2022 by the National Research Council of Thailand.

Research Funding

Principle Investigator

2026	Development of a Personalized Virtual Reality Gamified Learning System to Enhance University Teachers' Constructive Feedback Competence. Grant: Division of Education, Mahidol University, Thailand
2023-2025	Development of STEM activities at the upper primary level for schools around Bangchak Oil Refinery, Bangchak Corporation Public Company Limited. Grant: Bangchak Corporation Public Company Limited
2023	Wireless Sensor-based Newborn Intramuscular Injection Training Manikin Grant: I-2B (2023). National research council of Thailand, Thailand
2016-2020	Development of stochastic cellular automata for investigation of rice's growth rate and yield prediction in system of rice intensification for Khao Dawk Mali 105 rice line Grant: Government Budget Research Grant (2017-2018). National Research Council of Thailand, Thailand
2011-2018	Medical modeling and simulation to develop a stochastic cellular automaton model: effects of cell-mediated immunity to eradicate HIV-1 infection Grant: TRF-CHE Research Grant for New Scholar (2016). The Thailand Research Fund, Thailand
2012-2016	Cellular automata based game for enhancing logical thinking Grant: Research Assistantships (2013). Mahidol University, Thailand
2013-2014	Development of inquiry-based computer instruction package of immune system Grant: Young Researcher Grant Program (2014). Mahidol University, Thailand

Co-Researcher

2025	The development of a prototype curriculum for STEM education titled Smart Garden with STEM Robotic and Coding to prepare learners to become global citizens in the digital era Grant: Strategic Fund (SF)
2024	STEM and Coding Skills Incubation Program for the Sustainable Development of Young People and Workforce Capacity Grant: Strategic Fund (SF)
2023	The guideline on the use of smart farming for improving agricultural productivity: a case study of community enterprise and young smart farmer, Nakhon Pathom Province Grant: Strategic Fund (SF)
2022-2023	Develop STEM toys to enhance 21 st century in coding skills Grant: Pre-seed. Institute for Technology and Innovation Management (iNT Mahidol), Mahidol University, Thailand
2021-2023	Development of learning modules to prepare Thai teachers for artificial intelligence technology era Grant: Fundamental Fund (FF) (2021-2023). Thai Science Research and Innovation (TSRI), Thailand
2016-2018	Development of Learning Innovation Based on STEM Education for Promoting Learning Skills in Physics for 21st Century Learners

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Grant: (2016-2018) Thailand Center of Excellence in Physics,
Thailand

Academic Projects

- 2021-Present STEM&Robotics Camp
- 2019 The Connecting the Mekhong through Education and Training (USAID-LMI COMET)
- 2018 TEDxMahidolU 2 (Head of Finance and Accounting)
- 2017 Drama Program in health promotion for Mahidol University Students and Staff
Grant: Thai Health Promotion Foundation, Thailand
- 2017 SPOC and MOOC Development Project (Academic Year 2017)
“Measurement and Evaluation in Education (Teachers and Researchers Edition)” course
Grant: Office of the Higher Education Commission: OHEC, Thailand
- 2017 TEDxMahidolU (Head of Information Technology and Production)
- 2017 Enjoy Science Project by Chevron Thailand

Professional Experiences by

o Career works

- 2011-Present Lecturer, Institute for Innovative Learning, Mahidol University, Thailand
- 2019-2025 Editor, Kurumediapress, Bangkok, Thailand
- 2015-2019 Senate Committee, Mahidol University, Thailand
- 2014-2016 Writer, Aksorn chaloan tat, Bangkok, Thailand
- 2014-2015 Invited Instructor, Rajinibon School, Bangkok, Thailand
- 2013 Special Lecturer, College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Thailand

o Subjects/ Courses

Physics Education
Computer Education
Research in Science and Technology Education
Analysis of Research in Teaching Science
Innovations in Science and Technology Education
Measurement and Evaluation in Education
Seminars in Science and Technology Education
AI and Robotics in STEM Education
Principles of Teaching and Learning
Emerging Technology for Learning

o Thesis / Dissertations Advising

- Development and Evaluation of a Personalized AI-Enhanced Virtual Learning Platform to Enhance CTG Interpretation Competency Among Medical Students
- A Gamified Bayesian Adaptive Intelligent Tutoring System Integrating the Form, Meaning, Use, and Pronunciation (FMUP) Framework to Enhance Vocabulary Depth and Reading Comprehension in EAL Learners

