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Research into
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ABSTRACTS

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Plenary



Mike Askew, Distinguished Visiting Professor, University of Witwatersrand



Hamsa Venkat, Naughton Family Chair in EY/P STEM Education, Dublin City University & University of Witwatersrand

Developing primary mathematics teaching quality in contexts of disadvantage

For over ten years the Wits Maths Connect - Primary (WMC-P) project has worked with historically disadvantaged primary schools in South Africa. In a context of continued low standards of attainment and poorly resourced schools, many initiatives that have been 'imported' in a top-down fashion into SA's educational system from more advantaged systems have failed to improve teaching and learning through a lack of attunement to local needs and circumstances. The WMC-P project was set up as a development and research project to develop bottom-up approaches to improving teaching in ways that fitted with the conditions and culture of classrooms. In this talk we share insights into the cultures and conditions of primary maths teaching in South Africa, how we set about studying and developing this teaching, and findings on the improvements seen in teaching over time.

Research papers, workshops and working groups

[Where there are multiple authors, * Is used to identify presenters]

Aantjes, Max (Canterbury Christ University/University of Cambridge) [WORKSHOP]

Co-constructing a comprehensive approach to Critical Mathematics Education



Books and websites that promote 'teaching mathematics for social justice' (TMSJ) present the movement as a list of pedagogical goals and a selection of pre-planned projects (e.g., E.R. Gutstein). These projects have limited curriculum coverage (i.e., they focus mostly on statistics), and may conflict with intensive schemes of work. Those that promote 'critical mathematics education' (CME) challenge the superficiality of these selected goals and projects, calling for more critical reflection on the formative power of mathematics education (e.g., O. Skovsmose, A. Pais, R. Barwell). The proposed solution is increased collaboration between researchers and teachers (e.g., P. Wright). Yet, the limited availability of researchers and time constraints complicate such partnerships. The insights of TSMJ and CME could be made more accessible by providing explicit reflective guidance for initiates. The proposed workshop draws on the successful attempt to break down the concept of human development into different dimensions of capability expansion (see A. Sen). It invites participants to work in small groups and break down critical mathematics education into manageable 'chunks' (a starting point is found in T. Cotton). For each of these dimensions, participants come up with reflective questions and associated practices for deeper understanding.

Agarwal, Anirudh* (Tata Institute of Social Sciences, Mumbai, India) [PRESENTATION]

Kumar, Ruchi*; Bansal, Arushi*

An exploration of domain and topic specific PCK (Pedagogical Content Knowledge) among teacher educators from low resource countries



Research on maths teachers' domain and topic specific PCK is limited despite the claims that they are essential for student learning. This exploratory study analyses responses of 12 teacher educators from low resource countries to understand their beliefs about teaching, their knowledge of general pedagogy and their subject and topic specific PCK using a survey and a case study. The survey was analysed to understand beliefs regarding goals of teaching mathematics and best ways for mathematics teaching-learning, and the case study was analysed to understand knowledge and beliefs in one particular case of teaching algebra. It was observed that most teacher educators exhibited student-centred beliefs about teaching and learning - such as incorporating students' interests in the classroom - and believed in developing higher order skills along with procedural fluency. However, their chosen pedagogy was heavily procedural in nature and while some of them exhibited a knowledge of subject specific PCK, there was a relatively weaker grasp of domain specific and topic specific PCK. The results imply that although necessary beliefs exist, without topic specific ideas to support pedagogy, the learning of mathematics may fall through. There might be a gap between teacher educators' beliefs and their knowledge, and if such a gap is indeed present, it is pertinent to investigate how this gap might affect teacher education and pedagogy and for teacher education programs to bridge this gap.

Caylan Ergene, Busra* (Sakarya University, Turkey)
Isiksal, Bostan Mine

[PRESENTATION]



An analysis of students' reasoning about surface area and volume measurement: A focus on prisms

The purpose of the study is to explore middle school students' reasoning while solving two tasks about surface area and volume measurement. For this purpose, one-to-one task-based interviews were conducted with three middle school students (11-14 years old). For the first task, the students were given twelve unit cubes, and they were asked to build as many different prisms as they can. Then, they were asked to determine the volume and surface area of the prisms they built. For the second task, the students were provided with twenty-seven unit cubes, and they were asked to build a large cube and to explain how the volume and surface area changed when the unit cubes from some parts of the large cube were removed. The findings indicated that the students provided different responses and justifications involving some misconceptions: Surface area changes depending on how you position the prism and prisms with the same volume must also have the same surface area. The possible reasons behind these misconceptions were discussed.

