

**Gary Ka Wai Wong**

Room 111B, Runme Shaw Building

The University of Hong Kong, 1 Pokfulam Road, Hong Kong

Tel: (+852) 2241-5082; Email: wongkwg@hku.hk

Webpage: <http://web.edu.hku.hk/staff/academic/wongkwg>ORCID: <https://orcid.org/0000-0003-1269-0734>Google Scholar: <https://scholar.google.com/citations?user=UV6mOFMAAAAJ&hl=zh-TW>**POSITION: Associate Professor (Tenured)**

- Academic Unit of Human Communication, Development and Information Sciences  
Faculty of Education, The University of Hong Kong (HKU)

**HONORARY POSITION: Director**

- Centre for Information Technology in Education, Faculty of Education, HKU, 2021 – 2023; 2023 – 2025.

**EDUCATION**

- 2006     **Bachelor of Science in Computer Science and Mathematics (Double Major)**  
**Minor in Information System**  
*Honour: magna cum laude*  
 Brigham Young University Hawaii, USA
- 2009     **Master of Philosophy in Electronic and Computer Engineering**  
 The Hong Kong University of Science and Technology, HKSAR
- Thesis title: “A Comparative Study and Novel Heuristic Approach in the IEEE 802.16e Power Saving Mechanism”  
 Advisor: Professor Danny H. K. Tsang, *IEEE Fellow*  
 Co-advisor: Professor Qian Zhang, *IEEE Fellow*
- 2012     **Doctor of Philosophy in Computer Science**  
 City University of Hong Kong, HKSAR
- Thesis title: “Protocol Design and System Optimization in Wireless Communications and Networks”  
 Advisor: Professor Xiaohua Jia, *IEEE Fellow, ACM Distinguished Member*
- 2014     **Master of Education in Learning Design and Leadership**  
 University of Illinois at Urbana Champaign, USA
- 2019     **Master of Law in Information Technology and Intellectual Property Law**  
 The University of Hong Kong, HKSAR
- 2019     **Professional Certificate, Deeper Learning for All**, Harvard Graduate School of Education, Harvard University, USA

**EMPLOYMENT HISTORY**

2009 - 2012	<b>Assistant Lecturer</b> The Community College at Lingnan University, HKSAR
2012 - 2016	<b>Lecturer</b> Department of Mathematics and Information Technology The Education University of Hong Kong, HKSAR
2016 - 2023	<b>Assistant Professor</b> Faculty of Education, The University of Hong Kong, HKSAR
2023 - present	<b>Associate Professor</b> Faculty of Education, The University of Hong Kong, HKSAR

**RESEARCH INTEREST**

Constructionism, computational thinking, computer science and engineering education, artificial intelligence education, STEAM education, immersive digital learning environment

*Specialization:*

- Computational thinking and cognitive development
- Computer science and engineering education at K-12
- Artificial intelligence (AI) education
- Extended reality (XR) (e.g. virtual reality, augmented reality, mixed reality) or Metaverse in education
- Precision education with AI and data analytics

## RESEARCH AND SCHOLARSHIP

### 1. Publications

\* denotes student under my primary supervision and mentorship

#### 1.1 Scholarly Book or Chapters – International Peer-reviewed

1. **Wong, G.**, \*Jiang, S., & \*Kong, R. (2021). Computational thinking and multifaceted skills: A qualitative study in primary schools. In H. Ozcinar, G. Wong, & H. Ozturk (Eds.), *Research anthology on recent trends, tools, and implications of computer programming* (pp. 1592–1615). IGI Global. <https://doi.org/10.4018/978-1-7998-3016-0.ch071>
2. Law, N., Woo, D., de la Torre, J. & **Wong, G.** (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. UNESCO Institute for Statistics
3. **Wong, G.** & Notari, M. (2018). Exploring immersive language learning using virtual reality. In J. M. Spector et al. (Eds.), *Learning, design, and technology. An international compendium of theory, research, practice, and policy*. Springer. [https://doi.org/10.1007/978-3-319-17727-4\\_144-1](https://doi.org/10.1007/978-3-319-17727-4_144-1)
4. \*Yang, J., **Wong, G.**, & Dawes, C. (2018). An exploratory study on learning attitude in computer programming for the twenty-first century. In L. P. Deng, W. W. K. Ma & Fong, C. W. R. (Eds.), *New media for educational change* (pp. 59–70). Springer. [https://doi.org/10.1007/978-981-10-8896-4\\_5](https://doi.org/10.1007/978-981-10-8896-4_5)
5. **Wong, G.** & Yang, M. (2017). Using ICT to facilitate instant and asynchronous feedback for students' learning engagement and improvements. In S. Kong, T. Wong, M. Yang, C. Chow, & K. Tse (Eds.), *Emerging practices in scholarship of learning and teaching in a digital era* (pp. 280–309). Springer. [https://doi.org/10.1007/978-981-10-3344-5\\_18](https://doi.org/10.1007/978-981-10-3344-5_18)
6. **Wong, G.** (2016). A new wave of innovation using mobile learning analytics for flipped classroom. In D. Churchill, J. Lu, T. Chiu, & B. Fox (Eds.), *Mobile Learning Design: Theories and Applications* (pp. 189–218). Springer. [https://doi.org/10.1007/978-981-10-0027-0\\_12](https://doi.org/10.1007/978-981-10-0027-0_12)
7. **Wong, G.** & Cheung, H. (2015). Flipped classroom for student engagement in higher education. In N. Gotsiridze-Columbus (Ed.), *Student Engagement: Leadership Practices, Perspectives and Impact of Technology* (1–16). Nova Science Publishers, Inc.
8. **Wong, G.** (2015). Social context computing in the application of wireless networking. In P. A. Laplante (Ed.), *Encyclopaedia of Computer Science and Technology* (1–36). Taylor & Francis Group.

## 1.2 Journal Publications – International Peer-reviewed

Impact Factor [IF]

9. **Wong, G.**, Reichert, F., & Law, N. Reorienting the assessment of digital literacy in 21st century: Challenges from a product-lifecycle and experience dependence perspective. *Educational Technology Research and Development*, <https://doi.org/10.1007/s11423-023-10278-1> (SSCI, 2021 IF = 5.580)
10. Ye, J., Lai, X., Ye, J., **Wong, G.**, & He, N. (2023). Interplay of computational identity, learning experiences, programming self-efficacy, and computing aspirations for adolescents in urban China. *Educational Technology & Society*, 27(2), [https://doi.org/10.30191/ETS.202404\\_27\(2\).RP01](https://doi.org/10.30191/ETS.202404_27(2).RP01) [SSCI, 2021 IF = 4.0]
11. \*Lai, X., \*Ye J., & **Wong, G.** (2023). Effectiveness of collaboration in developing computational thinking skills: A systematic review of social cognitive factors, *Journal of Computer Assisted Learning*, <https://doi.org/10.1111/jcal.12845> (SCI, 2021 IF = 3.761)
12. \*Cai, H. & **Wong, G.**, (2023). A systematic review on parental involvement in computational thinking education. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2023.2214185> (SSCI, 2021 IF = 4.965)
13. \*Zhang, S. & **Wong, G.** (2023). Exploring the underlying cognitive process of computational thinking in primary education. *Thinking Skills and Creativity*, 48. <https://doi.org/10.1016/j.tsc.2023.101314> (SSCI, 2021 IF = 3.652)
14. **Wong, G.** (2023). Amplifying children’s computational problem-solving skills: A hybrid-based design for programming education. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-023-11880-9> (SSCI, 2021 IF = 3.666)
15. \*Zhang, S. & **Wong, G.** (2023). Development and Analysis of a Computational Thinking Test for Lower Primary Students. *Educational Technology Research and Development*. <https://doi.org/10.1007/s11423-023-10231-2> (SSCI, 2021 IF = 5.580)
16. \*Lui, A., Not, C., & **Wong, G.** (2023) Theory-based learning design with immersive virtual reality in science education: A systematic review. *Journal of Science Education and Technology*, 32, 390–432. <https://doi.org/10.1007/s10956-023-10035-2> (SSCI & SCI, 2021 IF = 3.419)
17. \*Xie, Z, Chiu, D., **Wong, G.**, & Lei, J. (2023). Bridging K-12 Mathematics and Computational Thinking: Analyzing the Scratch Community. *IT Professional*, 25(2). <https://doi.org/10.1109/MITP.2023.3243393> (SCI, 2021 IF = 2.590)

