Research Postgraduate Conference 2020-2021

May 28, 2021 (Friday)

via Zoom



FACULTY OF EDUCATION THE UNIVERSITY OF HONG KONG

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Programme for the Research Postgraduate Conference (RPC) 2020-21 – May 2021

<u>Time</u>	Day 1 – May 28, 2021 (Friday) Event by Zoom			
10:00 – 11:30	Keynote Seminar Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions? Professor Curtis BONK Professor, Department of Instructional Systems Technology School of Education, Indiana University Bloomington, U.S.A.			
11:30 – 12:00	Break			
	Zoom Meeting Room 1	Zoom Meeting Room 2	Zoom Meeting Room 3	Zoom Meeting Room 4
12:00 – 12:30	RESEARCH REPORT Ms SUN Mingyao (PhD – TELL) What motivate adaptive instruction: The interplay with teacher enthusiasm, metacognition, and informal teacher learning across teaching career Chairperson: Mr BAI Zichen	RESEARCH REPORT Ms LIU Qiaohui (MPhil – Beijing Normal University) The Time Dilemma of Middle School Teachers — A Mixed Study Based on Middle School Teachers in T City Chairperson: Ms XIAO Yunyun	<u>CONFIRMATION SEMINAR</u> Mr KWONG Cheuk Yin Chad (EdD – TELL) Case study of MYP students and their adoption of affordances of digital portfolios for achievement of the 'scientific method' learning outcome at an IB school in Hong Kong <u>Q & A session</u>	RESEARCH REPORT Mr PRIVITERA Adam John (PhD – CDIS) Internet-based Assessment of an Inhibitory Control Advantage in Bilingual Chinese High School Students Chairperson: Dr C ZHANG
12:45 – 13:15	RESEARCH REPORT Ms ZHOU Keyi (PhD – TELL) Technology-enhanced Vocabulary Learning Activities: A Research Synthesis Chairperson: Ms LIU Jiajia	RESEARCH REPORT Ms SHI Anding (MPhil – Beijing Normal University) Research Time Allocation of Young Faculty in Mainland China University: Status Quo and Its Mechanism Chairperson: Mrs LIANG Jiafang	<u>Supervisory Panel</u> : Dr D CHURCHILL (Primary Supervisor) Dr A W C TSE (Co-supervisor) TBC (Convenor) Chairperson: TBC	RESEARCH REPORT Ms YU Yawen (PhD – CDIS) Promoting College Students' Systems Thinking in Asynchronous Discussion Forums with Learning Analytics Chairperson: Ms LEE Hyun Kyung

Programme for the Research Postgraduate Conference (RPC) 2020-21 – May 2021

<u>Time</u>	Day 1 – May 28, 2021 (Friday) Event by Zoom				
13:15 – 14:15	Lunch Break				
	Zoom Meeting Room 1	Zoom Meeting Room 2	Zoom Meeting Room 3	Zoom Meeting Room 4	
	RESEARCH REPORT	RESEARCH REPORT	PANEL DISCUSSION	RESEARCH REPORT	
14:15 – 14:45	Ms HU Xiao (PhD – TELL) The interplays between L2 selves and instructed L2 learning	Mr REN Zhipeng (PhD – TELL) Mechanism and Influencing Factors of Students' Mathematical Modeling Competence in Middle School	<u>Panelist</u> : Mr ALI Victor (PhD – SCAPE) Ms VERMA Isha (PhD – TELL) Ms WONG York Hay Hannah (PhD – CETL) Mr YU Jinjian (MPhil – CDIS)	Ms SAXENA Anika (EdD – CDIS) A Preliminary, Systematic Review of Teaching and Learning Computational Thinking in Early Childhood Education	
	Chairperson: Ms LIU Kun	Chairperson: Mrs LIANG Jiafang	Research during a pandemic: Contemplating opportunities and options	Chairperson: Ms LEE Hyun Kyung	
	RESEARCH REPORT	RESEARCH REPORT	for data collection	RESEARCH REPORT	
	Mr LEUNG Ka Lok (EdD – TELL)	Ms ALKOUZ Fajer M. Ms ALZAHMI Ebtesam (PhD – United Arab Emirates University) (May 28, 11:00 GST)		Ms CHEN Lu (PhD – CDIS)	
15:00 – 15:30	Experimenting with a Blended Design-based Learning Pedagogy to Enhance Students' Design Competencies and Motivations among First-year Engineering Students	Investigating the Relationship between Teacher Burnout and Collegiality at the Workplace		Digital technology use and digital competence in primary school children: A multigroup latent profile analysis	
	Chairperson: Dr A W C TSE	Chairperson: Ms LIU Jiajia	Chairperson: Dr M M LO	Chairperson: Dr P COBB	
15:30 – 16:00 Break					