- A Digital Game-Based 5E Learning Environment with Embedded Predict–Observe–Explain (POE) Activities and AI-supported feedback system to Enhance Grade 10 Students’ Understanding of Cellular Respiration
- Enhancing Learning Performance of Undergraduate Students in Gauss’ Law Through a Gamified VR-based POEDE Personalizing System.
- Personalized Flipped STEM-Based Gear Camp for Enhancing Understanding, Self-Regulated Learning, Metacognitive skills, and Engagement in High School Students.
- Unplugged and Plugged Coding Activities Driven by Self-Questioning Strategies for Enhancing Computational Thinking Skills, Metacognition and Knowledge of Solid Waste Management (SDG11) in Elementary Students.
- Effects of 5E Game-Based VR on Enhancing International Business Undergraduates' Cross-Cultural Marketing Strategies, Learning Performance, Affection, and 21st Century Skills.
- A Blended Learning Package on Newborn Intramuscular Injection.
- A Context-Aware Ubiquitous Learning Driven by Reasoning-Based Learning Cycle to Enhance Students’ Scientific Conceptual Understanding, Reasoning, Argumentation, and Environment Awareness: Rice Field Environment.
- Development of a Guided Inquiry Laboratory to Enhance Students’ Understanding of Law of Energy Conservation.
- Game-based Cellular Automata to Enhance Logical Thinking. Development of a Science Learning Unit to Enhance High School Students’ Understanding of Rainbow Based on Predict-Observe-Explain Approach.

o Research Fellowships

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| 2025 | Host Supervisor for Visiting Scholar Program. Dr. Yang WeiZhi, School of Physics and Electronic Engineering, Jiaying University. The People's Republic of China (PRC). Research Program “Collaborative Development of a Digital-Intelligent STEM Teacher Training Framework Integrating Robotics, Programming, and Emerging Technologies for China and Thailand” |
| 2015 | Visiting scientist at Biophysics group, School of Physics and Mechanical & Electrical Engineering, Xiamen University, China |
| 2013 | Visiting scientist at Faculté de Médecine et de Pharmacie de Grenoble - Université Joseph Fourier (UJF), France |

o Books writer

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| 2015-2016 | Physics Text Books 1 and 2 (Based core curriculum 2551, Level: High school, Publisher: Aksorn chaloan tat)
Physics Exercise Books 3 (Based core curriculum 2551, Level: High school, Publisher: Aksorn chaloan tat) |
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Publication Statistics