18. **Wong, G.**, Tsang, Y., Wu, Q., Zhang, X. (2022). Do underprivileged youth find hope, sense of community, and perceived social support in computational participation? A socio-cognitive approach to computational learning. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-022-11522-6> (SSCI, 2021 IF = 3.666)
19. \*Ye J., \*Lai, X., & **Wong, G.** (2022). A multigroup structural equation modeling analysis of students' perception, motivation, and performance in computational thinking. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2022.989066> (SSCI, 2021 IF = 4.232)
20. \*Ye J., \*Lai, X., & **Wong, G.** (2022). The transfer effects of computational thinking: A systematic review with meta-analysis and qualitative synthesis. *Journal of Computer Assisted Learning*. <https://doi.org/10.1111/jcal.12723> (SCI, 2021 IF = 3.761)
21. \*Zhang, S. & **Wong, G.** (2022). Playing coding games to learn computational thinking: What motivates students to use this tool at home?. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-022-11181-7> (SSCI, 2021 IF = 3.666)
22. \*Lai, X. & **Wong, G.** (2022). Collaborative versus individual problem solving in computational thinking through programming: A meta-analysis. *British Journal of Educational Technology*, 53(1), 150–170. <https://doi.org/10.1111/bjet.13157> (SSCI, 2021 IF = 5.268)
23. \*Jiang, S. & **Wong, G.** (2022). Exploring age and gender differences of computational thinkers in primary school: A developmental perspective. *Journal of Computer Assisted Learning*, 38(1), 60–75. <https://doi.org/10.1111/jcal.12591> (SSCI, 2021 IF = 3.761)
24. Reichert, F., Zhang, J., Law, N. W., **Wong, G.**, & de la Torre, J. (2022). Exploring the structure of digital literacy competence assessed using authentic software applications. *Educational Technology Research and Development*, 70, 659–660. <https://doi.org/10.1007/s11423-022-10108-w> (SSCI, 2021 IF = 5.580)
25. **Wong, G.**, Li, Y., & \*Lai, X. (2021). Visualizing the learning patterns of topic-based social interaction in online discussion forums: an exploratory study. *Educational Technology Research and Development*, 69(5), 2813–2843. <https://doi.org/10.1007/s11423-021-10040-5> (SSCI, 2021 IF = 5.580)
26. \*Saxena, A., Lo, C., Hew, K., & **Wong, G.** (2020). Designing unplugged and plugged activities to cultivate computational thinking: An exploratory study in early childhood education. *Asia-Pacific Education Researcher*, 29(1), 55–66. <https://doi.org/10.1007/s40299-019-00478-w> (SSCI, 2021 IF = 2.561)

27. **Wong, G.**, Ma, X., Dillenbourg, P., & Huen, J. (2020). Broadening artificial intelligence education in K-12: where to start?. *ACM Inroads*, *11*(1), 20–29. <https://dx.doi.org/10.1145/3381884> (2021 CiteScore = 1.8)
28. **Wong, G.**, & Cheung, H. (2020). Exploring children's perceptions of developing twenty-first century skills through computational thinking and programming. *Interactive Learning Environments*, *28*(4), 438–450. <https://doi.org/10.1080/10494820.2018.1534245> (SSCI, 2021 IF = 4.965)
29. \*Jiang, S., & **Wong, G.** (2019). Primary school students' intrinsic motivation to plugged and unplugged approaches to develop computational thinking. *International Journal of Mobile Learning and Organisation*, *13*(4), 336–351. <https://dx.doi.org/10.1504/IJMLO.2019.10021903> (Scopus, 2021 CiteScore = 6.2)
30. **Wong, G.**, Ma, X., & Huen, J. (2019). When schools meet artificial intelligence in Hong Kong. *ACM Inroads*, *10*(4), 43–46. <https://dx.doi.org/10.1145/3369739> (Scopus, 2021 CiteScore = 1.8)
31. \*Weng, X., Xie, H., & **Wong, G.** (2018). Guiding principles of visual-based programming for children's language learning. *International Journal of Services and Standards*, *12*(3-4), 275–292. <https://doi.org/10.1504/IJSS.2018.100223> (Scopus, 2021 CiteScore = 1.5)
32. **Wong, G.** (2018). SROR: Designing a social-based routing protocol for context-aware ubiquitous learning. *International Journal of Mobile Learning and Organisation*, *12*(1), 18–41. <https://dx.doi.org/10.1504/IJMLO.2018.089225> (Scopus, 2021 CiteScore = 6.2)
33. **Wong, G.** (2016). The behavioral intentions of Hong Kong primary teachers in adopting educational technology. *Educational Technology Research and Development*, *64*(2), 313–338. <https://doi.org/10.1007/s11423-016-9426-9> (SSCI, 2021 IF = 5.580)
34. Wong, C., **Wong, G.**, & Indiatsi, J. (2016). ESL teacher candidates' perceptions of strengths and inadequacies of instructing culturally and linguistically diverse students: Post clinical experience. *Journal of Cultural Diversity*, *23*(2), 57–64. (Scopus, 2021 IF = 1.2)
35. **Wong, G.** (2015). Understanding technology acceptance in pre-service teachers of primary mathematics in Hong Kong. *Australasian Journal of Educational Technology*, *32*(6), 713–735. <https://doi.org/10.14742/ajet.1890> (SSCI, 2021 IF = 3.730)

36. **Wong, G.** (2014). Engaging students using their own mobile devices for learning mathematics in classroom discourse: A case study in Hong Kong. *International Journal of Mobile Learning and Organisation*, 8(2), 143–165. <https://doi.org/10.1504/IJMLO.2014.062352> (Scopus, 2021 CiteScore = 6.2)
37. **Wong, G.** (2014). Joint SINR-based link scheduling with max-min traffic delivery ratio in wireless multihop network systems. *International Journal of Business and Systems Research*, 8(2), 191–211. <https://doi.org/10.1504/IJBSR.2014.060313> (Scopus, 2021 CiteScore = 0.9)
38. **Wong, G.**, Liu, H., Chu, X., Leung, Y. W., & Xie, C. (2013). Efficient broadcasting in multi-hop wireless networks with a realistic physical layer. *Special Issue on Large Scale and Sustainable WSN, Ad Hoc Networks*, 11(4), 1305–1318. <https://doi.org/10.1016/j.adhoc.2010.12.001> (SCI, 2021 IF = 4.816)
39. **Wong, G.**, \*Hui, W., & \*Yuk, S. (2013). Building a final year project on social network platform: Challenges and opportunities. *International Journal of Information and Education Technology*, 3(2), 201–205. (Scopus, 2021 CiteScore = 1.3)
40. **Wong, G.** & Jia, X. (2013). An efficient scheduling scheme for hybrid TDMA and SDMA systems with smart antennas in WLANs. *Wireless Networks*, 19 (2), 259–271. <https://doi.org/10.1007/s11276-012-0464-x> (SCI, 2021 IF = 2.701)
41. **Wong, G.** & Cheung, H. Y. (2011). Outcome-based teaching and learning in computer science education at sub-degree level. *International Journal of Information and Education Technology*, 1(1), 40–46. (Scopus, 2021 CiteScore = 1.3)
42. **Wong, G.**, Zhang, Q., & Tsang, D. H. K. (2010). Switching cost minimization for the IEEE 802.16e mobile WiMAX sleep mode operation. *Wireless Communications and Mobile Computing*, 10(12), 1576–1588. <https://doi.org/10.1002/wcm.875> (SCI, 2021 IF = 2.146)
43. Kong, L., **Wong, G.**, & Tsang, D. H. K. (2009). Performance study and system optimization on sleep mode operation in IEEE 802.16e. *IEEE Transactions on Wireless Communications*, 8(9), 4518–4528. (SCI, 2021 IF = 8.346)

### 1.3 Conference Papers – Peer-reviewed

44. Zhang, Y., Ng, O., Liang, B., & **Wong, G.** (2023). Young ethnic-minority learner's gestural routine development in manipulative-based number discourse. *46th Conference of the International Group for the Psychology of Mathematics Education 2023*

