Personal Information

First Name: MONAMORN
Last Name: PRECHARATTANA
Date of Birth: June 04, 1984
Place of Birth: Bangkok, Thailand
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Research Interests

Technology-enhanced learning in both scientific and non-scientific fields, including physics education, engineering education, nursing education, agricultural systems, marketing, design thinking, computational thinking, STEM, and coding.

Education

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

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Awards

2022   > Innovation Project Proposal Writing Award, Good Level. Competition Category: Artificial Intelligence Technology and Equipment Development. Thailand Research Expo 2022 by 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 National Research Council of Thailand.

> Innovation Award, Gold Medal Level. Competition Category: Artificial Intelligence Technology and Equipment Development. Thailand Research Expo 2022 by National Research Council of Thailand.

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.

Research Funding

Principle Investigator

2023   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

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 21st 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) (2 0 2 1-2023). 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
	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-Present	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 for high school students
  Physics for pre-engineering students
  Physics Education
  Research in Science and Technology Education
  Analysis of Research in Teaching Science
  Innovations in Science and Technology Education
  Problem-Based Learning and Project-Based Learning
  Measurement and Evaluation in Education
  Seminars in Science and Technology Education
  How to Write Teaching Plan
  How to Manage Class for the Effective Learning Process
  How to Write Academic Paper
  Teaching Professional Ethics
  Design Thinking
  360 Degree Virtual Tour

Simulation

- o Thesis / Dissertations Advising
    Chanita Tantacharoenrat. A Blended Learning Package on Newborn Intramuscular Injection. Doctor of Philosophy (Science and Technology Education)
    Chulaluk Yimdee. A Context-Awareness Ubiquitous Learning Driven by Reasoning-Based Learning Cycle to Enhance Students' Scientific Conceptual Achievement, Reasoning, Argumentation, and Environment Awareness: Rice Field Environment. Doctor of Philosophy (Science and Technology Education)
    Dumcho Wangdi. Development of a Guided Inquiry Laboratory to Enhance Students' Understanding of Law of Energy Conservation**.** Master of Science (Science and Technology Education)
    Apinya Dhatsuwan. Game-based Cellular Automata to Enhance Logical Thinking. Doctor of Philosophy (Science and Technology Education)
    Sonam Choegyal. Development of a Science Learning Unit to Enhance High School Students' Understanding of Rainbow Based on Predict-Observe-Explain Approach. Master of Science (Science and Technology Education)

- o Research Fellowships
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
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)

Publication Statistics
Journal Articles: 17
Conference Papers: 6
Citations: Google scholar: 118 with h-index of 6

Publications
- o International journals

2023	Tantacharoenrat, C., and **Precharattana, M***. 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. 2023 (In press)
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, Songsaksuppachok C, Kusakunniran W, **Precharattana M**, Chuechote S, Pongsanon K, and Ritthipravat P[*]. Designing 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   Kitrungloadjanaporn 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.

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.

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.

Choegyal S and **Precharattana M**[*]. Indoor Rainbow Model: an Apparatus for Observing Spectrum in Classroom, Applied Mechanics and Materials 2018; 879: 260-266.

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.

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.

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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

2018   **Precharattana M**, Kajonphol T. A stochastic cellular automata model for rice tillering in the system of rice intensification. InJournal 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 Hans-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.
            Choegyal 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.

o   Conference presentations

            Kitrungloadjanaporn P, Phothong A, and **Precharattana M**. Seesaw Balancing: a Hands-on Model to Understand Moment of Force in Classroom. The 8th RMUTP International Conference on Science, Technology and Innovation for Sustainable Development: Challenges towards the Digital Society, June 22-23, 2017; Pullman Bangkok King Power, Bangkok, Thailand

            Tonwong S, Nonthakod S, Kajonphol T, 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. The 8th RMUTP International Conference on Science, Technology and Innovation for Sustainable Development: Challenges towards the Digital Society, June 22-23, 2017; Pullman Bangkok King Power, Bangkok, Thailand

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. The 8th RMUTP International Conference on Science, Technology and Innovation for Sustainable Development: Challenges towards the Digital Society, June 22-23, 2017; Pullman Bangkok King Power, Bangkok, Thailand

Choegyal S and **Precharattana M**. Indoor Rainbow Model: an Apparatus for Observing Spectrum in Classroom. The 8th RMUTP International Conference on Science, Technology and Innovation for Sustainable Development: Challenges towards the Digital Society, June 22-23, 2017; Pullman Bangkok King Power, Bangkok, Thailand

Precharattana M. Development of Computer-assisted Instruction Lesson on Immune System Organs and Immune System Diseases. The 8th RMUTP International Conference on Science, Technology and Innovation for Sustainable Development: Challenges towards the Digital Society, June 22-23, 2017; Pullman Bangkok King Power, Bangkok, Thailand

Dhatsuwan A and **Precharattana M**. Learning of Cellular Automata Using Paper-Based Game: Pilot Study. The 2nd ASEAN Plus Three Graduate Research Congress (2AGRC), February 5-7, 2014; Bangkok, Thailand.

Precharattana M and Triampo W. Stochastic Cellular Automaton Model for Dynamics of HIV Infection. International Conference in Mathematics and Applications (ICMA-MU 2013), January 19-21, 2013, Bangkok, Thailand.

Precharattana M. Exploring the Students' Demand on Media Used in Immune System Teaching. The 1st International Conference on Innovation in Education (ICIE 2012), November 7-9, 2012, Bangkok, Thailand.

Precharattana M and Triampo W. Effects of Initial Concentration and Severity of Infected Cells on Stochastic Cellular Automaton Model Dynamics for HIV Infection. The 10th edition of ACRI 2012 Conference (Cellular Automata for Research and Industry), September 24-27, 2012, Santorini, Hellenic Republic.

Precharattana M, Nokkeaw A, Triampo W, Triampo D and Lenbury Y. How could Leukocytapheresis as an Alternative HIV/AIDS Treatment Save Life?: Stochastic Model and Simulations. The 18th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2009), July 6-10, 2009, Peking University, Beijing, People's Republic of China.

Precharattana M, Nokkeaw A, Triampo W, Triampo D, Lenbury Y, "The Quest for a Strategy to Survive with HIV/AIDS, How could Leukocytaphaeresis as an Alternative HIV/AIDS Treatment Save Life?" , Physic for dynamics society (SPC 2009), March 19-21, 2009, Petchaburi , Thailand.

Precharattana M, Wechakama M. Neutron Star. Science and Technology for Youth, Bangkok International Trade & Exhibition Centre (BITEC), March 14-15, 2006, Bangkok, Thailand.

Products

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)
2016	BLOCKYLAND: Cellular automaton educational game for enhancing logical thinking Cellular automaton educational game for enhancing logical thinking
2014	Indoor Rainbow model: an apparatus for studying rainbow formation
2014	Seesaw Balancing: a simple apparatus for studying moment of force

2013   Inquiry-based computer instruction package of immune system

Academic Services

- 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)

- Books Reviewer

Year	Description
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

Year	Description
2021	Invited Instructor, Roong-Aroon School, Bangkok, Thailand
2014-2019	Invited Instructor, Horwang School, Bangkok, Thailand