Programme for the Research Postgraduate Conference (RPC) 2020-21 – May 2021

<u>Time</u>	Day 1 – May 28, 2021 (Friday) Event by Zoom			
	Zoom Meeting Room 1 Zoom Meeting Room 2		Zoom Meeting Room 3	
	PRESENTATION BY THE BEST EDD THESIS AWARDEE 2019-20	RESEARCH REPORT	RESEARCH REPORT	
	Dr CHEUNG Chor Wang (EdD – TELL)	Ms ALKATHEERI Safeya Othman (PhD – United Arab Emirates University) (May 28, 12:00 GST)	Ms CHEN Bihui (EdD – SCAPE)	
16:00 – 16:30	A Narrative Inquiry into the Shifting Identities of Trade Teachers in Using English Medium Instruction in a Content and Language Integrated Learning (CLIL) Vocational Programme	Collaborative Distribution of Leadership Extent in an Elementary School and Its Effects on Teachers-Peers' Relations, Recognition, Empowerment and Resources Adequacy	Addressing Contradictions of Using Inquiry-Based Teaching in EFL Classes through Action Research: A Case Study of an IB Middle Years Programme in China	
	Chairperson: Dr H HORTA	Chairperson: Ms VERMA Isha	Chairperson: Ms SAXENA Anika	
	Event by Zoom			
	Plenary Seminar			
16·45 – 18·00	Finding, Surviving and Enjoying an Academic Job in Mainland China			
10.00	Dr DAI Yuanyuan Lecturer, School of Education Science Chongqing Normal University, China			

Keynote Seminar

Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions?

Professor Curtis BONK Professor Department of Instructional Systems Technology School of Education Indiana University Bloomington, U.S.A. Email: <u>cjbonk@indiana.edu</u>



Keynote Seminar 10:00 – 11:30

Change is inevitable. Technology change is pervasive. Yesterday's technologies wiped entire industries and occupations. Today's technologies are accelerating these changes, and are, in particular, transforming the field of education. Learning is definitely changing. There is now a pervasive need for innovations in how we teach and how we learn. In response, Professor Bonk will detail a set of 20 "last" principles of instruction including the Principle of Flexibility, the Principle of Meaningful Learning, the Principle of Choice and Options, the Principle of Spontaneity, and the Principle of High Expectations. He will also highlight new roles for instructors in light of these principles. Next, he will discuss these in light of three megatrends related to learning technology today: (1) the technologies for engagement; (2) the technologies for pervasive access; and (3) the technologies for the personalization and customization of learning. He will also take a moment to gaze into the future of learning as each of these megatrends evolve. In the third decade of the 21st century, learning has become increasingly flipped, social, collaborative, global, game-like, mobile, modifiable, open, online, visually-based, hands-on, ubiquitous, personal, and much much more. Bonk will end his talk with predictions of the future such as robot partners on collaborative teams, world knowledge refreshment stations, Professor Einstein PDAs, the rise of super e-mentors, classrooms as cafes, learning environment engineers, and much more. Is this an evolution or a revolution? Professor Bonk will let the audience decide.

Plenary Seminar

Finding, Surviving and Enjoying an Academic Job in Mainland China

Dr DAI Yuanyuan Lecturer School of Education Science Chongqing Normal University, China Email: yuanyuandaicqnu@qq.com



Plenary Seminar 16:45 – 18:00

This seminar centers around the issues of finding, surviving and enjoying an academic job in Mainland China. Drawing on my own experience, I will first outline the job-hunting process starting from job market mapping, job searching, credential preparation, job application and interview. Following that, hands-on advice on how to cope with transition challenges will be given in the hope of helping new academic professionals adjust to unfamiliar academic settings, new routines and probably a strange city. Lastly, I will touch on the broader issue of academic identity, the construction of which relates directly to whether academics could enjoy a career in academia.