45. \*Ye, J., **Wong, G.**, & \*Lai, X. (2023). The Transfer Effects of Computational Thinking Through a Context-based Programming Learning Approach. *Proceedings of American Educational Research Association (AERA) 2023*
46. \*Lai, X., Ye J., & **Wong, G.** (2023). Assessing collaborative computational thinking patterns using epistemic network analysis in elementary education. *Proceedings of American Educational Research Association (AERA) 2023*
47. \*Xie, Z. R., Radloff, J., **Wong, G.**, & Yeter, I. H. (2022). The future nexus of computational thinking education: A preliminary systematic review of reviews. *IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2022*.
48. \*Zhang, S. & **Wong, G.** (2022). Cross-lagged Associations between Cognitive Performance and Attitudinal Beliefs of Computational Thinking: A Preliminary Study. *IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2022*.
49. \*Cai, H. & **Wong, G.** (2022). Parental Involvement in Computational Thinking Education: A Systematic Review. *IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2022*.
50. \*Zhang, S., **Wong, G.**, & Sun, X. (2022). Exploring coding attitudes of Chinese elementary students: A preliminary study. *Proceedings of IEEE Integrated STEM Education Conference (ISEC) 2022*.  
<https://ieeexplore.ieee.org/xpl/conhome/1801287/all-proceedings>
51. \*Zhang, S., **Wong, G.**, & Chan, P. (2022). Integrating game-based learning into computational thinking class for lower primary students: Lesson design and course effect. *Proceedings of the Sixth APSCE International Conference on Computational Thinking and STEM Education 2022 (CTE-STEM)*.  
<https://proceedings.open.tudelft.nl/cte-stem2022/issue/view/6/3>
52. \*Zhang, S., **Wong, G.**, & Xu, C. (2022). Exploring the association between computational thinking and cognitive abilities of elementary students: a preliminary study. *Proceedings of 17th International Conference on Computer Science & Education (ICCSE 2022)*.  
<https://ieeexplore.ieee.org/xpl/conhome/1800019/all-proceedings>
53. Saxena, A & **Wong, G.** (2021). A preliminary, systematic review of teaching and learning computational thinking in early childhood education. *Proceedings of Fifth APSCE International Conference on Computational Thinking and STEM Education 2021* (pp. 93-99). Asia Pacific Society for Computers in Education.
54. \*Ye, J., \*Lai, X., & **Wong, G.** (2021). The influence of students' computer science learning experience on their perception of computational thinking.



*Proceedings of IEEE Global Engineering Education Conference (EDUCON) 2021*, 1495-1496. <https://doi.org/10.1109/EDUCON46332.2021.9453929>

55. \*Zhang, S., **Wong, G.**, & Pan, G. (2021). Computational thinking test for lower primary students: Design principles, content validation, and pilot testing. *Proceedings of IEEE International Conference on Engineering, Technology & Education (TALE) 2021*, 345–352. <https://doi.org/10.1109/TALE52509.2021.9678852>
56. \*Lai, X., \*Ye, J. & **Wong, G.** (2021). The social factors of collaboration in developing computational thinking skills. *Proceedings of American Educational Research Association (AERA) 2021 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
57. \*Lai, X., \*Ye, J. & **Wong, G.** (2021). Understanding classroom learning experiences: an exploratory analysis of the sentiments behind social interactions [Conference Presentation]. *Proceedings of IEEE International Conference on Educational Technology (ICET)*.
58. \*Ye, J., \*Lai, X. & **Wong, G.** (2021). Toward a learning model promoting the transfer of computational thinking across domains: A systematic review [Conference Presentation]. *Proceedings of IEEE International Conference on Educational Technology (ICET)*.
59. \*Zhang, S. & **Wong, G.** (2021). Using coding games for computational thinking education: What are the benefits and challenges? *Proceedings of AERA 2021 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
60. \*Zhang, S., **Wong, G.**, & Chan, P. (2021). Achievement and effort in acquiring computational thinking concepts: A log-based analysis in a game-based learning environment. *Proceedings of Fifth APSCE International Conference on Computational Thinking and STEM Education 2021 (CTE-STEM)*, 8-13, [https://www.educationandlearning.nl/uploads/cfeal/attachments/CTE-STEM\\_Compiled-Proceedings.pdf](https://www.educationandlearning.nl/uploads/cfeal/attachments/CTE-STEM_Compiled-Proceedings.pdf)
61. \*Zhang, X., **Wong, G.**, Wu, Q., & Tsang, Y. (2021). Influential factors of Hong Kong secondary school students' intrinsic motivation to coding education during the COVID-19 epidemic: A correlational analysis. *Proceedings of Fifth APSCE International Conference on Computational Thinking and STEM Education 2021 (CTE-STEM)*, 114–117. [https://www.educationandlearning.nl/uploads/cfeal/attachments/CTE-STEM\\_Compiled-Proceedings.pdf](https://www.educationandlearning.nl/uploads/cfeal/attachments/CTE-STEM_Compiled-Proceedings.pdf)

62. \*Zheng, S. & **Wong, G.** (2021). Teacher identity development in STEM professional development settings: a Chinese secondary school teacher's perspective. *Proceedings of American Educational Research Association (AERA) 2021 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
63. Au, Y. & **Wong, G.** (2021, September 13-16). *Community-based coding programme to bridge the digital divide* [Conference presentation]. British Educational Research Association (BERA) Conference, Virtual Meeting, United Kingdom.
64. \*Lai, X., \*Ye, J., & **Wong, G.** (2020). Collaborative and individual problem solving in computational thinking through programming: A meta-analysis. *Proceedings of American Educational Research Association (AERA) 2021 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
65. \*Ye, J., \*Lai, X., & **Wong, G.** (2020). *A thematic review on the transfer of computational thinking* [Conference presentation]. British Educational Research Association (BERA) Conference, Virtual Meeting, United Kingdom.
66. **Wong, G.** & \*Jiang, S. (2019). Developing children's computational thinking: Algorithmic thinking and debugging. *Proceedings of American Educational Research Association (AERA) 2019 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
67. \*Yang, J., **Wong, G.**, & Dawes, C. (2018). *An exploratory study on learning attitude in computer programming for 21st century* [Conference presentation]. The Hong Kong Association for Educational Communications and Technology (HKAECT) Annual Meeting, Hong Kong.
68. **Wong, G.**, \*Zheng, S., Lau, H., & Leung, E. (2018). Teachers Professional Development for Integrating STEM Education in Primary Curriculums. *Proceedings of 5th International Mobile Learning Festival*, Singapore.
69. **Wong, G.**, \*Zheng, S., Lau, H., & Leung, E. (2018). Teachers Professional Development for Integrating Engineering-led STEM Education in Primary Curriculums. *Proceedings of the 21st Global Chinese Conference on Computers in Education (GCCCE)* (Best Paper Award in Technology Design (Runner-Up)). <https://www.gcsce.net/proceedingsFile/2018/gcsce2018.zip>
70. \*Jiang, S. & **Wong, G.** (2018). Developing primary school students' computational thinking through coding. *Proceedings of the 21st Global Chinese Conference on Computers in Education (GCCCE)*. <https://www.gcsce.net/proceedingsFile/2018/gcsce2018.zip>

71. \*Jiang, S. & **Wong, G.** (2018). Are children more motivated with plugged or unplugged approach to computational thinking? *Proceedings of the 49th ACM Technical Symposium on Computer Science Education (SIGCSE)*, 1094–1094. <https://doi.org/10.1145/3159450.3162270>
72. **Wong, G.** & \*Jiang, S. (2018). Computational thinking education for children: Algorithmic thinking and debugging. *Proceedings of IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2018*, 328–334. <https://doi.org/10.1109/TALE.2018.8615232>
73. \*Zheng, S. & **Wong, G.** (2018). Teachers' perceptions of professional development in integrated STEM education in primary schools. *Proceedings of IEEE Global Engineering Education Conference (EDUCON), 2018*, 472–477. <https://doi.org/10.1109/EDUCON.2018.8363268>
74. \*Kong, R. & **Wong, G.** (2017). Teachers' perception of professional development in coding education. *Proceedings of IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, 377–380. <https://doi.org/10.1109/TALE.2017.8252365>
75. \*Weng, X. & **Wong, G.** (2017). Integrating computational thinking into English dialogue learning through graphical programming tool. *Proceedings of IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, 320–325. <https://doi.org/10.1109/TALE.2017.8252365>
76. \*Jiang, S. & **Wong, G.** (2017). Assessing primary school students' intrinsic motivation of computational thinking. *Proceedings IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, 469–474. <https://doi.org/10.1109/TALE.2017.8252381> **[BEST PAPER AWARD]**
77. **Wong, G.** (2017). Integrative learning in K-12 STEM education: How to prepare the first step?. *Proceedings IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, pp. 80–87. <https://doi.org/10.1109/TALE.2017.8252308>
78. **Wong, G.** & Huen, J. (2017). A conceptual model of integrated STEM education in K-12. *Proceedings of IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, pp. 296–302. <https://doi.org/10.1109/TALE.2017.8252350>
79. Li, S. & **Wong, G.** (2016). Visualizing the asynchronous discussion forum data with topic detection. *Proceedings of the 9th ACM SIGGRAPH conference and exhibition on computer graphics and interactive techniques in Asia: Symposium on Education*, pp. 1–3. <https://doi.org/10.1145/2993363.2993367>

