Outputs Arising from Dean's Research Fund

Seventh Round

Individual Research Scheme (IRS)	
Project Leader	**Dr Sun Fenghua, HPE**
Project Title *(Ref No.)*	The neurons mechanism behind performance of brief mindfulness intervention during half time break of simulative soccer competition. *(IRS-2)*
Output:	Journal/ book 1. Zhu, Y., Sun, F.*, Li, C., Huang, J., Hu, M., Wang, K., He, S., Wu, J., Acute effect of mindfulness-based intervention on athletes' cognitive function: – a fNIRS investigation / Journal of Exercise Science and Fitness *(2022, Accepted but not yet published)* Conference 1. 26th Annual Congress of the European College of Sport Science Title: Acute effect of brief mindfulness-based intervention on athletes' mood and salivary cortisol concentration External Grant 1. Health and Medical Research Fund Effects of Interrupting Sedentary Behaviours with High-Intensity Circuit Exercise on Vascular Endothelial Function and Executive Function among Young Adults: A Pilot Study (Date of application: 31 Mar 2022)
Project Leader	**Dr Pei Qing, SSC**
Project Title *(Ref No.)*	Climate change, epidemics, and famines in historical China during past 1000 years *(IRS-3)*
Output:	Journal 1. DAMETTE, O., GOUTTE, S. & PEI, Q. (2020). Climate and nomadic migration in a nonlinear world: evidence of the historical China. In: Climatic Change. 163, 4, p. 2055-2071 2. PEI, Q., ZHANG, D. D., FEI, J. & HUI, P. Y. (2020). Demographic Crises of Different Climate Phases in Preindustrial Northern Hemisphere. In: Human Ecology. 48, 5, p. 519-527 Conference The Past Global Changes (PAGES) Climate Reconstruction and Impacts from Archives of Societies (CRIAS) working group (Mar 2021)

	Title: State of the Art of Historical Climatology in International Perspective
Project Leader	**Dr Yuen Man Wai, MIT**
Project Title *(Ref No.)*	On new analytical solutions and mathematical properties for high dimensional and multi-component Camassa-Holm systems *(IRS-4)*
Output:	Journal/ book 1. Jiang, Z.W., Yuen, M.W., & Zhang, L. (2023). The Generalized Peakon Solution for the Rotation-two-component Camassa-Holm System, International Journal of Modern Physics B, 37, 2350017(12 Pages) 2. Geng, J., Hu, K., Lai, N. A. * & Yuen, M. W., Nonexistence for the compressible Euler equations with space dependent damping in 3-D *(Under Review)*
Project Leader	**Dr Zhang Qiaoping, MIT**
Project Title *(Ref No.)*	An Exploratory Study of Secondary Mathematics Teachers' Conceptions of STEM Education in Hong Kong and Taiwan *(IRS-5)*
Output:	Journal/ book 1. Zhang, Q. P., Zhang, X. L., & Liu, J. B., A Holistic Review of Authentic Assessment in Mathematics Education/ Authentic Assessment and Evaluation Approaches and Practices in a Digital Era: A Kaleidoscope of Perspectives *(2021)* 2. 張僑平 ： 新學制推行以來香港數學教育的發展與挑戰/課程研究 *(2021)* 3. 張僑平 和 陳慕丹 ： 基於電腦的數學評價：PISA2021 數學素養測評的啟示《教學月刊》（小學版）*(2021)* 4. 慈艷 和 張僑平 ： 做中學、學中思：在數學實踐活動中激發學生的數學思考《小學教學》（數學版）*(2021)* 5. 張僑平*、周詠南、陳美莉和麥巧玲 ： 基於數學課題的 STEM 教學活動設計：以認識立體圖形為例/數數學教育 *(2021)* 6. Zhang Q. P.*, Sze, N. L., & Chia, H. M., Secondary school students' perceptions of STEM subjects and career interest: An exploratory study in Hong Kong/Educational Studies *(Under Review)* 7. Zhang, Q. P. & Yang, K. L, Mathematics teachers' conceptions of STEM education and STEM integration: A phenomenographic appoach/IJSME *(Under Review)* 8. 張僑平*、周詠南、陳美莉、麥巧玲, 基於數學課題的 STEM 教學活動設計:以認識立體圖形為例/數學教育，44 期，頁 3-17 9. Zhang Q. P. *, Chia, H. M., & Chen, K. X., Examining students' perceptions of STEM subjects and career interests: An exploratory

