Centre for Learning Sciences and Technologies
學習科學與科技中心

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Centre for Learning Sciences and Technologies Proudly Presents Its Project Highlights at Learning and Teaching Expo 2022

Dr. Choi Yuk-Lin, JP, Secretary for Education (centre) and Prof. Morris Jong (second from right) at the CLST booth

Prof. Fan Xitao (second from right), Faculty Dean of Education of the CUHK, and the project team members at the CLST booth

i. Jockey Club Community Care and STEM in Action Project: Empowering Disadvantaged Communities with Innovative Products

Funded by the Hong Kong Jockey Club Charities Trust and spearheaded by the Centre for Learning Sciences and Technologies (CLST), Jockey Club Community Care and STEM in Action Project has marked three years of significant achievements. Collaborating with six secondary schools, the project has yielded 21 ground-breaking technological products tailored to the needs of the underprivileged. Guided by the mentors from the Faculty of Engineering of The Chinese University of Hong Kong (CUHK), social service organizations and entrepreneurial circles, student innovators have breathed life into these creations. The fruits of their labour were showcased at the Learning and Teaching Expo 2022 held at the Hong Kong Convention and Exhibition Centre.

The Elevating Wheelchair invented by students from Lok Sin Tong Yu Kan Hing Secondary School

Exhibited in the CUHK replica bus, all products cater to various disadvantaged groups, leveraging technology to elevate their wellbeing. Target beneficiaries include the elderly, visually impaired, hearing impaired, wheelchair users, and nano-flat residents. These innovative products cover all facets of daily life, from clothing, food and shelter, down to transportation, entertainment, personal care, as well as communication. For instance, the Bus Reminder, conceived by students from Christian and Missionary Alliance Sun Kei Secondary School, emits audio signals to alert the elderly and visually impaired of their

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bus arrival; the Necklace, envisioned by students from Pentecostal Holiness Church Wing Kwong College, detects obstacles and provides warnings to visually challenged users; the Railway Safety Device, a brainchild of students from Carmel Holy Word Secondary School, deploys light flashes to prevent door crush injuries for the hearing impaired. Students masterminding such ingenious inventions walked the visiting public through their first-hand experiences with the complete "design-thinking process" spanning from conception to market launch.

The Railway Safety Device for the Hearing-impaired crafted by students from Carmel Holy Word Secondary School

Professor Morris Jong, the Principal Investigator of the project and Director of the CLST, reflects, "Our initiative furnishes a three-phase curriculum and an interactive platform for authentic STEM learning. Students harness their creativity and technological prowess to craft pragmatic solutions for marginalized communities and address their daily challenges. Beyond expanding horizons, this educational journey instils a profound sense of social responsibility and compassion in our future generation."

Enrolled teachers received a briefing from Mr. Edward Chan Chi-Kian about Jockey Club Virtual Reality Project for Chinese Language Education

ii. Jockey Club Virtual Reality Project for Chinese Language Education: Revolutionizing Chinese Language Pedagogies with Virtual Reality

Featured alongside Jockey Club Community Care and STEM in Action Project was Jockey Club Virtual Reality Project for Chinese Language Education, which aims to scale up the application of virtual reality (VR) technologies in Chinese Language writing at the secondary level. Joined by helpful teachers and students from the participating schools, we excelled ourselves to promote the initiative to the general public. They received briefings on the project vision and milestones while trying out the VR headsets and diving into the immersive world of virtual Hong Kong landscapes. In addition to playing videos, putting up exhibition boards, and displaying one-of-its-kind teaching kits, we distributed cardboard VR goggles and collected works of outstanding students, bringing visitors so much joy and attention. Running parallel to our VR exhibition were three mini talks hosted by experienced teachers of the three participating schools. Their ideas, insights, and illustrations were met with recognition and big applause from the audience. In the post-talk mingling, peers with mutual interests came together for in-depth exchange and a few representatives in the education community expressed keen interest in being part of the project.