Presentation by the Best EdD Thesis Awardee 2019-20

A Narrative Inquiry into the Shifting Identities of Trade Teachers in Using English Medium Instruction in a Content and Language Integrated Learning (CLIL) Vocational Programme

Dr CHEUNG Chor Wang
EdD Graduate
Faculty of Education
Email: <u>alicec@vtc.edu.hk</u>

Zoom Meeting Room 1 16:00 – 16:30

Keywords: Narrative inquiry, CLIL, Vocational education, Teachers' identities

English is the dominant language used as the medium of instruction (MOI) in Content and Language Integrated Learning (CLIL). CLIL is spreading across Hong Kong mainstream schools and tertiary education, including vocational colleges. Trade teachers who normally adopt Chinese as MOI will take on a new linguistic identity and join a new CLIL community. The shift in identity during this transition process can be unsettling and challenging to the trade teachers.

A deep and sensitive examination into trade teachers' experiences and their voices is deemed necessary. My study therefore aims to explore the experiences of four trade teachers to understand how their lived experiences interplay with contextual complexities and tensions, which trigger their identity shifts in the process of becoming CLIL teachers.

A narrative inquiry approach is used as the research methodology to afford access to the four trade teachers' voices. Their stories were co-constructed through face-to-face conversations, reflective journals and observational field notes over a period of nine months. Their experiences were studied using Wenger's (1998) theory of Communities of Practice (COP) as a framework to untangle the interconnectedness between identity and learning.

Analysis illustrates that participants' identities were shaped by unfavorable past learning experiences, which largely influenced their attitudes towards CLIL and teaching in English as MOI. The stories shed light on the theoretical significance of COP in understanding identity shifts, and practical significance which questions the applicability of CLIL in a trade-specific context. The study has implications for institutional MOI policy and its impact on teachers' identities.

Panel Discussion

Research during a pandemic: Contemplating opportunities and options for data collection

Mr ALI Victor (PhD Student) Ms VERMA Isha (PhD Student) Ms WONG York Hay Hannah (PhD Student) Mr YU Jinjian (MPhil Student) Faculty of Education Emails: vali9@hku.hk (Mr Ali V.) <u>ishav@connect.hku.hk</u> (Ms Verma I.) <u>wonghyh@connect.hku.hk</u> (Ms Wong Y. H. H.) u3006250@connect.hku.hk (Mr Yu J.)

Keywords: educational research, pandemic, data collection

In the midst of the COVID-19 pandemic researchers may face many questions and challenges related to their research. These include issues related to the feasibility and credibility of research, as well as ethics. Research may be paused or delayed, and new means of data collection, such as online methods, may be required. In addition, the disruption caused by the pandemic provides an opportunity to question and explore fundamental concepts related to research and data collection. It is therefore important for researchers to explore what they can do under these circumstances.

Different cases of research during the pandemic will be discussed in this panel, focusing on data collection online. First, the design and adaptation of tools for online data collection will be explored. Next, considerations for participant selection and invitation will be discussed, especially as target research participants may be under social distancing. The panel will then explore the process of data collection, drawing examples from interviews and questionnaires conducted over the internet to discuss possible options and problems faced. Finally, the panel will address potential biases and errors that may affect research credibility and timeliness, as well as broader issues related to ethics and conceptions of data collection. Each of the panelists will reflect on their experiences of data collection across diverse contexts. The aim is to engage in critical discussions around reflexivity as a researcher, considering opportunities for relationship building with participants, and thinking of ways to collaborate with or support participants amidst the pandemic.

Research Report

Collaborative Distribution of Leadership Extent in an Elementary School and Its Effects on Teachers-Peers' Relations, Recognition, Empowerment and Resources Adequacy

Ms ALKATHEERI Safeya Othman PhD Student United Arab Emirates University Email: <u>200502845@uaeu.ac.ae</u> Zoom Meeting Room 2 16:00 – 16:30

Keywords: Collaborative distribution of leadership, teachers-peers' relations, teachers' recognition, teachers' empowerment, resources adequacy

Schools in the UAE are similar to schools in other countries in terms of their diversity and complexity. Managing leadership tasks, running a school effectively, maintaining students' learning and leading staff successfully become challenging tasks to be maintained by an individual leader. Constant changes and additional responsibilities make school leaders adopt a leadership approach where leadership practices are collaboratively distributed across school members. This study intended to figure out to what extent collaborative distribution of leadership is practiced in an elementary public school in Al-Ain, UAE during the first term of 2020-2021. Besides that, it examined the effects of collaborative distribution of leadership on teachers-peers' relations, recognition, empowerment and resources adequacy. A qualitative research design was employed to answer five research questions, and the semi-structured interviews were conducted with English teachers (N=5) to gain their insights of collaborative distribution leadership. The thematic analysis approach was used to obtain the gualitative data. The findings of the study revealed that collaborative distribution of leadership is highly practiced in the study school. The findings also showed that collaborative distribution of leadership strengthens bonds of teachers-peers' relations, recognizes teachers' efforts and contributions, affects teachers' empowerment positively and provides teachers with adequate resources that can be shared. The study suggested a number of implications and recommendations for teachers, school principals, lead principals, MOE upper managers, policymakers and further studies.