	study among secondary students in Hong Kong/Vol 33 (2) 10. Zhang, Q. P., Yang, K. L. *, & He, X. B., Mathematics Teachers' Conceptions of STEM Education: A Comparative Study in Hong Kong and Taiwan Conference 1. Proceedings of the 44th Conference of the International Group for the Psychology of Mathematics Education Title: Rethinking authentic assessment in mathematics education: A holistic review 2. The 14th International Conference on Technology and Mathematics Education (ICTME) Title: When math meets STEM: Where do math teachers stand? 3. The 7th STEM in Education Conference: STEM future-expanding our horizons Title: Hong Kong Mathematics teachers' perceptions of STEM integration: An exploratory study External Grant 1. ECS Shaping students' lived space of mathematics learning: How mathematics teachers' beliefs and values affect their teaching (Date of application: Sept 2020)
Project Leader	**Dr Au Ka Man, SES**
Project Title *(Ref No.)*	Design and synthesis of novel metal-organic gels *(IRS-6)*
Output:	Journal/ book 1. Au, K.M, Recent Advances in the Use of Metal-Organic Frameworks for Dye Adsorption, Frontiers in Chemistry 2020,8,708 *(2021)* 2. Au, K.M, S. Y. Kwan, M. N. Lai & K. H. Low, Dual-Functional Mesoporous Copper(II) Metal-Organic Frameworks for the Remediation of Organic Dyes. Chemistry - A European Journal 2021,27,9174 *(2021)* Conference 1. ACS Spring 2021 – Macromolecular Chemistry – The Second Century Title: Dual-Functional Copper Metal-Organic Framework s for Dye Removal 2. ACS Publications Symposium – The Power of Chemical Transformation

	Title: Photocatalytic Degradation of Tartrazine with a Copper)II) Metal-Organic Framework External Grant 1. GRF Design and synthesis of luminescent MOF-gel composites with hierarchical porosity (Date of application: Nov 2021)
Project Leader	**Prof Chow Cheuk Fai Stephen, SES**
Project Title *(Ref No.)*	Design and Development Smart Latent Catalytic Systems. *(IRS-8)*
Output:	Journal/ book 1. Zheng, A., Cheng, B. G.* & Chow , C. F.*, Selective detection for methomyl pesticide via catalytic chemosensing ass Chemistry , A European Journal , 26, 63, p.14461-14466 *(2020)* External Grant 1. GRF Synthesis and Catalytic Halopgenation Studies of High-Valent Iron(IV/V)-oxo-halide Complexes (Date of application: Nov 2020)
Project Leader	**Dr Deng Wenjing, SES**
Project Title *(Ref No.)*	Children's non-dietary exposure to emerging flame retardants via school and household indoor dust intake *(IRS-9)*
Output:	Journal/ book 1. Hu, L. X., Deng W. J.*, Ying, G. G.& Hong, H. C., Environmental perspective of COVID-19: atmospheric and wastewater environment in relation to pandemic. Ecotoxicology and Environmental Safety 219, 112297. *(2021)* 2. Li, N., Ying, G. G., Hong, H. C., Tsang, E. P. K. & Deng, W. J.*, Plasticizer contamination in the urine and hair of preschool children, airborne particles in kindergartens, and drinking water in Hong Kong. Environmental Pollution 271, 116394. *(2021)* 3. Li, N., Ying, G. G., Hong H.C.& Deng W. J.* Perfluoroalkyl Substances in the Urine and Hair of Preschool Children, Airborne Particles in Kindergartens, and Drinking Water in Hong Kong. Environmental Pollution 270, 116219 *(2021)* 4. LIU, J., HU, L.X., DENG, W.J., YING, G.G., HONG, H.C., TSANG, P.K., BARCELÓ, D., Disinfection Byproducts in natural water in Hong Kong after COVID-19 pilot study of pollution characteristics and ecological risk of disinfection by-products in natural waters in Hong Kong, Environmental Toxicology and Chemistry, accepted in

