Session 3. Insights from the Learning Sciences

Pedagogical innovations for improving early and foundational learning. Pedagogical innovations must be based on scientific approaches rooted on different types of research, from small experimental controlled studies to large-scale, well assessed, interventions in real classroom contexts. This session will explore the 'science of teaching' to address some of the needs for the scientific validation of teaching practices and provide suggestions that may be offered for pedagogical innovation and improvement of teaching practices globally.

Moderator

Roberto LENT, UNESCO Chair on Science for Education, Professor of Neuroscience, Institute of Biomedical Sciences, Federal University of Rio de Janeiro and D'Or Institute of Research and Education (BRAZIL)

Panelists

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New Modes of Teaching and Learning during Digital Transformations. As a long-term interdisciplinary research area, Technology Enhanced Learning (TEL) focuses on deploying technologies as mediating devices to support student learning including assessment, tutoring, and instruction, and encompasses web-based and computer-based learning, virtual classrooms and learning environments, and digital collaboration. Nowadays, digital transformation of education has become a global consensus during the United Nations Transforming Education Summit 2022 where the utilization of digital technologies is presented as a solution to the global education emergency regarding inclusivity, equity, quality and sustainability. High-quality content, capacity to use digital technology, and digital connectivity are emphasized as instrumental in unlocking the potential of digital learning. However, the role of technology in education is challenging and debated in the 2023 Global Education Monitoring Report such as technology providing education lifeline for millions but excluding many more. Therefore, the new modes of teaching and learning during digital transformations should focus on technology-enhanced and learner-centred learning in *trustworthy* digitalized environments under the guidance of *Digital Pedagogy,* which was conducted by a large-scale survey of technology usage in Chinese K-12 schools. This is achieved by learning environments with applicable digital technology, *evidence-based practice* with quality digital resources, *digital competence* for accessing deep learning, and the *synergy* between human teachers and trustworthy artificial intelligence. With 15 years of experience in designing learning

activities for university freshmen using the LASSI (Learning and Study Strategies Inventory) instrument, the evidence indicates that the Sustainable Digital Transformation (SDT) aims to transform learning to promote self-regulated learning, active learner agency, and cognitive load management, with the active use of digital technology in inquiry, communication, construction and expression. Based on a pilot study of visible learning in 12 rural schools conducted during the COVID-19 pandemic, we can see the importance of reshaping teaching in or beyond the classroom, including teacher-student interaction, classroom guidance, learning facilitation and digital resource utilization to stir up children's native impulses and digital competency.

Paul HOWARD-JONES, University of Bristol (UK)

How do Science of Learning research findings influence practitioners' teaching effectiveness? As our understanding of how learning occurs expands rapidly, there is a growing belief this could benefit teachers' insight about their practice. Indeed, in some countries (e.g., UK), the science of learning has become a mandatory part of teacher training and teacher professional development. Efforts to introduce the cognitive neuroscience of learning into teacher training at the University of Bristol will be briefly reported, with evidence that professional development on the science of learning impacts in-service teachers' thinking about their practice.

There are, however, many challenges when communicating research findings to teachers. Neuromyths provide a stark example of the dangers of misinterpretation and, even when teachers have received professional development about research findings, they may not apply them effectively in practice. Interdisciplinary review of the literature (including psychology, neuroscience, education and consumer research) allows construction of a "journey" by which research findings can benefit learners through enriching teachers' understanding and practice. The review helps highlight gaps in our knowledge about how teachers process and use scientific learning concepts and how these impact their approach to their teaching.

These gaps in our understanding about what teachers "do" with findings from the science of learning may arise because, unlike our science for understanding learning processes, we have no Science of Teaching based on experimentation. Attempts to study teaching experimentally are reported (using micro-teaching), which qualitatively reveal the depth and diversity of teaching while also allowing important hypotheses to be tested.