Research Report

Investigating the Relationship between Teacher Burnout and Collegiality at the Workplace

Ms ALKOUZ Fajer M. (PhD Student) Ms ALZAHMI Ebtesam (PhD Student) United Arab Emirates University Emails: <u>202090089@uaeu.ac.ae</u> (Ms ALKOUZ F. M.) 202090041@uaeu.ac.ae (Ms ALZAHMI E.)

Zoom Meeting Room 2 15:00 – 15:30

Keywords: Burnout, stressor, collegiality, collaboration, Gulf region

Teacher burnout is a psychological state, argued to be triggered by a number of stressors (Maslach et al., 1996; Smetackova et al., 2019). In this study, three dimensions of teacher burnout are addressed as the triggers of such occupational-related stress. These include teachers' workload, teachers' personal relationships, and school leadership. Accordingly, the notion of teacher burnout is argued to play a central role in examining the level of collegiality at the workplace, particularly in schools. Collegiality in this study is measured through three dimensions: trust, teamwork, and sharing resources. The purpose of this regional study was to investigate the influence of teacher burnout on collegial relationships among faculty members in two higher educational organizations: one in Kuwait and one in the United Arab Emirates. By choosing the GCC region, this study hoped to address an understudied relationship between teacher burnout and the professional side of communal bonds at the workplace. A quantitative methodology was employed through the use of an online questionnaire. The findings suggested that teacher burnout is a predictor of the level of collegiality at the workplace. The researchers applied a Spearman rho correlation test in order to determine if a significant correlation existed between the two variables. In addition, a generalized linear model analysis indicated a multiple linear regression between the two variables and the participants' sex, age, and work experience. Conclusions were drawn from the study findings, and implications for policy, practice, and future research were discussed.

Research Report

Addressing Contradictions of Using Inquiry-Based Teaching in EFL Classes through Action Research: A Case Study of an IB Middle Years Programme in China

Ms CHEN Bihui EdD Student Faculty of Education Email: <u>bhchen@connect.hku.hk</u>

Zoom Meeting Room 3 16:00 - 16:30

Keywords: inquiry-based teaching, contradictions, Chinese EFL teachers, continuing professional development, action research

The International Baccalaureate (IB), which is one of the most dominant curricula among Chinese international schools, adopts inquiry-based teaching and learning as its central pedagogy. However, using inquiry-based teaching creates multiple tensions in EFL classes and one-size-fits-all training opportunities fail to help EFL teachers to tackle these tensions occurring in their daily classroom teaching. Guided by Engeström's activity theory, this study intends to explore the process and the outcome of using action research to address contradictions related to inquiry-based teaching in EFL classes in the context of a private international school offering IB Middle Years Programme (MYP) in China. Adopting a qualitative research design, this study will use both action research and a case study approach. Specifically, action research will be conducted to identify and tackle contradictions of adopting inquiry-based English language teaching. Meanwhile, a case study approach will be employed to explore the process and outcomes of participation in action research. A preliminary study was conducted before the main study. Based on the analysis of the semi-structured interview with the participant, findings reveal the influence of the teacher's past teaching experience on her current perception and use of inquiry approaches in EFL classes. Meanwhile, contradictions occur due to the teacher's transition from an experienced Primary Years Programme (PYP) teacher to a novice MYP teacher. Also, the preliminary study indicates that using online teaching in the context of the Covid-19 pandemic creates contradictions in the EFL teacher's inquiry-based classes.

Research Report

Digital technology use and digital competence in primary school children: A multigroup latent profile analysis

Ms CHEN Lu PhD Student Faculty of Education Email: cllaure@connect.hku.hk

Zoom Meeting Room 4 15:00 – 15:30

Keywords: digital technology use, digital competence, latent profile analysis

The need to acquire digital competence is no longer a matter of debate. Although a large body of research has examined the relation between digital use and digital competence, there is a paucity of research on the relations among gender, digital use at home, and digital competence. Against this background, this study examined gender differences in child profiles of digital use at home leveraging data from the Learning and Assessment for Digital Citizenship study (REF). Participants were 633 children (304 girls), attending Primary 3 in 18 schools in Hong Kong. They completed an on-line survey regarding daily digital use and a performance assessment on digital competence. In line with a person-centered approach, multigroup latent profile analysis was applied. The findings revealed three user profiles (socially active, study-active, and non-active users) with boys and girls represented in each profile group. Children with "socially active" profiles had significantly lower digital competence than "study-active" users and "non-active" users. Furthermore, parent education did not predict child's profile membership of digital use, but family learning resources (i.e., the number of books) did. The implications of the findings are discussed.