	July 2022 External Grant 1. UGC GRF Does dietary intake of veterinary antibiotics affect intestinal microflora and pose a health risk on children (Date of application: Nov 2020)
Project Leader	**Dr Li Wai Chin, SES**
Project Title *(Ref No.)*	*Do root apoplastic barriers hinder cadmium (Cd) transfer from soil to rice? (IRS-10)*
Output:	Journal/ book 1. Xiao, A., Chen, D., Li, W. C., & Ye, Z, Root Morphology and Anatomy Affect Cadmium Translocation and Accumulation in Rice. Rice Science, Vol 28. *(2021)* 2. ROKONUZZAMAN, M., LI, W. C., MAN, Y. B., TSANG, Y. F. & YE, Z., Arsenic accumulation in rice: Sources, human health impact and probable mitigation approaches, Rice Science. 29(4): 309-327 External Grant 1. GRF The mechanism of arsenic and antimony mineralization and its application in soil remediation at antimony smelting contaminated (Date of application: Sept 2021)
Project Leader	**Dr Man Yu Bon, SES**
Project Title *(Ref No.)*	Spent Coffee ground-based biochar-supplemented fish feed for lowering uptake of perfluorooctanoic acid and perfluorooctanesulfonic acid by grass carp *(IRS-11)*
Output:	Journal/ book 1. Man, Y. B., Zhang, F. Ma, K. L., Mo, W. Y. Kwan, H. S., Chow, K. L., Man, K. Y., Tsang, Y. F., Li, W. C. & Wong, M. H.* . Growth and intestinal microbiota of Sabah giant grouper reared on food waste-based pellets supplemented with spirulina as a growth promoter and alternative protein source, Aquaculture Reports, 18, 100553 *(2020)* 2. Man, Y, B., Lee, T. M., Hossain, MD. F., Tsang, Y. F., Wong, C. F., Chow, K. L. *, Food waste and single-cell proteins. In Food Waste as a Resource: Food, Feed Fertilizer, Fuel. World Scientific Publishing Co *(The book chapter will be published on January 2023)* External Grant

	1. GRF Coffee grounds-biochar as feed supplements, to reduce residues of antibiotic s and spread of antibiotic resistance genes in fish (Date of application: Nov 2020) 2. GRF Activated carbon made from rice husks and coconut shells as feed supplement for reducing uptake of metal/loids, PAHs and PCBs by Nile tilapia. (Date of application: Nov 2021), ***(Date of approval: 30 June 2022, Project Duration: 1 Jan 2023 to 31 Dec 2025)***
Project Leader	**Dr Tsang Yiu Fai, SES**
Project Title *(Ref No.)*	Synergistic Mechanisms between Autotrophs and Heterotrophs in CO_2 Fixation using Non-photosynthetic Microbial Community (NPMC) and NPMC Structure Modification *(IRS-12)*
Output:	Journal/ book 1. Cho, S. H., Jung, S., Park, Y. K., Lin, K. Y. A., Chen, W. H., Tsang, .Y. F.* & Kwon, E. E. *, Biofuel Production as an Example of Virtuous Valorization of Swine Manure. *ACS Sustainable Chemistry & Engineering*, 9, 13761-13772, [Cover story] *(2021)* 2. Khan, M. T., Hossain, M. F., Man, Y. B., Wong, M. H., Kim, K. H. * & Tsang, Y. F.*, Removal of Microplastics in conventional and advanced wastewater treatment technologies: Challenges, and opportunities, *Journal of Environment Management (2022 Major Revision)* 3. Man, Y. B., Lee, T. M., Hossain, M. F., Tsang, Y. F., Wong, C. F. & Chow, K. L.*, Food Waste and Single-cell Proteins. In Wong, M. H., Purchase, D & Dickson, N. (Eds.), *Food Waste as a Resource: Food, Feed, Fertilizer, and Fuel,* London, UK: World Scientific (in press) *(2022 Book Chapter)* 4. Hu, X., Wang, J., Jin, T., Li, Z., Tsang, Y.F.*, Liu, B.*, Efficient H2O2 generation and bisphenol A degradation in electro-Fenton of O-doped porous biochar cathode derived from spirit-based distiller's grains. Process Safety and Environmental Protection, 166, 99-107. *(2022)* 5. Zhou, Y., Zhou, J.*, Yu, J., Huang, X., Niu, X., Tsang, Y.F.*, Improved integrated anaerobic–anoxic–o xic system for landfill leachate treatment using domestic wastewater as carbon source: Performance study and optimization. Process Safety and Environmental Protection (in press). *(2023)*