80. **Wong, G.**, Li, Y., & Wong, W. (2016). Analyzing academic discussion forum data with topic detection and data visualization. *Proceedings of IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*, 109–115. <https://doi.org/10.1109/TALE.2016.7851779>
81. Zhu, K., **Wong, G.**, Ma, X. & Huen, M. H. (2016). How different input and output modalities support coding as a problem-solving process for children. *Proceedings of ACM SIGCHI Interaction Design and Children (IDC) 2016*, 238–245. <https://doi.org/10.1145/2930674.2930697>
82. **Wong, G.** & Li, S. (2016). Academic performance prediction using chance discovery from online discussion forums. *Proceedings of 2016 IEEE 40th Annual Computer Software and Applications Conference (COMPSAC 2016)*. <https://doi.org/10.1109/COMPSAC.2016.44>
83. Li, S. & **Wong, G.** (2016). Educational data mining using chance discovery from discussion board. *Proceedings of the 20th Global Chinese Conference on Computers in Education*.
84. **Wong, G.**, Zhu, K., Ma, X. & Huen, M. H. (2016). The development of internationalized computational thinking curriculum in Hong Kong primary Education. *Proceedings of The 47th ACM Technical Symposium on Computing Science Education 2016*, 685. <https://doi.org/10.1145/2839509.2850528>
85. **Wong, G.**, Cheung, H. Y., Ching, C. C., & Huen, M. H. (2015). School perceptions of coding education in K-12: A large scale quantitative study to inform innovative practices. *Proceedings of IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2015*, pp. 5–10. <https://doi.org/10.1109/TALE.2015.7386007> [BEST PAPER AWARD]
86. **Wong, G.** & Cheung, H. Y. (2015). Can we flip the formative assessment of students too in flipped classroom?. *Proceedings of the 23rd International Conference on Computers in Education (ICCE)*.
87. Mark, K. P. & **Wong, G.** (2015). Is information technology general education effective for non-engineering major students? An exploratory study on ethnically Chinese classrooms. *Proceedings of the 45th Annual Frontiers in Education (FIE) Conference*. <https://doi.org/10.1109/FIE.2015.7344406>
88. Yang, M., **Wong, G.** Sin, K., Lee, T., Lam, B., & Han, C. (2015). The role of dialogic feedback in supporting students active learning in higher education. . *Proceedings of American Educational Research Association (AERA) 2021 Annual Meeting*. <https://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>

89. **Wong, G.** (2015). A new wave of innovation using mobile learning analytics for flipped classroom. *Proceedings of the 2nd International Mobile Learning Festival 2015*.
90. **Wong, G.** & Cheung, H. Y. (2015). Empirical study of cloud technologies in flipped classroom for Mathematics education. *Proceedings of The Global Chinese Conference on Computers in Education(GCCCE) 2015*.
91. **Wong, G.**, Chang, Y., Jia, X., Wong, H., & Hui, W. (2015). Performance evaluation of social relation opportunistic routing in dynamic social networks. *Proceedings of IEEE International Conference on Computing, Networking and Communications 2015*. <https://doi.org/10.1109/ICCNC.2015.7069461>
92. \*Wang, Q. & **Wong, G.** (2015). How parent's belief influence children's motivation in learning mathematics at pre-school level. *Proceedings of 13th Annual Hawaii International Conference on Education 2015*.
93. **Wong, G.** & Cheung, H. Y. (2015). Mobile learning analytics for sustaining flipped learning. *Proceedings of 13th Annual Hawaii International Conference on Education 2015*.
94. **Wong, G.**, Ching, C., Mark, K., Tang, J., Lei, C., Cheung, H., & Chui, H. (2015). Impact of computational thinking through coding in K-12 education: a pilot study in Hong Kong. *Proceedings of the 11th International Conference on Technology Education in the Asia Pacific Region, Hong Kong*.
95. \*Wang, Q. & **Wong, G.** (2014). A case study on the influence of parent's belief to children's motivation in learning mathematics at preschool level. *Proceedings of the Asia Pacific Educational Research Association International Conference 2014*, Hong Kong.
96. **Wong, G.** & Cheung, H. Y. (2014). Analytical evaluation of technology acceptance in teachers training of primary mathematics education in Hong Kong: A preliminary study. *Proceedings of the 22nd International Conference on Computers in Education (ICCE)*, Nara, Japan.
97. Cheung, H. & **Wong, G.** (2014). Flipped classroom in Hong Kong higher education: An experience sharing. *Proceedings of 6th Annual Asian Conference on Education (ACE-2014)*, Osaka, Japan.
98. **Wong, G.** (2014). Cloud computing for collaborative knowledge construction: A case with Google drive. *Proceedings of 6th Annual Asian Conference on Education (ACE-2014)*, Osaka, Japan.

99. **Wong, G.** & Cheung, H. Y. (2014). Technology acceptance by in-service teachers in Hong Kong: preliminary results. *Proceedings of the Second Asian Conference on Society, Education and Technology (ACSET 2014)*, Osaka, Japan.
100. Yang, M., Bryant, D., Han, C., Lam, B., Lee, T., Sin, K., & **Wong, G.** (2014). Exploring teachers and students experiences of assessment feedback in higher education. *Proceedings of Global Curriculum & Instruction Network (GCIN) Conference 2014*, Hong Kong.
101. **Wong, G.** (2013). Are we ready to engage students with our own mobile devices?. *Proceedings of 5th Annual Asian Conference on Education (ACE-2013)*, Osaka, Japan.
102. **Wong, G.** & Jia, X. (2013). A novel socially-aware opportunistic routing algorithm in mobile social networks. *IEEE Proceedings of International Conference on Computing, Networking and Communications (ICNC) 2013*, pp. 514-518, San Diego, CA, USA. <https://doi.org/10.1109/ICCNC.2013.6504138>
103. **Wong, G.** (2012). Toward an authentic leadership in Hong Kong sub-degree education: Personal philosophical approach. *Proceedings of 4th Annual Asian Conference on Education (ACE-2012)*, Osaka, Japan.
104. **Wong, G.** & Cheung, H. Y. (2011). Evaluation of outcome-based approach in computer science education at sub-degree level. *Proceedings of IEEE 3rd International Conference on Communication Software and Networks (ICCSN'11)*, Xian, China. <https://doi.org/10.1109/ICCSN.2011.6013796>
105. **Wong, G.** & Jia, X. (2010). Downlink scheduling in WLANs with SDMA using multiple smart antennas. *In proceedings of 5th Beijing-Hong Kong International Doctoral Forum [Poster Session]*, Beijing, China.
106. **Wong, G.**, Chow, W., Wong, K., Chow, S., Lam, J., & Cheung, H. Y. (2010). Needs assessment and design of course management system (CMS) using open and community source frameworks in post-secondary institutions. *Proceedings of ACM SIGUCCS 2010*, pp 135–142, Norfolk, Virginia. <https://doi.org/10.1145/1878335.1878371>
107. **Wong, G.**, Chow, W., Wong, K., Chow, S., Lam, J., & Cheung, H. Y. (2010). An implementation of Sakai open source course management system in post-secondary education. *Proceedings of IEEE International Conference on Educational and Information Technology (ICEIT'10)*, Chongqing, China.
108. **Wong, G.**, Zhang, Q., & Tsang, D.H. K. (2009). Joint optimization of power saving mechanism in the IEEE 802.16e mobile WiMAX. *Proceedings of IEEE*

*Global Communications Conference (GLOBECOM) 2009*, pp. 1–6, Honolulu, Hawaii. <https://doi.org/10.1109/GLOCOM.2009.5425803>

109. **Wong, G.**, Zhang, Q., & Tsang, D. H. K. (2009). Switching cost minimization for the IEEE 802.16e mobile WiMAX sleep mode operation. *Proceeding of ACM International Wireless Communications and Mobile Computing Conference (IWCMC) 2009*, pp 567–572, Leipzig, Germany. <https://doi.org/10.1145/1582379.1582503>
110. **Wong, G.** & Fife, L. (2006). Needs assessment for campus wide network services at Brigham Young University Hawaii using IEEE 802.16 wireless network infrastructure. *Proceedings of the 34th Annual ACM SIGUCCS conference on User services*, pp 424-430, Edmonton, Canada. <https://doi.org/10.1145/1181216.1181307>