Our participation in this annual mega event reached its climax with our professional staff delivering seminars about "Facilitating Teachers in the Process of Pedagogical Paradigm Shift: The Effectiveness of Virtual Reality in Chinese Language Writing — Jockey Club VR Project for

Chinese Language Education: Insights from Phase I and Prospects for Phase II" and "Theory into Practices: Jockey Club Community Care and STEM in Action Project (From Prototype to Product)" in the venues of Future Learning Theatre and InnoSTEMer. Among the distinguished speakers was our Centre Director, Professor Morris Jong.

Our dedication to advancing VR and STEM technologies for real-world challenges in education and community care, combined with our warm receptions and genuine interactions, left an indelible mark on the visitors' understanding of the positive influences brought by our projects on the society of Hong Kong.

Prof. Morris Jong shared the research findings of Jockey Club Virtual Reality Project for Chinese Language Education with frontline Chinese language teachers in a keynote seminar

Selected Recently Funded Projects

Project Title	Period	Amount (HKD)	Fund Source	Principal Investigator
EduVenture Self-directed Learning Resources Programme: General Studies in Primary Education and Citizenship and Social Development in Secondary Education	2023–2026	9,528,000	Quality Education Fund	Prof. Morris Jong
I Believe My Students Can Fly: Educational Design Research on Teachers' Learning Facilitation for Scaffolding Students to Conduct Drone-supported Inquiry-aimed Geo-fieldwork in Natural Environments	2023–2025	633,700	Research Grants Council (GRF)	Prof. Morris Jong
School Learning Support and Teacher Digital Competence from a Needs Satisfaction Perspective	2023–2024	324,000	Research Grants Council (GRF)	Prof. Thomas Chiu
Social Innovation and Entrepreneurship: Starting up "Learniversity"	2023–2025	600,000	University Grants Council (S-KPF)	Prof. Morris Jong
Hong Kong in Arts: Creative Arts Technology and Cultural Inheritance Programme for Gifted Primary Students	2023–2024	1,364,722	Education Bureau (GEF)	Prof. Morris Jong
Revolutionising Experiential Learning with Learner-immersed Interactive Virtual Reality in Hong Kong and the Asia Pacific Region	2023–2025	500,000	Faculty of Education, CUHK	Prof. Morris Jong
Incorporating Aviation Knowledge and Communication to Enhance STEAM curriculum	2022–2024	1,551,100	Quality Education Fund	Prof. Thomas Chiu