	6. Mou, H., Yang, Q., Qu, S., Hu, X.*, Li, Z., Tsang, Y.F.*, Degradation of dimethyl phthalate by heterogeneous electro-Fenton process using Fe3O4-doped biomass porous carbon. Process Safety and Environmental Protection. *(2023 Under Review)* External Grant 1. GRF Inhibitory and Synergistic Effects of Microfibres and Microplastics and Biological Wastewater and Sludge Treatment and Their Mechanisms (Date of application: November 2020)

Interdisciplinary Research Scheme (IDS)	
Project Leader	**Dr Cheng Kwok Shing Gary, MIT**
Project Title *(Ref No.)*	*Facilitating Theme-based Vocabulary Learning by Neural Topic Modeling based on Completely Random Measures (IDS-2)*
Output:	Journal/ book 1. Chen, X., Zou, D., Xie, H., & Cheng, G., Twenty Years of Personalized Language Learning: Topic Modeling and Knowledge Mapping. Educational Technology & Society, 24(1), 205-222. (2021) 2. Chen, X., Xie, H., Li, Z., & Cheng, G., Topic Analysis and Development in Knowledge Graph Research - A Bibliometric Review on Three Decades. Neurocomputing. DOI: 10.1016/j.neucom.2021.02.098. (2021) 3. Trends, Research Issues and Applications of Artificial Intelligence in Language Education. Educational Technology & Society , 26(1): 112-131, https://www.j-ets.net/collection/forthcoming-articles/26_1#h.p0122f3fwnvt Conference 1. The 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020) Title: Neural Mixed Counting Models for Dispersed Topic Discovery 2. The 5th International Symposium on User Modeling and Language Learning (UMLL 2021) Title: Investigating the Impact of Teacher Feedback on Content Revisions in EFL Students' Writing by Automated Tracking Approach

	External Grant 1. GRF Automated Feedback for Elucidating Coherent Text – The AFFECT Project (Date of application: Nov 2020) 2. GRF Towards automatic analysis of student behaviour and work to facilitate self-regulated learning in computer programming (Principal Investigator: Dr Cheng Kwok Shing Gary) (Date of application: Nov 2021)
Project Leader	**Dr Song Yanjie, MIT**
Project Title *(Ref No.)*	Enhancing primary students' collaborative science inquiry through meta-cognitive scaffolding in a mobile learning environment *(IDS-3)*
Output:	Journal/ book 1. Song, Y., Yang, Y., Cao, J., Loo, C. K. (2022). Mapping primary students' mobile collaborative inquiry-based learning behaviours in science collaborative problem solving via learning analytics. International Journal of Educational Research. 114, 101992. Conference 1. The 26th Global Chinese Conference on Computers in Education (GCCCE 2022) (June/2022/online) Title: Enhancing primary students' collaborative problem-solving skills via a metacognitive scaffold embedded in a mobile app
Project Leader	**Prof Ho Wing Kei, SES**
Project Title *(Ref No.)*	Novel sulphur vacancies rich transition metal sulphide based photocatalysis for environmental purification *(IDS-4)*
Output:	Journal/ book 1. Di, T., Xu, Q., Ho, W. K., Tang, H., Xiang, Q. & Yu, J. (2019). Review on Metal Sulphide-based Z-scheme Photocatalysts, ChemCatChem, 11, 1394-1411 2. Ge, H., Xu, F., Cheng, B., Yu, J. & Ho, W. K. (2019). S-Scheme Heterojunction TiO2/CdS Nanocomposite Nanofiber as H2-Production Photocatalyst, ChemCatChem, 11 (24), 6301. 3. Di, T., Cheng, B., Ho, W. K., Yu. J. & Tang, H. (2019). Hierarchically CdS–Ag2S nanocomposites for efficient photocatalytic H2 production. Applied Surface Science, 170, 196-204. 4. Zhao, Y., Zhao, X., Lang, Z., Sun, H., Du, Z., Tan, H., Qiu, T., Ho, W. K., Zhao, Z., & Wang, Y. (2020). Reasonable design of Cu2MoS4 heterophase junction for highly efficient photocatalysis. Journal of