## 2. Work-in-Progress

### 2.1 Journal Articles with Major/Minor Revision – International Peer-reviewed

111. \*Saxena, A. & **Wong, G.** Teachers’ changing attitudes on the integration of computational thinking in education: a systematic review. *International Journal of STEM Education* (SSCI & SCI, 2021 IF = 5.789)
112. Au, Y., **Wong, G.**, Chan, C., & Kahn, K. Do underrepresented children find connectedness and sense of hope from engaging in coding? A community-based approach. *British Journal of Educational Technology* (SSCI, 2021 IF = 5.268)
113. \*Zhang, S. & **Wong, G.** Elementary Student Coding Attitudes Survey (ESCAS) for Chinese Students Scale Adaptation and Exploration of Influential Factors of Children’s Coding Attitudes. *Educational Technology Research and Development* (SSCI, 2021 IF = 5.580)
114. **Wong, G.**, Cheung, H., & \*Jiang, S. Engaging children in developing algorithmic thinking and debugging skills in primary schools: A comparative multicase study. *Education and Information Technologies* (SSCI, 2021 IF = 3.666)
115. \*Zhang, S. & **Wong, G.** (under review) Unraveling the Underlying Mechanism of Computational Thinking: The Mediating Role of Attitudinal Beliefs between Personality and Learning Performance, *Journal of Computer Assisted Learning* (SCI, 2021 IF = 3.761)

### 2.2 Journal Articles Under Review – International Peer-reviewed

116. Lo, S., Bridges, S., Chian, M., Yip, V., Leung, J., **Wong, G.**, Not, C., Williams, G., Chan, K., Russell, B., & Goodwin, A. (under review). Reconceptualizing ecology field trips in a postdigital era: an Interactional Ethnography of an entangled design. *Journal of the Learning Sciences*. (SSCI, 2021 IF = 6.083)
117. **Wong, G.**, Cheung, H., & Lau, H. (under review). Motivating primary students in engineering design-based science learning: A study of constructionist approach to pedagogical design. *Journal of Science Education and Technology* (SSCI & SCI, 2021 IF = 3.419)
118. **Wong, G.** & \*Rui, L. (under review). Co-creating an immersive virtual reality learning environment for Chinese language learning with teachers: A qualitative study. *Education and Information Technologies* (SSCI, 2021 IF = 3.666)
119. \*Lai, X., \*Ye J., **Wong, G.**, Zheng, S., & Jiang, S. (under review). Adolescents' computational identities, learning experiences, self-efficacy, and aspirations in computational thinking. *Frontiers in Psychology* (SSCI, 2021 IF = 4.232)
120. Yeter, I. H., **Wong, G.**, Radloff, J., & \*Xie, Z. R. (under review). Identifying the role of non-cognitive factors fostered through computational thinking development: A systematic literature review. *Computers & Education*. (SSCI, 2021 IF = 10.207)
121. **Wong, G.** & Huen, J. (under review). Can Blockchain technology bring any value to education?. *ACM Inroads* (Scopus, 2021 CiteScore = 1.8)
122. **Wong, G.** & Huen, J. (under review). Metaverse in education: Is it the future or a bubble?. *Communications of the ACM* (SCIE, 2022 IF = 14.065)

### 2.3 Conference Papers Under Review – International Peer-reviewed

#### 2.4 Publications in Preparation

123. \*Lai, X. & **Wong, G.** Effectiveness of collaboration in developing computational thinking skills for primary school students: a mixed-methods approach. *Computers & Education*. (SSCI, 2021 IF = 11.182)
124. \*Lai, X. & **Wong, G.** Analysing the learning process of collaborative programming using epistemic network analysis. *International Journal of Computer-Supported Collaborative Learning*. (SSCI, 2021 IF = 5.611)
125. \*Lai, X. & **Wong, G.** The influencing factors of high school students' computational identity. *Educational Technology Research and Development*. (SSCI, 2021 IF = 5.580)



126. \*Ye, J. & **Wong, G.** Effects of context-based programming learning on the development and transfer of computational thinking at the secondary-school level. *Interactive Learning Environments*. (SSCI, 2021 IF = 4.965)
127. **Wong, G.** & Au, Y. Community-Based Coding to Bridge Digital Divide: The parents' perspective. *Children and Youth Services Review* (SSCI, 2021 IF = 2.519)
128. Wu, Q., **Wong, G.**, Zhang, X., & Tsang, Y. Relationship between negative COVID-19 experience and anxiety: A study of resilience and perceived effectiveness of prevention measure. *Children and Youth Services Review* (SSCI, 2021 IF = 2.519)
129. **Wong, G.**, Wu, Q., Zhang, X., & Tsang, Y. The effect of mentoring program on youth's coding attitudes in computational thinking education: An exploratory study. *Interactive Learning Environments*. (SSCI, 2021 IF = 4.965)

### 3. External Research Grants

#### 3.1 Funded Projects (as Principal Investigator)

**RGC General Research Fund (GRF), RGC, HKSAR (HK\$547,500)**

Project title: *The impact of coding education in Hong Kong primary schools: a longitudinal study*. (2017-2020, completed)

**RGC General Research Fund (GRF), RGC, HKSAR (HK\$320,500)**

Project title: *Infusing engineering design process into science education in primary schools: Design-based research on students' constructionist learning approach*. (2020-2023, completed)

**Quality Education Fund (QEF) e-Learning Ancillary Facilities Programme (Development and Dissemination Scheme), EDB, HKSAR (HKD17,046,300.00)**

*Enhancing Literacy Education with Artificial Reality Neo-platform (eLEARN) 2.0*. (2023-2026, ongoing)

**Quality Education Fund (QEF), EDB, HKSAR (HK\$3,444,200)**

Project title: *Enhancing Language Education with Artificial Reality Neo-platform (eLEARN)*. (2017-2020, completed)

**The Hong Kong Jockey Club Charities Trust – General Award, HKSAR (HK\$11,370,000)**

Project title: *Computational Thinking Education for Junior Secondary Students Pilot Programme*. (2019-2022, completed)

**The Hong Kong Jockey Club Charities Trust - Contract Research, HKSAR (HK\$ 5,752,174)**

Project title: *Developing Pre-Service Teacher Computational Thinking Competences in Hong Kong*. (2022-ongoing)

**Quality Education Fund (QEF), EDB, HKSAR (HK\$375,800)**

Project title: *Flipped Learning Initiative Programme for Primary Education, (FLIPPEd)*. (2015-2016, completed)

**Croucher Foundation for Conferences and Seminars (HK\$100,000)**

*IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2017*

**3.2 Funded Projects (as Co-Investigator)**

**RGC Theme-based Research Scheme (TRS), HKSAR (HK\$13,504,000)**

Project title: *Learning and Assessment for Digital Citizenship (PI: Nancy W. Y. Law)*. (2016-ongoing)

**Seed Fund for Basic Research, HKU (HK\$97,060)**

Project title: *Application of virtual reality environments in voice training for primary school teachers (PI: Estella Ma)*. (2020-21)

**4. Representative Internal Research Grants (Funded, as Principal Investigator)**

**Teaching Development Grant (TDG) Award, HKU (HK\$288,700)**

Project title: *An Artificial Intelligent-enabled Recommendation (AIR) System for Ideation in Undergraduate Research Projects*. (2022 – ongoing)

**Seed Fund for Basic Research for Resubmission of GRF/ECS Proposals, HKU (HK\$38,928)**

Project title: *The impact of integrated STEM education in primary schools: a design-based research* (2017)

**Seed Fund for Basic Research for New Staff, HKU (HK\$149,796)**

Project title: *The school perceptions and affordances of computer-mediated reality for K-12 education* (2017-19)

**Dean's Research Fund, EdUHK (HK\$53,000)**

Project title: *Knowledge Transfer on STEM Education, Coding Education and Computational Thinking* (2016)

**Teaching Development Grant (TDG) Award, EdUHK (HK\$199,400)**

Project title: *Using Learning Analytics to Discover Serendipitous Learning in Moodle for Formative Assessment in Higher Education*. (2016 – 17)

**Internal Research Grant, EdUHK (HK\$100,000)**

Project title: *Energy-Efficient Computation Offloading Mechanisms in Mobile Cloud Computing*. (2015 – 16)