Deng, Huiping* (University College of London)

[PRESENTATION]



How did the Chinese Teacher Respond to Students' Errors in Classrooms — A Video-based Study of Mathematics Lessons of Mr. Yinglong Hua

Compared with making use of errors in mathematics learning, little attention has been paid to how mathematics teachers from developing countries responded to students' errors. My research applied video-based observation to investigate how a Chinese expert mathematics teacher, Mr. Yinglong Hua, responded to students' errors by analysing four videos of his mathematical public demonstration classes. There were several findings: Firstly, the framework of teachers' responses to students' errors needs to be adjusted in different cultural backgrounds. Secondly, the characteristics of Mr. Hua's responses to students' errors were summarised as: a). Mr. Hua had more adaptive responses than maladaptive responses. b). The categories of his responses to errors were diverse. c). Almost all categories of adaptive responses but *waiting* occurred during the interaction between Mr. Hua and his students, which might result from limited time of his public demonstration classes. d). No maladaptive responses happened except *correction by the teacher*, which might be related to certain types of errors. Thirdly, the pattern of Mr. Hua's responses might be affected by the guidance of the curriculum reform in China, his educational belief (e.g. *transforming error strategy*) and expertise, and characteristics of public demonstration classes in China. Hence, it would be necessary to analyse teachers' responses in a realistic and specific situation to examine how teacher-student interaction occurs.

Fu, Arya (Shanghai Experimental Foreign Language School)

[PRESENTATION]



Gender differences among high-achieving students in mathematics education: A Cross-Cultural Study between the UK and China

This research adopts the comparative approach to conduct a cross-cultural study in mathematics education from the perspective of sociocultural theory. Through questionnaire surveys and semi-structured interviews with teachers and students from the UK and China, relevant data are collected to help me understand the gender differences in mathematics education in the two countries, as well as teachers and students' views on this issue. Specifically, I hope to find out whether there is a gender gap in mathematics scores between UK and China middle school students. If there is a difference, is there a greater gender gap among top-performing students? What are the possible reasons for this difference? The results showed that in both countries the gender difference of average scores are not obvious, but boys still accounted for a large proportion of students with top mathematics scores and those who in mathematics competition team. This phenomenon is more obvious in China, where there are more boys in the competition team. Besides, there are some differences in the mathematics learning habits of British and Chinese students. British students are more inclined to work in teams when solving a difficult problem while Chinese student with top mathematics performance prefer to work out problem alone. Most Chinese students have the habit of preview and review and the average time they spend in learning mathematics everyday is more than students from UK.

Gould, Tabitha* (Cambridge Mathematics – Cambridge University)

[WORKSHOP]



Jameson, Ellen*; Rycroft-Smith, Lucy*

Exploring within and between mathematical ideas: a virtual playground from Cambridge Mathematics

It is often said that maths is connected, but what could those connections look like and what could we do with them? In this workshop we explore ways in which we describe and represent ideas of connectedness in mathematics and the useful ways this might be exemplified for practitioners. We will play with a selection of resources, developed by Cambridge Mathematics, thinking about ways in which connections might be embodied within and between concepts, and how this might be translated into a virtual space - a website. We discuss design decisions that could be made to structure an online experience in which website navigation and appearance actively complement individual resources, creating something that is enjoyable and empowering for practitioners.

Gripton, Catherine* (University of Nottingham)

[PRESENTATION]



Borthwick, Alison*; Gifford, Sue*; Williams, Helen J*. Farran, Emily K.; Gilligan-Lee, Katie A.; Williams, Ashley Y.; Lancaster, Andrea; Bates, Kathryn E.

Practitioner perspectives on spatial reasoning

Understanding early childhood practitioner knowledge of spatial reasoning is becoming a pressing issue. With a growing evidence base for the importance of spatial reasoning in mathematics and its recent inclusion in the statutory framework for Early Years (birth to five) in England, practitioner knowledge of spatial reasoning is crucial in realising its mathematical potential for young children. To investigate this, we asked practitioners about their understanding of spatial reasoning and recognition of spatial activities as well as their previous professional training and current development needs. The mixed methods study comprised of questionnaires and focus groups with practitioners working in a range of setting types. Findings indicate that these practitioners regularly engage in a variety of spatial activities with young children but most do not feel confident in their definition of spatial reasoning. Most reported having received little training in key aspects of spatial learning and expressed a desire for practice guidance including posters and short videos. The findings indicate potential priorities for professional development and offer a case study example of attempts to bridge the research-practice divide in the diverse early childhood education context.

Joubert, Marie* (University of Nottingham)

[PRESENTATION]



Wake, Geoff; Dalby, Diane

They are doing the maths, but what can we say about their learning?