Research Report

The interplays between L2 selves and instructed L2 learning

Ms HU Xiao PhD Student Faculty of Education Email: <u>u3513905@connect.hku.hk</u>

Zoom Meeting Room 1 14:15 – 14:45

Keywords: L2 learning motivation, L2 selves, instructed L2 learning

Deviating from a traditional socio-psychological perspective on the second language (L2) learning motivation, this qualitative study draws on the integrated framework of the L2 motivational self-system (Dörnyei, 2009) and a person-in-context relational view (Ushioda, 2009) to explore how an instructed L2 learning context interacts with learners' L2 selves. This study was conducted at a teacher-centred classroom (TC) and a student-centred classroom (SC), involving 4 focal students and 2 English teachers during one semester. To understand the interplays between instructed L2 learning and L2 selves, the researcher began with an investigation of the instructional practices at the two classrooms and students' engagement along with the instructional practices. These engagement moments were interpreted by students as enjoyable and gave students space to express their views in the student-centred classroom that favored communicative-based or task-based learning; whereas, the engagement moments were seen as knowledge-driven and not fun in the teacher-centred classroom that valued the knowledge transmission. Following this discussion, the researcher examined students' perception of their L2 selves and explored how the instructed L2 learning shaped students' L2 selves. Stimulated recall interviews and narrative interviews with participants reveal that (1) students in the TC demonstrate L2 selves anchored from knowledge acquisition and (2) students in the SC demonstrate L2 selves anchored from their agency, knowledge, and reflective intentionality. This study argues that a person-in-context view to examining learner L2 selves affords a refined understanding of L2 learning motivation through an emic perspective.

Confirmation Seminar

Case study of MYP students and their adoption of affordances of digital portfolios for achievement of the 'scientific method' learning outcome at an IB school in Hong Kong

Mr KWONG Cheuk Yin Chad EdD Student Faculty of Education Email: <u>u3541628@connect.hku.hk</u>

Zoom Meeting Room 3 12:00 – 13:15

Keywords: affordances, digital portfolio, scientific method, international baccalaureate middle years programme, technologies integration in education

This qualitative study explores ten cases of Grade 8 students and their experiences with digital portfolio technologies in documenting their 'scientific method' learning (an essential part of science education that teaches students to think like a scientist to acquire knowledge through empirical experimentation) in an International Baccalaureate (IB) Middle Years Programme (MYP) Sciences classroom for one academic year. This study aims to answer the overarching question: How do the educational affordances of digital portfolio technologies support the 'scientific method' learning outcome? A sub-question related to the factors that facilitate and impede the effective adoption of these affordances in an IB MYP Sciences classroom will also be answered. Students who are onto their second year of science portfolio implementation are selected. Their portfolio artefacts from the previous year help to highlight the affordances that may have already emerged, and a literature review assists in anticipating new affordances. A 'scientific method' section of the portfolios is used to organize students' science learning thought process and to frame their laboratory-related portfolio activities. Data includes students' portfolio artefacts (images, videos, texts, etc.) and stimulated recall semi-structured individual interviews at the beginning, mid-way point, and end of the study. Data analysis takes an inductive approach to content analysis of texts and visual data. The intended aim of this study is to further the theoretical understanding of educational affordances of technologies in science education and to provide a recommendation for an effective digital portfolio implementation strategy to support the 'scientific method' learning outcome.

Research Report

Experimenting with a Blended Design-based Learning Pedagogy to Enhance Students' Design Competencies and Motivations among First-year Engineering Students

Mr LEUNG Ka Lok EdD Student Faculty of Education Email: <u>egjac@connect.hku.hk</u>

Zoom Meeting Room 1 15:00 - 15:30

Keywords: blended learning, design-based learning, first-year engineering, multidisciplinary, motivations

Disruptive technologies and knowledge accessibility rapidly proliferate, preparing the next generation of engineering graduates requires more than masteries of theories but also the ability to devise innovative designs. However, conventional approaches in engineering education are being criticized for not addressing these demands. Educational technologies and online learning platforms shed lights on new blended learning strategies in design-focused syllabi. A strategic integration of self-paced online modules and hands-on active learning activities enables students to develop design competencies as early as their first course in the university. This study aims to design a pedagogy, named blended design-based learning (bDBL), to develop first-year engineering students' design competencies and increase their motivation in engineering. The instructional design of bDBL was developed using design-based research methodology. Five research questions were addressed to examine the effects and students' perceptions of bDBL.