**Internal Research Grant, EdUHK (HK\$26,204)**

Project title: *The impact of coding education in Hong Kong primary schools: a pilot study. (2014 – 15)*

**5. Research and other awards**

- |             |   |
|-------------|---|
| 2023        | <b>IEEE EAB Meritorious Achievement Award in Pre-University Education</b><br>IEEE Educational Activities Board (EAB), 2023  |
| 2017        | <b>Best Paper Award</b><br>IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)   |
| 2016        | <b>Outstanding Journal Article Published in the International Review of ETR&amp;D Award</b><br>Educational Technology Research and Development (SSCI, 2021 IF = 5.580; 20/267 Education & Educational Research)<br>Association for Educational Communications and Technology (AECT) |
| 2015        | <b>Best Paper Award</b><br>IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)   |
| 2016        | <b>Special Merit Award</b><br>The Education University of Hong Kong, 2016   |
| 2012        | <b>Phi Kappa Phi</b>  |
| 2012        | <b>Performance Award 2010/11</b><br>The Community College at Lingnan University   |
| 2011        | <b>Performance Award 2009/10</b><br>The Community College at Lingnan University   |
| 2011        | <b>Young Alumni Award</b><br>Brigham Young University Hawaii  |
| 2010        | <b>Marquis Who's Who in the World, USA, 2010</b>  |
| 2004        | <b>Upsilon Pi Epsilon</b>   |
| 2004        | <b>University Honor Roll (Dean Lists) Award</b><br>Brigham Young University Hawaii  |
| 2004        | <b>Mathematics Department Scholarship Award</b><br>Brigham Young University Hawaii  |
| 2003 - 2006 | <b>Computer Science Department Scholarship Award</b><br>Brigham Young University Hawaii   |

## 6. Editorship, Keynote Speeches, and Invited Lectures

### 6.1 Editorship

- |              |  |
|--------------|--|
| 2023-present | Associate Editor, <i>IEEE Access</i> (Publisher: IEEE) (SCIE, 2021 IF = 3.476; journal ranked 79/164 Computer Science, Information Systems)  |
| 2023-present | Associate Editor, <i>ACM Inroads</i> (Publisher: ACM) (Scopus, 2021 CiteScore = 1.8)   |
| 2023-present | Editorial Board Member, <i>Education and Information Technologies</i> (Publisher: Springer) (SSCI, 2021 IF = 3.666; journal ranked 18/247 Library and Information Sciences)                        |
| 2021-present | Associate Editor, <i>IEEE Transactions on Education</i> (Publisher: IEEE) (SCI, 2021 IF = 2.740; 20/44 Education, Scientific Disciplines)  |
| 2021-present | Associate Editor (Guest), <i>Frontier in Psychology</i> (Publisher: Frontier Media) (SSCI, 2021 IF = 4.232; 35/147 Psychology, Multidisciplinary)  |
| 2021-present | Editorial Board Member, <i>Computers &amp; Education: X Reality (New companion journal to Computers &amp; Education)</i> (Publisher: Elsevier)   |
| 2021-present | Associate Editor, <i>Frontier in Education (STEM Education)</i> (Publisher: Frontier Media) (ESCI)   |
| 2021-present | Guest Editor, Special issue on “Artificial Intelligence (AI) and Education”, <i>Education Sciences</i> (Publisher: Multidisciplinary Digital Publishing Institute, MDPI) (Scopus)                  |
| 2020-present | Editorial Board Member, <i>Library Hi Tech</i> (Publisher: Emerald Group Publishing) (SSCI, 2021 IF = 1.623; 57/84 Information Science and Library Science)  |
| 2018         | Guest Editor, Special issue on “Innovative Engineering Education for Smarter World”, <i>International Journal of Mobile Learning and Organisation</i> (Publisher: Inderscience) (Scopus)           |
| 2013-present | Editorial Board Member, <i>International Journal of Mobile Learning and Organisation</i> (Publisher: Inderscience) (Scopus)  |
| 2013-present | Editorial Board Member, <i>International Journal of Business and Systems Research</i> (Publisher: Inderscience) (Scopus)   |
| 2013         | Guest Editor, Special issue on “Information Technology and Intellectual Property Law”, <i>International Journal of Information and Communication Technology</i> (Publisher: Inderscience) (Scopus) |

## 6.2 Keynote Speeches

Dec 12, 2021 **Back to the Future: Are Schools Really Going Back to the Origin of Computational Thinking Education?**  
Beyond Academic Learning, Learning & Teaching Expo 2021,  
Hong Kong SAR, China

## 6.3 Invited Lectures

June 11,  
2022 **Deepening Children's Learning with Virtual Reality  
Education Seminar Series**  
Faculty of Education, The University of Hong Kong, HKSAR,  
China

January 28,  
2022 **Enhancing Language Education with Artificial Reality Neo-  
platform (eLEARN)**  
QEF Thematic Dissemination Activities, Hong Kong SAR, China

July 28, 2021 **From human intelligence to artificial intelligence: How to  
cultivate students' innovative technology literacy?**  
Education Bureau and Hong Kong Education City (EdCity), Hong  
Kong SAR, China

April 13,  
2016 **Maker and Innovation New Vision in Robotics**  
Panel Discussion Speaker  
HKTDC Hong Kong Electronics Fair (Spring Edition)

## 7. Postgraduate Supervision: Research Postgraduate Students

### 9.1 As primary supervisor (5 graduated; 7 current)

Shan (Joyce) Jiang      Currently Lecturer at the Chongqing Normal University  
(PhD, 2021)

Thesis: Understanding age and gender differences of  
computational thinkers in primary school: The interaction  
between development and learning

Xiaoyan (Lavie) Lai      Thesis: Effects of collaborative problem-solving in the  
(PhD, 2022)                development of computational thinking for elementary  
school students

***Award: Tin Ka Ping Foundation Postgraduate  
Fellowship***

Jiachu (Joe) Ye            Thesis: Development and transfer of computational  
(PhD, 2022)                thinking through context-based programming learning in  
secondary school

***Award: Hong Kong PhD Fellowship Scheme (HKPFS)***

Anika Saxena (EdD, 2023)	Thesis: Computational thinking in curriculum for early childhood education
Shudan (Catherine) Zheng (PhD, 2023)	Thesis: Teacher identity development in STEM professional development settings: A multi-case study in China
Shuhan (Janet) Zhang (PhD, 2023)	Thesis: Exploring the development of programming strategies of young children
Haiyan (Stella) Cai (PhD, 2020-present)	Thesis: The relationship between parental involvement, students' motivation and computational thinking performance: An investigation among Chinese primary students
Lok Ching (Angela) Lui (MPhil, 2020-present)	Thesis: Learning effectiveness of the application of immersive virtual reality in higher education environmental science courses
Ming Ma (PhD, 2021-present)	Thesis: Developing children's artificial intelligence literacy through computational thinking education
Ying Zhang (PhD, 2022-present)	Thesis: The Acquisition of Computational Skills and Its Correlation to Other Capacities of Young Children Aged 4-6: A Quasi-Experimental Study
Zerong (Tom) Xie (PhD, 2022-present)	Thesis: Collaboration towards computational thinking empowerment in creative context: What contributes to successful youth online coding collaborations?
Ali Muhammad (PhD, 2022-present)	Thesis: The role of robotics in STEM education for promoting design and computational thinking in primary students

### ***9.2 As co-supervisor***

Maimaiti Gulipari (PhD, 2022)

Hernandez Lopez Nora Patricia (PhD, 2022)

Hao Li (PhD, 2021)

Liuyufeng Li (PhD, 2020)

Lejia Liu (PhD, 2020)

Yutian Ma (PhD, 2020)

Jiahui Du (PhD, 2019)

Guoyuhui Huang (PhD, 2019)

Xiyue Tan (PhD, 2018)

## TEACHING AND LEARNING

### 1. Teaching Responsibilities (# most active in recent years)

#### *Undergraduate Courses*

- BSIM3014: User-based systems analysis
- BSIM3998: Professional practices in information management
- BSIM4999: Project<sup>#</sup>
- EDUC7173: Foundations of computational thinking education in schools<sup>#</sup>

#### *Taught Postgraduate Courses*

- MITE6330: Learning design and technology
- MITE6333: Mobile and ubiquitous technology in education
- MITE7341: Digital game-based learning
- MITE7352: Information technology and intellectual property law in education
- MITE6025: Methods of research and enquiry<sup>#</sup>
- MEDD8861: Computational and Design Thinking for STEM Literacy in 21st Century<sup>#</sup>
- MEDD8896: Computational thinking and education<sup>#</sup>