Selected Recent Publications in Journals

1. Jong, M. S. Y. (2023). Flipped classroom: Motivational affordances of spherical video-based immersive virtual reality in support of pre-lecture individual learning in pre-service teacher education. *Journal of Computing in Higher Education, 35*(1), 144–165. https://doi.org/10.1007/s12528-022-09334-1
2. Jiang, M. Y. C., Jong, M. S. Y., Lau, W. F. F., Chai, C. S., & Wu, N. (2023). Exploring the effects of automatic speech recognition technology on oral accuracy and fluency in a flipped classroom. *Journal of Computer Assisted Learning, 39*(1), 125–140. https://doi.org/10.1111/jcal.12732
3. Wu, W. L., Hsu, Y., Yang, Q. F., Chen, J. J., & Jong, M. S. Y. (2023). Effects of the self-regulated strategy within the context of spherical video-based virtual reality on students' learning performances in an art history class. *Interactive Learning Environments, 31*(4), 2244–2267. https://doi.org/10.1080/10494820.2021.1878231
4. Jiang, M. Y. C., Jong, M. S. Y., Lau, W. F. F., Chai, C. S., & Wu, N. (2023). Effects of automatic speech recognition technology on EFL learners' willingness to communicate and interactional features. *Educational Technology & Society, 26*(3), 37–52. https://doi.org/10.30191/ETS.202307_26(3).0004
5. Lin, V., Barrett, N. E., Liu, G. Z., Chen, N. S., & Jong, M. S. Y. (2023). Supporting dyadic learning of English for tourism purposes with scenery-based virtual reality. *Computer Assisted Language Learning, 36*(5–6), 906–942. https://doi.org/10.1080/09588221.2021.1954663
6. Lau, K. L., & Jong, M. S. Y. (2023). Acceptance of and self-regulatory practices in online learning and their effects on the participation of Hong Kong secondary school students in online learning. *Education and Information Technologies, 28*(7), 8715 –8732. https://doi.org/10.1007/s10639-022-11546-y
7. Nalipay, M. J. N., King, R. B., Yeung, S. S. S., Chai, C. S., & Jong, M. S. Y. (2023). Why do I teach? Teachers' instrumental and prosocial motivation predict teaching quality across East and West. *British Journal of Educational Psychology, 93*(2), 453–466. https://doi.org/10.1111/bjep.12568
8. Cui, Z., Ng, O. L., & Jong, M. S. Y. (2023). Integration of computational thinking with mathematical problem-based learning: Insights on affordances for learning. *Educational Technology & Society, 26*(2), 131–146. https://doi.org/10.30191/ETS.202304_26(2).0010
9. Dai, Y., Liu, A., Qin, J., Guo, Y., Jong, M. S. Y., Chai, C. S., & Lin, Z. (2023). Collaborative construction of artificial intelligence curriculum in primary schools. *Journal of Engineering Education, 112*(1), 23–42. https://doi.org/10.1002/jee.20503
10. Chen, X., Zou, D., Cheng, G., Xie, H., & Jong, M. S. Y. (2023). Blockchain in smart education: Contributors, collaborations, applications and research topics. *Education and Information Technologies, 28*(4), 4597–4627. https://doi.org/10.1007/s10639-022-11399-5
11. Huang, Y., Tse, C. S., Xie, J., Shen, M., & Wang, R. (2022). Controlled or automatic? Influence of congruency proportion and stimulus-onset asynchrony on the brightness-valence and spatial-valence metaphoric congruency effects. *Quarterly Journal of Experimental Psychology, 75*(6), 1067–1084. https://doi.org/10.1177/17470218211048190
12. Pu, X., Zhang, G., Tse, C. S., Feng, J., Tang, Y., & Fan, W. (2022). When does daily job performance motivate learning behavior? The stimulation of high turnover rate. *Journal of Knowledge Management, 26*(5), 1368–1385. https://doi.org/10.1108/JKM-03-2021-0242
13. Xia, Q., Chiu, T. K. F., Lee, M., Sanusi, I. T., Dai, Y., & Chai, C. S. (2022). A self-determination theory (SDT) design approach for inclusive and diverse artificial intelligence (AI) education. *Computers & Education, 189*, Article 104582. https://doi.org/10.1016/j.compedu.2022.104582
14. Weng, X., Chiu, T. K. F., & Tsang, C. C. (2022). Promoting student creativity and entrepreneurship through real-world problem-based maker education. *Thinking skills and Creativity, 45*, Article 101046. https://doi.org/10.1016/j.tsc.2022.101046
15. Chiu, T. K. F., Sun, J. C. Y., & Ismailov, M. (2022). Investigating the relationship of technology learning support to digital literacy from the perspective of self-determination theory. *Educational Psychology, 42*(10), 1263–1282. https://doi.org/10.1080/01443410.2022.2074966
16. Chiu, T. K. F. (2022). School learning support for teacher technology integration from a self-determination theory perspective. *Educational Technology Research and Development, 70*(3), 931–949. https://doi.org/10.1007/s11423-022-10096-x

Hong Kong Centre for International Student Assessment
香港學生能力國際評估中心

https://www.fed.cuhk.edu.hk/~hkcisa/index.html

本中心總監何瑞珠教授 2023 年榮休，中心非常感謝何教授過去二十年為中心的付出及努力。中心創立初衷旨在促使香港制訂嶄新的全球評估及監察機制，並建立完備的資料庫，為教育持分者提供資訊。自中心 2003 年創立以來，何教授一直帶領中心前進，成功推展多屆「學生能力國際評估計劃」(Programme for International Student Assessment)，為香港教育改革提供適時而有用的數據，使香港成為首個參與 PISA 的華人地區。本中心更於 2013 年更加入由聯合國教科文組織（UNESCO）建立的「亞太區監察教育素質評估網絡」(NEQMAP)，目的是支援亞太地區發展教育素質評鑑系統。

未來中心亦會繼續向前邁進，發揮自身優勢，為香港教育界提供更多適時而有用的數據，協助教育界作出更深遠的改革。