Data collection spanned over three research cycles and one special iteration under Covid-19, all using bDBL. Both quantitative and qualitative methods were applied. The third research cycle involved a quasi-experiment. Results showed that bDBL has consistent positive effects on students' design competencies and motivation in engineering. Particularly for design competencies, students in bDBL outperform that of those in the control group. Four themes emerged on students' perceptions of bDBL: outcomes, content, engagement, and organization. Design principles and recommended practices are suggested for future adoption of similar approach.

This study fills the gap within first-year engineering design education by proposing bDBL as an effective approach to integrate online learning strategies and design-based learning principles.

Research Report

The Time Dilemma of Middle School Teachers — A Mixed Study Based on Middle School Teachers in T City

Ms LIU Qiaohui MPhil Student Beijing Normal University Email: <u>475630166@qq.com</u> Zoom Meeting Room 2 12:00 - 12:30

Keywords: Working time, Middle school teachers, Teachers' Burden

According to TALIS2018 survey, on average 48.7% of teachers worldwide are experiencing high levels of work stress. Time pressure is a major source of stress for teachers. Under the background of "Relieving teachers' burden" in China, teachers' time becomes a special perspective to analyze teachers' burden. Using a mixed research method, 626 teachers from 15 middle schools in 5 districts (counties) of T city were investigated by quantitative questionnaire and qualitative interview. The results demonstrate that the teachers were caught in the dilemma of time. They had an unpleasant perception of their working hours, and felt a heavy burden of workload. They were highly agreeable with the time allocated for teaching and professional development, but showed disapproval for the time allocated for school administrative affairs, complaining the long hours spent on school affairs and limited time available for teaching preparation and professional development is. The factors influencing the working time include social environment, school management and teachers themselves. Just as Andy Hargreaves claims that teachers' time has a phenomenological dimension. The mixed study suggests that the focus of teachers' time dilemma and the root of their work burden can be ascribed to the overlong explicit and implicit working time, the boundary of teachers' working time and life time, the conflict between teaching time and non-teaching time, and the disharmony between prescribed time and self-disposal time. To improve and optimize the structure of teachers' working time to reduce teachers' burden, a series of measures can be taken, including reducing teachers' chores, helping them return to teaching, increasing their working time allocated to teaching, and extending the time at teachers' disposal.

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Research Report

Internet-based Assessment of an Inhibitory Control Advantage in Bilingual Chinese High School Students

Mr PRIVITERA Adam John PhD Student Faculty of Education Email: <u>aprivite@hku.hk</u>

Zoom Meeting Room 4 12:00 – 12:30

Keywords: bilingual advantage, executive function, Simon task, inhibitory control, bilingualism

The question of whether bilingual language experience confers a cognitive advantage remains open. Controversy arises from assertions that putative advantages can instead be explained by differences in culture, socioeconomic class, or immigration status, as well as the classification of bilingual experience as a fixed variable rather than a random effect. The present study addresses some of these potential issues by assessing the impact of L2 (English) experience on executive function using a sample (n = 37) of culturally and socioeconomically similar, native Mandarin-speaking high school students residing in Shenzhen. Our sample was recruited from an elite, private school using English as the primary medium of instruction. Participants reported on demographic details, language history, perceived stress, and performed a Simon task online using Gorilla (www.gorilla.sc) via their own personal computers. Data were analysed using Linear Mixed Effects (LME) models to test for random effects of individual differences on the Simon effect. Results showed higher levels of L2 proficiency were associated with reduced Simon effects, suggesting a cognitive advantage. Using LME, we suggest that statistical limitations can contribute to mixed evidence of a bilingual advantage in participants who are immersed in a balanced bilingual linguistic environment. Our results also demonstrate a proof of concept about the feasibility of testing this putative advantage virtually with large remote samples.