Citations: Google Scholar: 224 with h-index of 9

Publications

o International journals

- 2026 Mongkholsiriwattana, C., & **Precharattana, M.** (2026). Design, calibration, and classroom implementation of a low-cost gear apparatus for secondary physics education. *Physics Education*, 61(5), 055009.
- Xintong, H., Wongkitrungrueng A., & **Precharattana M***. Effects of a 5E Game-Based VR Learning System on International Undergraduates' Cross-Cultural Marketing Competence, Affective Outcomes, and 21st-Century Skills. *International Journal of Mobile Learning and Organisation*. (In press).
- Fayanto, S., & **Precharattana, M.** (2026). Construct Parabolic Motion using the R-Program for Physics Learning. *JoPhRA: Journal of Physics Research and It's Application*, 2(2), 43-48.
- Fulminar, L. P., & **Precharattana, M.** (2026). Development of a gamified web-based interactive program on constructing free-body diagrams for secondary school students. *Physics Education*, 61(2), 025015.
- 2025 Mongkholsiriwattana, C., & **Precharattana, M***. (2025). STEM-Based Gear Activities for Enhancing Understanding and Satisfaction in a Thai Multi-Grade Engineering Class. *AsTEN Journal of Teacher Education*.
- 2024 **Precharattana, M.**, Pitipornatapin, S. *, Sanium S., Kitrunloadjanaporn P., & Phengpom T. Enhancing Teachers' Integrating Micro:bit in their Teaching through Professional Development Program within Smart Farm Context. *Kasetsart Journal of Social Science*. 2024, 45(4), 1141-1150.
- 2024 Tantacharoenrat, C., and **Precharattana, M***. (2024) The survey of learning experience of pediatric injection among registered nurses and nursing students using a design thinking approach. *Journal of Education and Health Promotion*, 13(1), 226.
- 2023 Fayanto, S., Kuswandi, D., **Precharattana, M.**, Tahang, L., & Ali, H. M. (2023). Introduction and Testing about Development the Technology-Based EIGEC Models to Enhance Student Learning Outcomes. *Science Education International*, 34(4), 347-355.
- 2023 Tantacharoenrat, C., and **Precharattana, M***. An Electronic-based Simulator for Intramuscular Injection in Newborns. *International Journal of Nursing Education*. 2023; 15(2): 1-6.
- 2023 **Precharattana M***, Sanium S, Pongsanon K, Ritthipravat P, Chuechote S, and Kusakunniran W. Blended Engineering Design Process Learning Activities for Secondary School Students during COVID-19 Epidemic: Students' Learning Activities and Perception. *Education Sciences*. 2023; 13(2): 159.
- 2022 Htet Aung Z, Sanium S, Songsaksupachok C, Kusakunniran W, **Precharattana M**, Chuechote S, Pongsanon K, and Ritthipravat P*. Designing

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- A Novel Teaching Platform For AI: A Case Study in Thai School Context. Journal of Computer Assisted Learning. 2022; 38(6): 1714-1729.
- 2020 Wangdi D, **Precharattana M***, Kanthang P. A Guided Inquiry laboratory to enhance students' understanding of the Law of Mechanical Energy Conservation. International Journal of Innovation in Science and Mathematics Education. 2020 Aug 28;28(1).
- 2018 Kitrunloadjanaporn P, Phothong A, and **Precharattana M***. Seesaw Balancing: a Hands-on Model to Understand Moment of Force in Classroom, Applied Mechanics and Materials 2018; 879: 269-275.
- 2018 Kajonphol T*, Tonwong S, Nonthakod S, Sangsiri C and **Precharattana M**. Effect of Spacing and No. of Seedling per Hill on Growth and Yield Components of Rice cv. Chai Nat 1 under System of Rice Intensification , Applied Mechanics and Materials 2018; 879: 95-100.
- 2018 Kajonphol T, Seetaput N, **Precharattana M**, and Sangsiri C*. Correlation and Multiple Regression Model for Economic Traits of Local Rice (*Oryza Sativa* L.) in Upland Rice System, Applied Mechanics and Materials 2018; 879: 71-77.
- 2018 Choegyul S and **Precharattana M***. Indoor Rainbow Model: an Apparatus for Observing Spectrum in Classroom, Applied Mechanics and Materials 2018; 879: 260-266.
- 2018 **Precharattana M**. Development of Computer-assisted Instruction Lesson on Immune System Organs and Immune System Diseases, Applied Mechanics and Materials 2018; 87: 276-283.
- 2017 Wangdi D, Kanthang P and **Precharattana M***. Development of a hands-on model embedded with guided inquiry laboratory to enhance students' understanding of law of mechanical energy conservation, Asia-Pacific Forum on Science Learning and Teaching 2017; 18(2).
- 2016 Dhatsuwan A* and **Precharattana M**. BLOCKYLAND: Cellular Automata Based Game to Enhance Logical Thinking, Simulation and Gaming 2016; 47(4): 445-464. DOI: 10.1177/1046878116643468.
- 2015 **Precharattana M**. Stochastic Modeling for Dynamics of HIV-1 Infection Using Cellular Automata: a Review, Journal of Bioinformatics and Computational Biology 2015;14(1):1-17. DOI:10.1142/S021972001630001X.
- 2014 **Precharattana M*** and Triampo W. Modeling Dynamics of HIV Infected Cells Using Stochastic Cellular Automaton, Physica A: Statistical Mechanics and its Applications 2014;407:303-311.
- 2011 **Precharattana M**, Triampo W*, Modchang C, Triampo D, Lenbury Y, Nokkaew A. Stochastic Cellular Automata Model and Monte Carlo Simulations of CD4⁺ T Cell Dynamics with a Proposed Alternative Leukapheresis Treatment for HIV/AIDS, Computer in biology and medicine 2011;41(7):546-558.
- 2011 Sudprasert K, **Precharattana M**, Nuttavut N, Triampo D, Pattanasiri B, Lenbury Y and Triampo W*. Non-equilibrium Statistical Mechanics of Driven Lattice Gas Model: Probability Function, FDT-violation, and Monte Carlo Simulations, International Journal of Computational and Mathematical Sciences 2011;5(2):84-92.
- 2010 **Precharattana M**, Triampo W, Modchang C, Triampo D, Lenbury Y*. Investigation of Spatial Pattern Formation Involving CD4⁺ T cells in