#### *Research Postgraduate Courses*

- EDUR8032: Research on developing computational thinking in 21st century learning

#### *Other Sub-degree/Undergraduate/Graduate Courses*

- GEH1031/GED1032 Technology, Entertainment and Mathematics
- GED1003/GEH1005 Mathematics Across Cultures and Time
- MTH1065 Understanding Numbers
- MTH2101 Mathematics Exploration with Technology
- INT3029 Web Intelligence
- INS3906 Honours Project
- INT5018 e-Learning in Primary Schools
- INT5032 e-Learning in School Education in a Green and Cloud Computing Environment
- INT5046 Pedagogical Design and Practices in e-Learning Environment
- MTH4088/5070 Problem-solving and Assessment in Mathematics
- MTH5050 Recreational Mathematics
- BUSA01 Quantitative Skills
- ISMD11 Introduction to Computing
- ISMD08 Computer Science
- ISMD03 Mobile Applications in Business Services
- ISMD12 Principles of Data Communication and Networking
- ISMD13 Microsoft Windows
- ISMD16 Introduction to Windows Server
- ISMH08 Data Communications and Networking



- ISMH09 Management Information Systems
- ISMH10 Human Computer Interface
- ISMH13 Knowledge-based Systems
- ISMH15 Computer Ethics
- ISMH17 Final Year Project
- ISMH18 Windows Administration
- ISMH20 Advanced Networking

## 2. Curriculum Development and Teaching Innovations

### *Course and programme development through research expertise*

#### **i. Designed new courses at PG Level**

- EDUR8032 Research on developing computational thinking in 21st Century Learning [*elective*]
- MITE/MLIM7352 Information technology and intellectual property law in education [*elective*]
- MEDD8861 Computational and design thinking for STEM literacy in 21st century [*core*]
- MEDD8896 Computational thinking and education [*core*]

#### **ii. Designed new courses at UG Level**

- BSIM3998 Professional practices in information management [*core*]
- EDUC7173 Foundations of computational thinking education in schools [*elective*]

#### **iii. Designed new programme at both UG and PG level**

- Leading the development of **BASc (Social Data Sciences) programme** at the beginning through working as a core team member and delivering a part of the presentation in the
- Leading the development of **MEd (Specialism: STEM Education) programme** at the beginning through the programme structure design and core course design.

## KNOWLEDGE EXCHANGE

### 1. Knowledge exchange awards

2022                    **Faculty Knowledge Exchange Award 2022**  
**Individual (as PI)**  
 Project: *Coding for Community Project: Building a Diversified Coding Community in Hong Kong Secondary Education*

2021                    **Faculty Knowledge Exchange Award 2021**  
**Team (as Co-I)**  
 Project: *Co-creating a New Normal of Empowered Learning through Digital Citizenship Research*

### 2. Knowledge exchange activities (three selected exemplary cases)

2019 -                    **“Coding for Community Project”: Building a diversified coding**  
 ongoing                    **community in Hong Kong secondary education**

This is an award-winning KE project funded by the Hong Kong Jockey Club Charities Trust with HK\$11,370,000, in collaboration with Youth Global Network (non-governmental organization) and the Department of Applied Social Sciences at the Hong Kong Polytechnic University, to develop a mentorship-based computational thinking curriculum for local secondary schools, in which the impact has been recognized through the receiving of the individual **Faculty Knowledge Exchange Award in 2022**.

This project has been supporting 7 schools since September 2019, benefiting nearly over 2,000 students, entirely during the unprecedented COVID-19 epidemic. Still around 36 teachers were involved in the delivery of 31 compulsory lessons with 17 elective lessons (nearly 60 contact hours per student) in physical or remote classroom, with nearly 300 mentors participating in over 150 hours of meeting with the students in community. Over the last 30 months, students had a positive psychosocial growth (i.e., coding attitude, self-efficacy, grit, sense of community, sense of belonging, intrinsic motivation of learning) throughout this project, and the difference of the growth between the underprivileged students (e.g. from low-income family) and other students was less divided. Besides, those students who were supported by mentoring had significant higher growth in their psychosocial development. Details can be referred to the Summary Table in ACARS for this impact case.

The project has been awarded with the Faculty Knowledge Exchange Award 2022 with monetary support of HK\$100,000 to sustain the project for another one year. This news has also been

covered by the Faculty's News and Events on July 7, 2022 (<https://web.edu.hku.hk/news/facultykeaward2022>). At the University's level, the Knowledge Exchange Office has published the notes on their webpage addressed by the Vice-President and Pro-Vice-Chancellor (Research) of HKU, recognizing the success of the project (<https://www.ke.hku.hk/spotlight/faculty-knowledge-exchange-awards-2022>).

To help grow the project and build the exemplary impact case in the Faculty for the next Research Assessment Exercise (RAE) 2026, I have applied the Strategic Impact Scheme in 2022/23 under the theme "Use of IT in Education" with nearly \$500,000 to fund and sustain the continuation of this project to conduct further evaluation of the project's impact.

2019-  
ongoing

### **Building and Developing the "Enhancing Literacy Education with Artificial Reality Neo-platform" (eLEARN)**

Given my background in computer science and interest in instructional technology, I have contributed my expertise into the development and new learning technology for schools. My QEF funded project on developing a virtual reality (VR) learning platform for primary Chinese language education entitled "Enhancing Language Education with Artificial Reality Neo-platform (eLEARN)" was successful. The total amount of \$3,444,200.00 supporting the project for 3 years involved **18 local primary schools** has allowed me to set up a research team in collaboration with industrial education technology company to co-develop the VR learning platform with the teachers for their classroom teaching.

This project began with a clear research foundation. The conceptualization of the project has been formulated through literature and learning theories, which will be published in as a book chapter (paper #3). Through the 3-year effort, a total of 15 different VR-assisted modules were developed for Chinese language subject in primary schools, supporting Grade 4 through Grade 6, with more than 5000 primary school students. Due to the pandemic, the data collection was only completed last year, and one journal article was prepared to report our investigation of the opportunities and challenges among school teachers in adopting VR in their teaching. The work has been submitted for review (paper #105). In addition, I have been interviewed by the local major journalist from Ming Pao Post about the contribution of this project and a featured article in the Faculty was also published on the Faculty website to recognize

the outstanding innovation of pedagogies using VR learning technologies.

Given the merit of this project's impact and outcome, my project has been selected for the new "e-Learning Ancillary Facilities Programme - Development and Dissemination Scheme" by the IT in Education Section at EDB. This selection is highly significant, because only the **best nine QEF projects related to e-learning in the last five years were nominated (9 out of 185 funded project related to e-learning at all levels), and my project is one of those.** Through this new scheme, I am in collaboration with the Education University of Hong Kong, the Hong Kong University of Science and Technology, and an innovative technology company in the industry, to enhance and develop a new learning platform assisted with VR for Chinese language, English language, and Humanities (e.g. moral and national education, value education). The new platform will also explore a new digital learning space, called "*metaverse*", to engage students in learning through social interaction.

2016-2022

### **Serving as consultant and expert for digital literacy projects**

Recognizing computational thinking as a key component in digital literacy framework, I have involved in the collaborative KE-related project related to digital literacy and its development among children and youth, contributing the receiving of the team's **Faculty Knowledge Exchange Award in 2021.**

I was a co-investigator of the TRS project "Learning and Assessment for Digital Citizenship" (PI: Nancy W. Y. Law), specifically working and co-leading the working group on digital literacy assessment and collaborative problem-solving. A part of this research was an award-winning KE project, "*Co-creating a New Normal of Empowered Learning through Digital Citizenship Research*", which launched an action-focused comprehensive 360-degree survey study called "eCitizen Education 360" (e360). It aims to provide evidence about the impact of school suspension to guide community-wide actions in co-creating a New Normal to combat the negative effects of the COVID-19 pandemic by supporting the learning and wellbeing of students, families, schools and teachers. As a part of the team, I have contributed both the underpinning research (paper #2, #13, and #101) and the implementation of this project to benefit the knowledge exchange between the general public and the University.