Research Report

Mechanism and Influencing Factors of Students' Mathematical Modeling Competence in Middle School

Mr REN Zhipeng PhD Student Faculty of Education Email: <u>zpren@connect.hku.hk</u>

Zoom Meeting Room 2 14:15 – 14:45

Keywords: Mathematics Modeling, Problem Solving, Knowledge Application, Middle School Students

Mathematics modeling plays an important role in students' knowledge application and problem-solving. This study aims to figure out the mechanism of students' mathematical modeling and find out the factors enhancing the modeling competence. As a stage work report of PhD dissertation, the related literature review about theoretical and empirical discussions of mathematical modeling was firstly analyzed. The difference between mathematical application, problem-solving and mathematical literacy in STEM education was discussed. The practice trend of modeling thinking in middle schools was reviewed. 100 grade-8 students in 4 classes were selected as student participants, as well as their 4 mathematics teachers as teacher participants. The mathematical application course will be taught to participants for 4 weeks, with the pre-test and post-test of students' mathematical application competence and some of the participants will also be selected for an interview. The expected results show a statistically significant difference between the scores of pre-test and post-test. Learning resources, knowledge applying and mathematics illustration could be the factors for developing mathematical modeling competence. The mechanism of students' mathematics modeling competence could also be closely related to problem-solving ability. This study is expected to illustrate a representation flowchart of mathematical application. The limitations of this study may be the small number of samples, and the applicability for other countries or regions.

Research Report

A Preliminary, Systematic Review of Teaching and Learning Computational Thinking in Early Childhood Education

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Zoom Meeting Room 4 14:15 – 14:45

Keywords: computational thinking, systematic review, early childhood education, teaching/learning strategies

Computational thinking (CT) and its implementation in the K-12 curriculum have recently become important topics in education and research worldwide. Due to the burgeoning interest in CT in education, there has been a marked increase in empirical research in this area. Many researchers suggest that CT should be introduced and fostered early in education, as it is a precursor of academic success. However, there is little evidence from research that sums up empirical research findings to give further teaching and learning directions specific to early childhood education (ECE). Following the pre-analysis, 32 articles were selected and included in the study. Content analysis was applied to determine and evaluate the shared codes and themes related to the findings. The results demonstrate that ECE practitioners should consider incorporating CT concepts with core subject areas following an integrated teaching and learning approach in ECE, using various developmentally appropriate pedagogical practices.

This systematic literature review will allow us to address some of CT's critical issues in ECE and lead us to answer the following research questions.

RQ1: How have people studied CT in ECE?

RQ2: What is the computational concept, perspectives and tools to implement CT in ECE?

A systematic review methodology was employed in this study. The review was conducted following Kitchenham' et al. (2009) guidelines for conducting a systematic literature review. It included five phases: research/question/definition, search strategy design, study collection, data extraction, and data synthesis. Implications for teaching and learning indicated by selected empirical studies has been discussed.

Reference:

Kitchenham, B., Brereton, O. P., Budgen, D., Turner, M., Bailey, J., & Linkman, S. (2009). Systematic literature reviews in software engineering – A systematic literature review. *Information and Software Technology*, *51*(1), 7-15.

Research Report

Research Time Allocation of Young Faculty in Mainland China University: Status Quo and Its Mechanism

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Zoom Meeting Room 2 12:45 – 13:15

Keywords: research university, research time, young faculty, mainland China

Adequate research time is a significant guarantee for the academic achievements of university teachers, and it is even particularly crucial for the academic development of young faculty who have just started their research careers. This research aims to explore the current situation of research time allocation for young faculty in mainland Chinese universities and analyze its specific mechanism. Through purposeful sampling, nine typical young faculty in a research university were interviewed, and a formation mechanism of their current research time allocation is established through grounded theory. The research results show that the research time of young university faculty is more scarce and scattered than their other colleague, and the boundary with life time is always blurred. In addition, this study also found that young faculty's research time allocation is related to the balance of needs and support from their working environment, family, and individual. The more demands from the working environment (such as frequent academic evaluations, excessive administrative tasks) and family (such as the care of children and the elderly), the less time for scientific research. On the contrary, the more academic support provided by the working environment and family, and the higher the level of time coordination skills they possess, the more time they have to conduct research. All in all, this research contributes to understanding the working conditions of young university faculty and improving their academic environment in the future.