HIV/AIDS Dynamics by a Stochastic Cellular Automata Model, *International Journal of Mathematics and Computer in Simulations* 2010;4(4):135-143.

o Book Chapter

- 2012 **Precharattana M** and Triampo W. Effects of Initial Concentration and Severity of Infected Cells on Stochastic Cellular Automaton Model Dynamics for HIV Infection. G.C. Sirakoulis and S. Bandini (Eds.): ACRI 2012, LNCS 7495, pp. 454–463, 2012. © Springer-Verlag Berlin Heidelberg 2012.

o Proceedings

- 2025 Hua, X., & **Precharattana, M.** (2025, November). Developing a 5E Game-Based VR Learning System to Enhance Cross-Cultural Marketing Competence and 21st Century Skills in International Undergraduates. In *Proceedings of the 2025 9th International Conference on Education and E-Learning* (pp. 38-41).
- M. Precharattana**, T. Phengpom, P. Kitrunloadjanaporn, S. Sanium and N. Jirakittayakorn, "Design and Development of a Gamified Web Platform to Enhance Design-Based Digital Maker Skills in Thai FabLabs," *2025 International Workshop on Artificial Intelligence and Education (WAIE)*, Yokohama, Japan, Japan, 2025, pp. 1-5, doi: 10.1109/WAIE67422.2025.11381204.
- Yang, W., Yang, Y., & **Precharattana, M.** (2025, October). Evaluating DeepSeek for Automated Screening of Chinese Educational Literature: A Reliability-Centered Study of a Domestic LLM in a High-Ambiguity Domain. In *2025 International Conference on Engineering and Emerging Technologies (ICEET)* (pp. 1-6). IEEE.
- Kamalabadi, B. T. & **Precharattana, M.** (2025). Elementary School Students' Perception of Integrating Unplugged and Plugged Coding Activities with Self-Questioning Strategies for Solid Waste Management (SDG11). 10th International STEM Education Conference (iSTEM-Ed), Pattaya, Thailand, 2025, pp. 1-6, doi: 10.1109/iSTEM-Ed65612.2025.11129389.
- 2023 Mongkholsiriwattana, C., Phengpom, T., & **Precharattana, M.** (2023, December). Development of computer-aided learning with hands-on activities kits on topic of gears for a flipped robotics camp. In *Journal of Physics: Conference Series* (Vol. 2653, No. 1, p. 012002). IOP Publishing.
- 2018 **Precharattana M**, Kajonphol T. A stochastic cellular automata model for rice tillering in the system of rice intensification. In *Journal of Physics: Conference Series* 2018 Jul (Vol. 1053, No. 1, p. 012104). IOP Publishing.
- 2014 Wangdi D, Kanthang P and **Precharattana M.** A Low Cost Hands-on Model for Demonstration on Law of Mechanical Energy Conservation, Proceeding of the 40th Congress on Science and Technology of Thailand, December 2-4, 2014; Khon Kaen, Thailand.
- 2014 Choegyul S and **Precharattana M.** Development of a Learning Unit to Enhance High School Students' Understanding about Spectrum Formation in Rain Drop Using Predict-Observe-Explain (Poe) Learning Cycle, Proceeding of the 2nd ASEAN Plus Three Graduate Research Congress, February 5-7, 2014; Bangkok, Thailand.