Sherlyne A. ALMONTE-ACOSTA, SEAMEO INNOTECH (PHILIPPINES)

Exploring Teachers' Whys: Understanding Motivation Among Teachers in the Philippines. Teachers play an important role in improving the quality of education. Performing their task is largely dependent on their motivation in the profession. Different researchers recognized the complex nature of motivation. Motivation is the driving force behind human action (Pintrinch, Schunck, & Meece, 2008). Although teachers are from diverse contexts with different characteristics and experiences, understanding their motivation for the profession should help inform the development of future policy initiatives and ensure that these are relevant and responsive to teachers' varied contexts.

Through a combination of research methods, this research sought to answer two whys and two whats— Why do teachers decide to become teachers? Why do teachers decide to stay in the profession? What

policy measures are in place that support teachers' decisions to join and remain in the teaching profession? What policy recommendations may be drawn to encourage qualified and motivated teachers to join and remain in the Philippine education system?

There is a confluence of factors that figure in teachers' decisions to keep on teaching. While the findings strengthen the case that teachers are fueled by intrinsic reasons such as their continued commitment to the profession, and the passion, meaning, and fulfillment that they derive from their everyday interactions with their students, extrinsic reasons for staying are also important. In the process of surfacing factors that influence teachers' motivations, this research also documented possible reasons why teachers would also consider leaving the profession. The design of the research entailed the development of a framework that captures these reasons for joining, remaining, and possibly leaving the teaching profession. Further, policy options and recommendations for relevant stakeholders to promote teaching as a profession of first choice and to encourage teachers to keep on teaching in the Philippine education system were generated from the findings.

Pamela WADENDE, Kisii University (KENYA)

Indigenous care and motivation practices as transition strategy into formal school tasks. This project was conducted in two rural areas of Africa, Ainamoi area of Kericho, in Kenya and Mukuni village in Livingstone, Zambia, among a farmer and creative art community, respectively. It is concluded that a good education starts at home and continues in school with both settings reinforcing each other. We collected the Indigenous care and motivation strategies used with children 3-5 years of age in home and school settings to help ease the impediments children in low- and middle-income countries face transitioning from home to school learning. We aimed to not only collect the strategies in the two settings but to support participating teachers integrate suitable strategies into their practice and help parents with children do the same. Key findings showed that the children were exposed to an integrated curriculum at home but to a segmented one (according to subjects) in school. Some Indigenous learning games that children play at home were not in school. Some aspects of home settings that differed from those in school included routinely sitting on mats, yet in school children are often required to immediately sit on upright chairs. Routines such as when and how food is eaten and care strategies such as pre-adolescents caring for younger siblings were not the same at school. The main recommendation focused on the school settings borrowing some viable aspects of the home settings and the home setting doing the same. We developed a policy brief and stakeholder dissemination documents. We had stakeholder workshops in Kenya and Zambia sites and participating teachers have integrated some of their findings in their work.

Ximena GONZALEZ GRANDÓN, Universidad Iberoamericana (MÉXICO)

A Latin American and inter-bodily contribution to global socio-emotional education. Recognition of the importance of social and emotional learning has become a primary priority in education standards. During the early 1990s, the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework that has been widely used by teachers, researchers, and policymakers alike promoted the development of the ability to form positive relationships, to effectively regulate emotions and express feelings, and to persevere with challenging tasks. We attempt to further develop this framework and to be able to generate a variety of higher education interventions that enhance socio-emotional learning in

diverse contexts. We embrace emergent contributions from Latin American sociocultural perspectives that start from the assumption that emotions are also historical, collective, and cultural expressions are customarily marked by affectivity, body movement, and inter-bodily interaction.

In particular, we examined the effects of an "Inter-bodily empathy" intervention conducted in Mexico's higher education on teachers' and students' subjective affectivity and learning behaviours. The findings showed the importance of considering feelings that evoke strong and often discomforting emotions emerging in both teachers and students in learning spaces, and how strategic narratives, postures, gestures, tone of voice, and exchange of bodily affections, at least in some context of conflict, can function as a valuable pedagogical tool that enables the formation of new affective communities with shared ethics, and positive learning behaviours among the participants. At the same time, the approach to developing this kind of intervention serves as a model for other education organizations and programs worldwide. The epistemological, political, and ethical horizon inspires stakeholders to get insights regarding the benefits of this kind of program informing states legislation and learning standards.