Research Report

What motivate adaptive instruction: The interplay with teacher enthusiasm, metacognition, and informal teacher learning across teaching career

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Zoom Meeting Room 1 12:00 – 12:30

Keywords: adaptive instruction, enthusiasm, regulation of cognition, informal teacher learning, metacognition

Adaptive instruction is strongly required in today's increasingly diverse classrooms teaching and learning. However, there is a dearth of empirical studies exploring the mechanism of adaptive instruction. This study contributes to the literature by investigating the critical roles of teacher enthusiasm, metacognition, and informal teacher learning (ITL) in teachers' adaptive instruction across their careers. Based on 5,056 survey responses from primary teachers in China, the results of multigroup structural equation modeling reveal that teacher enthusiasm and metacognition served as important impetuses to adaptive instruction. Indeed, teacher enthusiasm had a stronger positive association with adaptive instruction than with metacognition for the three stages of teachers' careers (novice teachers means 0-3 years of teaching experience, mid-career teachers means 4-15 years of teaching experience and late-career teachers means 16 or more years of teaching experience). The association between teacher enthusiasm and adaptive instruction was strongest for beginning teachers, and the association between metacognition and adaptive instruction was strongest for late-career teachers. ITL activities mediated the relationship between metacognition and enthusiasm and adaptive instruction to varying degrees across the three teacher career stages. Learning through individual reflection and learning through student interaction did not mediate this relationship for beginning teachers and mid-career teachers. The results of this study extend the current understanding of the mechanism of teachers' adaptive instruction and discuss more practical implications for educators.

Research Report

Promoting College Students' Systems Thinking in Asynchronous Discussion Forums with Learning Analytics

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Zoom Meeting Room 4 12:45 – 13:15

Keywords: systems thinking, asynchronous discussion, learning analytics, classroom discourse, online learning during pandemic

Background: Systems thinking is considered as an important reasoning skill for medical students. However, fostering systems thinking becomes especially hard during the pandemic in which students mostly engage with online/blended learning. How to design a learning environment that supports systems thinking in online/blended learning environments remains an issue.

Research aims: In this study, we explore the possibilities of supporting students' systems thinking in asynchronous discussions by engaging them with reflective conversations in face-to-face sessions which are assisted by a learning analytical tool: Classroom Discourse Analyzer (CDA).

Methods: Forty-six students from two different classes in the nursing department of a medical university participated in this study. Students engaged with similar learning tasks except the experimental group participated in reflective conversations in face-to-face sessions. Students' online assessments, artifacts, interview and classroom video are collected. Content analysis is conducted to examine students' artifacts and statistical analysis is applied to examine if students' learning outcomes improved in the experimental group. Meanwhile, we extract themes to reveal how CDA could assist students' online discussions.

Results: Students showed better understanding of key concepts and enhanced systems thinking skills. Also, they perceived this environment as effective in promoting their systems thinking. CDA assisted students to learn how to conduct progressive inquiry and ask explanation-seeking questions that have been shown beneficial to their systems thinking.

Discussions: This study extends prior studies in promoting students' systems thinking by conceptualizing and applying a learning analytical tool in a blended learning environment, which sheds light on the teaching and learning during the pandemic.

Research Report

Technology-enhanced Vocabulary Learning Activities: A Research Synthesis

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Zoom Meeting Room 1 12:45 – 13:15

Keywords: vocabulary learning, technology-enhanced language learning, learning activities

Technology-enhanced vocabulary learning has been a popular way of learning new words. Recently, a number of meta-analyses are conducted on the effectiveness of various approaches of technology-enhanced vocabulary learning. While these results generally showed positive effects on vocabulary learning, it remains largely unclear what technology-enhanced instructional activities work better. This study retrieved 1,221 journal papers published between 2010 and 2020 based on keyword search on PsycInfo. 151 papers met the criteria and were included for the analysis. Each article was reviewed and the following information was extracted: learning activity design, types of technology, research methods and vocabulary learning outcomes. After coding, studies were further synthesized by the learning activity design. Three major characteristics of technology-enhanced vocabulary instructional activities were identified, including cognitive processing, metacognitive regulation and social engagement. Instructional activities that promote cognitive processing of words are commonly included in technology-enhanced vocabulary learning, yet the other two types of instructional activities are used less frequently in technology-enhanced vocabulary learning environments. Cognitive-processing activities are primarily these three types: flashcards, word lists, and meaning-related quizzes. Metacognitive regulation activities ask students to set up their goals and review their progress, and some provide personalization so that learners can customize the learning materials and paces. Social engagement activities enable learners to connect and/or compete with learners with similar goals. All the three types of instructional activities are commonly accompanied with affective promotion messages, or let learners feel challenged by other learners. Practical recommendations for educators and instructional designers will be discussed.