- 2012 **Precharattana M** and Triampo W. Stochastic Cellular Automata for HIV Infection with Effects of Cell-mediated Immunity, Proceeding of the 2012 International Conference on Scientific Computing (CSC'12), July 16-19, 2012; Las Vegas, USA.
- 2010 **Precharattana M**, Triampo W, Modchang C, Triampo D, Lenbury Y. Simulation of a Stochastic Cellular Automata HIV/AIDS Model for Investigation of Spatial Pattern Formation Mediated by CD4⁺T Cells and HIV Dynamics, Proceeding of the 10th WSEAS International Conference on Applied Computer Science (ACS'10), October 4-6, 2010; Iwate Prefectural University, Japan.

Patents

- 2026 Gear Apparatus for Studying Rotational Motion and Torque
- 2024 Wireless Sensor-based Newborn Intramuscular Injection Training Manikin
- 2022 An Electronic-based Simulator for Intramuscular Injection for Newborns
- 2021 Law of Energy Conservation instructional tool for a guided inquiry laboratory (petty patent No. 18158)

Selected LMS Development works

<https://fte.lunka.io/soil>
<https://code-everywhere.web.app/allmodule>
<https://injection-everywhere.web.app/>
<https://engineer-gear-train.org/>

Academic Services

o Invited Talks & Lectures

- 2027 Invited Speaker
The International Conference on Artificial Intelligence in Education and Smart Campus (AIESC 2027)
 Musashino University Ariake Campus, Tokyo, Japan, 2–4 April 2027.
 Invited Talk: *[Title to be confirmed]*
- 2026 Invited Lecturer / Workshop Facilitator
 Faculty of Economics, Chiang Mai University, Chiang Mai, Thailand.
 Invited Workshop: *“Designing Learning for the Future: From Future Skills to AI, Games, and Immersive Learning.”*
- 2025 Invited Speaker
The 20th Siam Physics Congress 2025 (SPC2025)
 Pullman Khon Kaen Raja Orchid, Khon Kaen, Thailand, 11–13 June 2025.
 Invited Talk: *“Enhancing Primary Educators’ Confidence and Skills in Coding Instruction through a Design Thinking Teacher Training Program in the Context of Urban Vegetable Gardening.”*

o Conference Leadership & Academic Service

- 2027 Technical Program Committee (TPC) Member
 International Conference on Artificial Intelligence and Education Technology (AIETA 2027)
 Beijing, China.
- 2027 Technical Committee Member
 The International Conference on Artificial Intelligence in Education

- and Smart Campus (AIESC 2027)
Tokyo, Japan.
- 2026 Special Session Chair
The 10th International Conference on Education and E-Learning (ICEEL 2026)
Tokyo, Japan, 27–29 November 2026.
Special Session: “AI-Enhanced Learning Environments for Future-Ready Education: Personalization, Immersive Technologies, and Intelligent Feedback.”
- o Journals Reviewer
Frontiers Immunology (IF = 6.429)
PLOS ONE (IF = 3.057)
PHYSICA A (IF = 1.785)
Asia-Pacific Forum on Science Learning and Teaching (IF=0.161)
- o Books Reviewer
2019 PHYSICS BOOK 1-6 (Based core curriculum 2561, Level: High school, Publisher: AIMPHAN)
SCIENCE BOOK 1-6 (Based core curriculum 2561, Level: Primary school, Publisher: KURU media)
2018-2019 COMPUTATIONAL THINKING 1-6 (Based core curriculum 2561 by STEM based Education technique, Level: Primary school, Publisher: EDUKIDS)
2016-2017 SCIENCE BOOK 1-6 (Based core curriculum 2551 by STEM based Education technique, Level: Primary school, Publisher: EDUKIDS)
- Teaching
2021 Invited Instructor, Roong-Aroon School, Bangkok, Thailand
2014-2019 Invited Instructor, Horwang School, Bangkok, Thailand