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Title	The expanding boundaries of learning
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Editorial for LRP 7(1) 2021 March

### The Expanding Boundaries of Learning

The world we know is pivoting rapidly with the onset of the COVID-19 pandemic. We are witnessing sweeping changes in daily lives, learning and schooling, bringing about the new normal. The boundaries of learning are changing. It is no longer the conventional learning in schools and classrooms, but in the home, and through various forms of electronic interactions. Beyond the conventional and traditional, in this new normal, what forms of learning occur and should take place? As researchers, educators and policymakers, what should we continuously be striving for in the design and enactment of learning and schooling for our learners? Echoing our previous editorial, now is the time “to think more deeply about what Learning ought to be” (Tan, 2020, p.113).

There are no easy answers to these questions, but in this issue, we offer conceptual explorations and innovations as reflections and considerations for the new normal. The five articles in this issue reflect the expanding boundaries of learning, the widening breadth as well as the increasing depth of learning, both theoretically and empirically. In learning conceptualisations, processes and enactments, the articles demonstrate several diverse perspectives and innovations in learning. We are happy to have received more conceptual papers in our journal, which help to build the intellectual base of the field of learning. We also applaud the efforts of authors who have conducted empirical studies that add to evidential claims of theoretical conceptualisations.

This new issue of 2021 opens with what has dominated most of 2020 and will continue to affect us, the pivots made in learning and teaching due to the pandemic, underscoring the widening breadth in learning processes and enactments. The article by Moorhouse, Lee and Herd, **Providing remote school-based professional support to teachers during school closures caused by the COVID-19 pandemic**, brings to light how traditional on-site professional support to schoolteachers was transformed during school closures in Hong Kong. An exploratory case study was performed with two experienced teachers from the Hong Kong Education Bureau, whose role is to provide continuous support and professional development to schoolteachers. The findings reveal effective conditions for school-based professional support, namely, setting clear expectations, adopting a collaborative support approach, building strong relationships and providing long-lasting support. The paper showed how participants adapted from providing on-site to remote professional support, while managing organisational and technical problems like tensions in arranging home-based work environments. Lastly, the findings highlighted the forms of professional support that were provided such as virtual classroom management, emotional support and technological innovations in teaching.

Our second article continues to widen the breadth of learning by recognising the role of cultural beliefs and globalisation influences students' beliefs and mental well-being. Although this study was conducted before the pandemic, global influences have much potential to affect students' learning and well-being. In **Students' Perspective of Globalisation in Schools on their Traditional Asian Cultural Beliefs and Mental Well-being**, Diaco surveyed over 500 undergraduates in the Philippines about their perspectives on globalisation. The main factors investigated were classroom technology, ideologies and behaviours, manners of thinking and making decisions, and outfit styles. The survey found that there were epistemological inconsistencies between students' traditional cultural beliefs and the ideologies and behaviours that globalisation promotes, like contemporary trends and materialistic gains, reflecting the negative relations between perceived influence of globalisation on mental well-being and the strength

of students' traditional cultural beliefs and their levels of mental well-being. The increasing perceived influence of globalisation on mental well-being was shown to weaken the strength of traditional cultural beliefs.

Turning to learning theorisations, the third article offers a novel lens on trajectories and pathways of learning by introducing a space-time perspective. A systematic review performed by Chavez in **Space-time in the Study of Learning Trajectories** explored the various views of space-time coordinates to understand learning trajectories. From the sociocultural perspective, space-time coordinates emphasize activities relevant at the point in time at which something is learned and could be used to understand personal learning activities and life events associated with the understanding of learners' learning processes. Based on the analysis, three categories of trajectories are resulted: "nature of the journey", "extension" and the combinations of the two categories. The paper provides an analytical lens to help people understand the route they have taken to learn, helping them make sense of learning based on time, space and meaning.

Another theoretical article follows, **Cognitive Load and Working Memory: A System View of Measurement** by Shearer, Yu and Peng, which provides new insights to the conceptualisation of two important constructs in cognitive science, cognitive load and working memory. The paper proposed a theoretical framework of cognitive load and working memory through a system dynamic modelling approach. In cognitive load theory, intrinsic load depends on the nature of learning materials, extraneous load is altered by instructional design, and germane load occurs for transferring information from working memory to long-term memory. Based on the proposed framework, intrinsic and extraneous load, germane and extraneous load form a possible negative feedback loop, while intrinsic and germane feedback loop is shown as a possible positive loop. Therefore, intrinsic and germane load are not distinguishable, but could be treated together as active working memory, while extraneous load is treated as distracted working memory. The increase of active working memory (intrinsic and germane load) is conceptualised to decrease distracted working memory (extraneous load). The proposed model has been tested on a single participant studying online using eye-tracking. The data matched the proposed cognitive load/working memory model and shows the promise of the model.

Expanding on the 'cognitive load' line of inquiry, the last article in this issue focuses on teachers' discourse and how discourse moves can help students' cognitive load. Soysal provides a very rich empirical paper in **Exploring Elementary and Middle School Science Teachers' Metadiscourse Moves: A Vygotskian Analysis and Interpretation**. The study investigates teachers' metadiscourse moves (MDMs), talk about talk, and in science learning from a Vygotskian perspective. The paper examined which MDMs were more functional to maintain cognitive engagement, how teachers displayed MDMs to manage cognitive load during inquiry activities, and how teachers used MDMs to support students' science learning and manage the social tensions between social languages. 71 students with 3 science teachers participated in designed argument-based inquiry tasks based on the science curriculum. Classroom activities were recorded and analysed. The findings revealed that teachers applied 11 types of MDMs to maintain cognitive engagement such as retrospective monitoring, selecting and eliminating. Teachers also provided hints to reduce cognitive load during inquiry learning. To manage the tension between social languages and support science learning, teachers asked about mind change and used focusing strategies. The results inform teachers to incorporate identified MDMs such as retrospective monitoring, selecting and eliminating, in their teaching and learning.

As can be seen, the articles in this issue demonstrate the expanding boundaries of learning, in terms of breadth and depth of learning theorisations, processes and enactments. This continues to build on the premise of our journal, launched in 2015, on the expanding knowledge boundaries of learning (Hung, Tan, & Koh, 2015). The articles, with their novel perspectives and innovative enactments, underline the current dramatic and exciting times and more importantly, highlight to us the ever-expanding boundaries of learning. Challenging these boundaries is a huge core of what this journal represents, in order to strengthen and enrich learning conceptualisations and evidence for the field and its stakeholders. We encourage readers and future readers to continue to submit articles to us, especially of in-depth conceptualisations, holistic research approaches as well as innovative and rigorous methodologies that encompass the diverse and complex ways of learning.

We hope to provide academic space for new and relevant conceptualisations and practices that continue to expand the boundaries of learning. In this regard, we have recruited a new Associate Editor, who will help to bring fresh perspectives to the team. Dr. Ouhao Chen is a Lecturer in the Mathematics Education Centre at Loughborough University, United Kingdom, with expertise in cognitive load theory, technology-enhanced learning and multiple representations. Ouhao started his degree in Mathematics and Applied Mathematics in China, followed by a focus on designing instruction for teaching and learning of Mathematics strengthened by his post-doctoral training in Southern Cross University, Australia. He received his PhD in Educational Psychology from University of New South Wales, Australia. Before joining Loughborough University, he was a Lecturer and Research Scientist at the National Institute of Education, Nanyang Technological University, Singapore.

We heartily welcome Ouhao and also invite you dear readers to read on, to explore the articles in this issue and hopefully gain useful insights on the expanding boundaries of Learning.

Stay safe!

Elizabeth Koh and Ouhao Chen

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