In addition to this local initiative, I was invited to participate in the assessment design committee as an external voluntary consultant of

the International Computer and Information Literacy Study (ICILS) for their assessment in the 2023 study, which was designed to understand how students are prepared for study, work, and life in a digital world. The study measures international differences in students' computer and information literacy (CIL) as well as computational thinking (CT) as a new area in the measurement of digital literacy. I provided to the project team with feedback and comments to enhance and contextualize the ICILS test items, especially in the area of CT, as well as their research instruments (e.g. teacher and principal questionnaire) used for collecting school data to understand the digital literacy among both teachers and students around the world.

As of today, ICILS2023 study involves participants from different regions, such as Austria, Azerbaijan, Belgium (Flemish), Bosnia and Herzegovina, Chinese Taipei, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Kazakhstan, Kosovo, Latvia, Luxembourg, Malta, Netherlands, Norway, Oman, Portugal, Republic of Korea, Romania, Russian Federation (Moscow), Serbia, Slovak Republic, Slovenia, Spain, Sweden, United States, and Uruguay. This demonstrates how I contribute my knowledge through exchange to international parties.

### 3. Highlight some notable knowledge exchange activities

July 2022

#### **Served as a judge for the final of CoolThink@JC Competition**

Being the sixth competition, the event targets at P4-P6 students, and aims to promote computational thinking education and to demonstrate and recognize students' problem solving capabilities as well as to cultivate team collaboration. I served as the judge for the competition and helped evaluate 20 competition team and help select teams for the finale.

July 2022

#### **Invited speaker on blended learning for creative education**

I gave a seminar to the creative industrial professionals at the PMQ, a local organization that promotes creative education, on blended learning with technologies and train their trainers for supporting the creative education in primary schools. The event had nearly 20 professionals from creative industries who were interested in being a trainer to school students.

Dec 2021

#### **Invited panelist on gamification for STEM education**

I shared my view as a panelist to the general public at the Cyberport Digital Entertainment Leadership Forum to explore on the recent interest of artificial intelligence (AI) education using online gaming platform, such as Roblox, and discuss how children can unleash

their collaborative problem-solving skills by interacting with others on such virtual learning space. The event attracted both online and on-site audience with more than 200 participants in my session.

Dec 2021

**Being a keynote speaker and the moderator of the Global Forum at the Learning & Teaching Expo 2021**

I shared a talks on computational thinking education with the title “*Back to the Future: Are Schools Really Going Back to the Origin of Computational Thinking Education?*” at the Expo on-site, attracting more than 100 audience participating in the seminar. As a part of the Expo, I also served as a moderator of the Global Forum attracted more than 200 audience around the world, with the following prominent experts at the forum: Mr Mart Laidmets, Former Secretary General, Estonian Ministry of Education and Research; Prof Fernando M. Reimers, Ford Foundation Professor of the Practice in International Education, Harvard Graduate School of Education; Prof Andreas Schleicher, Director, Directorate for Education and Skills, Organisation for Economic Cooperation and Development; and Mr WONG Siew Hoong, Director-General of Education, Ministry of Education, Singapore.

Nov 2021

***Serving as a judge panel of the 2<sup>nd</sup> ‘Innovative Teacher Award’ at the EdCity***

I served as a panel judge to assess the teachers who participated in the Innovative Teacher Award organized by the EdCity. My role was to contribute my expertise in pedagogical and learning designs with educational technologies in deciding which teams from schools should be awarded for their innovative teaching. A total of 15 teams from different schools were judged by the panel.

Aug 2019

***Being interviewed by a RTHK radio programme about my GRF project on engineering integrated into science learning in primary school***

I was interviewed at the radio programme to discuss with the public on my GRF project on using engineering design process to enhance their science knowledge and explain how children can learn engineering in primary school.

2017-2020

***External Reviewer of internal grant applications for Education University of Hong Kong (EdUHK)***

I served as an external reviewer of several internal grant applications for the EdUHK, including Teaching Development Grants and other seed funding related to AI, computational thinking education, and e-learning.

**SERVICE/ADMINISTRATION****Faculty of Education**

2022-present	<b>Member</b> , HKU Musketeers Foundation Institute of Data Science
2022-present	<b>Member</b> , Faculty Research Committee
2021-present	<b>Director</b> , Centre for Information Technology in Education
2017-present	<b>Programme Director</b> , Bachelor of Science (Information Management)
2017-present	<b>Member</b> , Faculty Teaching and Learning Quality Committee
2016-present	<b>Member</b> , Faculty Review Committee on Student Performance and Discontinuation
2016-present	<b>Programme Committee Member</b> , Master of Science (Information Technology in Education)
2016-present	<b>Member</b> , Faculty Research Ethics Committee
2016-present	<b>Reviewer</b> for MPhil/PhD/EdD applications in the faculty
2016-present	<b>Convenor</b> for PhD/EdD student confirmation seminars
2016-present	<b>Internal Examiner</b> for PhD/EdD students' thesis examinations

**Professional Community Services**

2023	<b>General Co-Chair</b> , CITE Research Symposium (Endorsed by IEEE Education Society)
2023-present	<b>Member</b> , IEEE TALE Conference Steering Committee, IEEE Education Society
2022-present	<b>Secretary</b> , Executive Committee, IEEE Education Society
2022-present	<b>Vice Chair</b> , IEEE Hong Kong Section (Education Chapter)
2022	<b>Chair</b> , Publications, Registration & Payment Committees, IEEE Region 10 Conference (TENCON 2022), Hong Kong
2022	<b>Co-Chair</b> , Publicity Committee, IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2022)

- 2022-2023 **Co-chair**, Division of Maker and STEM Education, the 27th Global Chinese Conference on Computers in Education (GCCCE 2023)
- 2021-2022 **Programme Committee Member**, Division of Mobile, Ubiquitous & Contextual Learning, the 26<sup>th</sup> Global Chinese Conference on Computers in Education (GCCCE 2022)
- 2019-2020 **Programme Committee Member**, Division of Maker and STEM Education and Educational Technology: Innovations, Policies & Practice, the 24<sup>th</sup> Global Chinese Conference on Computers in Education (GCCCE 2020)
- 2020 **Chair, Technical Program Committee**, IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2020)
- 2018-2019 **Programme Committee Member**, Division of Maker; STEM Education and Educational Technology: Innovations, Policies & Practice; Digital Technology, Innovation, and Education, the 23<sup>th</sup> Global Chinese Conference on Computers in Education (GCCCE 2019)
- 2017-2018 **Programme Committee Member**, Division of Maker; STEM Education and Educational Technology: Innovations, Policies & Practice; Digital Technology, Innovation, and Education, the 23<sup>th</sup> Global Chinese Conference on Computers in Education (GCCCE 2018)
- 2017-2018 **Chair, Technical Program Committee**, IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2018)
- 2017 **General Chair**, Technical Program of IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2017)
- 2017-2020 **Chair**, IEEE Hong Kong Section (Education Chapter)
- 2016-2017 **Vice Chair**, IEEE Hong Kong Section (Education Chapter)
- 2013-2019 **Member (Asia Pacific Representative)**, Global Liaison Committee, ACM Special Interest Group on Computer Science Education (SIGCSE) Conference
- 2016- present **International Journal Reviewer**
- Computers & Education (IF = 11.182)
  - Educational Research Review (IF = 10.207)



- Internet and Higher Education (IF = 8.591)
- International Journal of STEM Education (IF = 5.789)
- Educational Technology Research & Development (IF = 5.580)
- British Journal of Educational Technology (IF = 5.268)
- Interactive Learning Environments (IF = 4.965)
- Frontiers in Psychology (IF = 4.232)
- Journal of Computer Assisted Learning (IF = 3.761)
- Education and Information Technologies (IF = 3.666)
- Educational Technology & Society (IF = 2.633)

### Public Services

- |                  |  |
|------------------|--|
| 2022-<br>2023    | <b>Member &amp; Sub-Group Leader</b> , Assessment Panel on General Studies (2022/2023), Chief Executive's Award for Teaching Excellence (CEATE), 2022-2023 |
| 2022-<br>present | <b>Member</b> , Ad Hoc Committee on Reviewing IT Learning Targets, Education Bureau (EDB)  |
| 2022-<br>present | <b>Co-opt Member</b> , Curriculum Development Council (CDC) Committee on Technology Education, Education Bureau (EDB)                                      |
| 2022-<br>present | <b>Member</b> , Working Group on Revamp for Consumer Education for Youth, Consumer Council, 2022-2024  |

### Professional Membership

- IEEE Senior Member
- ACM Professional Member
- Member, IEEE Education Society
- Member, ACM Special Interest Group for Computer Science Education (SIGCSE)
- Member, American Educational Research Association (AERA)

*Last update: 22 August 2023*