	Alloys and Compounds, 826,154076.
Project Leader	**Dr Chow Sin Yin Alice, SSC**
Project Title *(Ref No.)*	Assessing willingness-to-pay for voluntary carbon offsets among the Greater Bay Area's air travelers: A comparison of hypothetical and non-hypothetical estimations *(IDS-5)*
Output:	Journal/ book 1. Chow, A. S.Y., Lo, A.Y., Cheung, LTO, Fok. L. To be submitted to Journal of Environmental Planning and Management, Journal of Sustainable Tourism, or Journal of Transport Geography. *(Under preparation)* External Grant 1. GRF Willingness-to-pay for China's domestic carbon credits to offset air travel carbon emissions: is it a political choice or an environmental choice? (Date of application: Nov 2020)
Project Leader	**Prof So Wing Mui Winnie, SES**
Project Title *(Ref No.)*	Science, Technology, Engineering and Mathematics (STEM) Education: Giving Voice to Teachers on notion of integration *(IDS-6)*
Output:	Journal/ book 1. Chen, Y., Li, W. C., Chiu, W. K. S. & So, W. M. W., Elementary Teachers' Perceptions of STEM Integration in Schools: a cluster analysis *(Under preparation)* External Grant 1. PPR Professionals' Perspectives on Competences and Contexts for STEM Education Enhancing Policy for Innovation and Technology (I&T) Development in Hong Kong (Date of application: July 2020)

Research Output Prize (ROP)	
Project Leader	**Dr Pei Qing, SSC**
Project Title *(Ref No.)*	The Strange Flight of the Peacock: Farmers' Atypical Northwesterly Migration from Central China, 200BC-1400AD *(ROP-4)*
Output:	Journal/ book 1. Pei, Q., Division of Hunan and Hubei Provinces in the Qing Dynasty: Pragmatism in the unity of heaven and governance. The Professional Geographer, 72(2) : 283-296 *(2020)* 2. Pei, Q., G. Li, B. Winterhalder, M. Lowman, Regional patterns of pastoralist migrations under the push of reduced precipitation in imperial China. Global Ecology and Biogeography, 29(3) : 433-443 *(2020)* 3. Pei, Q,, D. D. Zhang, J. Fei & P. Y. Hui, Demographic crises of different climate phases in preindustrial Northern Hemisphere. Human Ecology, 48: 519-527 *(2020)* 4. D. D. Zhang, Pei, Q., H. F. Lee, Jim, C. Y., Li, G., Zhang, M., Wu, Z., Wang, L, Yue, R. P. H. & Zhang, S., Climate change fostered cultural dynamics of human resilience in Europe in the past 2500 years. Science of the Total Environment, 744: 140842 *(2020)* 5. O. Damette, S. Goutte & Pei, Q *. Climate and Nomadic Migration in a Nonlinear World: Evidence of the Historical China. Climate Change, 163: 2055-2071 *(2020)* 6. D. Degroot, K. Anchukaitis, M. Bauch, Jakob Burnham, F. Carnegy, J. Cui, K. de Luna, P. Guzowski, G. Hambrecht, H. Huhtamaa, A. Izdebski, K. Kleemann, E. Moesswilde, N. Neupane, T. Newfield, Q.

	Pei, E. Xoplaki & N. Zappia, Towards a rigorous understanding of societal responses to climate change. Nature, 591: 539-550 *(2021)* External Grant 1. UGC GRF Climate change and Agrarian -nomadic Migration across the Great Wall during Little Ice Age (Date of application: June 2021)