One way to think about students' learning of mathematics is to consider the dialectics in which they engage, as proposed by Brousseau (2002). Brousseau's theoretical framing suggests that unless students engage in dialectics of action, formulation and validation, it is unlikely that they will be learning mathematics. Additionally, building on this it is argued that it is important to consider whether, and how, students' activity moves between the pragmatic/empirical and mathematical/systematic fields (Joubert 2017) and, although there are occasions when all three of Brousseau's dialectics may be observable, if activity primarily remains, for example, in the pragmatic/empirical field, mathematical learning will be limited. In the Centres for Excellence in Maths research trial, taking place in FE colleges in 2021-22, students are provided with multiple opportunities to engage in Brousseau's dialectics and to move between the pragmatic/empirical and mathematical/systematic fields when they work on substantial tasks in carefully designed lessons. In this presentation, we consider what we can say about a pair of students' mathematical learning when their interactions are analysed using this theoretical framing.

Karacan, Emine (University of Reading)

[PRESENTATION]



Social and Emotional Learning in Mathematics Classrooms

Social and emotional learning (SEL) is a key factor for improving pupils' academic performance and lifelong learning. However, for both pupils and teachers, SEL competencies have not been studied intensively and directly in mathematics classrooms. In the literature, there are few studies regarding SEL for mathematics education. Moreover, enhancement of social and emotional competencies provides an environment that supports and helps academic achievement in education and school life (CASEL, n.d.). My aim is to help enhance the pupils' understanding in math topics to overcome the existing problems such as the feelings of boredom, anger, math anxiety, hopelessness, enjoyment, pride and relief (Metje et al., 2007; Peixoto et al., 2016; Skaalvik, 2018). Also, to create an optimal environment for children with their peers and tutors. This includes how teachers should react with the pupils in different situations. To achieve this, teachers need to develop more empathy towards those with learning difficulties and social issues. This will result in a more efficient interaction and understanding with the taught content, hence, better outcome for the students in general. This study focuses on the delivery of social and emotional competencies in UK primary mathematics classrooms. For this presentation, I will give a brief introduction about social and emotional learning and the focus of my research. Additionally, I will present and discuss initial focus group data

Lord, Ems (University of Cambridge)

[PRESENTATION]



Solving Together: Investigating the potential of playing interactive games for increasing parental engagement with mathematics

Although many schools seek to increase parental engagement with learning, noting its benefits for raising attainment, increasing parental engagement with mathematics poses its own unique challenges. These include, but are not restricted to, low parental confidence levels in mathematics, lack of subject knowledge, lack of awareness about current teaching approaches and limited time and resources to support their offspring. To help to address these concerns, NRICH secured funding from Nesta and Tata to investigate ways to increase parental engagement through playing online maths games. Working with six schools in areas of high deprivation, the participating Year 7 teachers set a collaborative online game as part of their weekly mathematics homework tasks. Parental support provided through email reminders about the set tasks and the provision of short video clips modelling how to play the games, and accompanying guidance notes. The games were chosen for their potential to reinforce previous classroom learning, rather than introducing new topics, to address concerns about parental confidence and awareness of current teaching methods. Data collection included pre- and post-intervention questionnaires, focus groups and comparing pre- and post-intervention drawing by the pupils showing them working on their homework. The findings revealed that parental engagement was significantly increased during the intervention.

Makramalla, Mariam (New Giza University)

[PRESENTATION]



Cross cultural curricular transfer in mathematics education

Underpinned by our understanding of contextually and culturally responsive standards for mathematics education, in this session I present the case study of one lecturer - that has been rooted in procedural instruction methodologies - who is requested to adopt a UK based mathematics curriculum in an Egyptian mathematics university classroom. The findings of the study indicate a slow mental shift in view of re-envisioning the value of mathematics as a subject matter.

Marks, Rachel* (University of Brighton)

[PRESENTATION]



Barclay, Nancy*; Barnes; Alison*

Choosing and using curriculum resources in primary mathematics

In 2016 the DfE launched a match-funding scheme to support primary schools in England to purchase approved mastery textbooks (Maths – No Problem! and Power Maths for KS1 & KS2) to support the teaching and learning of primary mathematics. While the funding scheme has undergone some changes, the ambition to give 55% of primary schools access to funding by the end of 2023 remains. This funding opportunity – and the potential changes to mathematics pedagogy within a school that textbook adoption brings – comes at a time when there is a dearth of understanding around curriculum resource (including textbook) use in primary mathematics, particularly in terms of large-scale investigations. Our ongoing Nuffield funded project engages with this gap, using a population wide survey to identify what is being used and to understand some of the decisions primary schools make around resource adoption and use. In this session, we present some very early ‘high-level’ findings from our survey. We provide a general mapping of the landscape and the decisions made around selecting online, published and hybrid resources and how these are used within the classroom.

Marks, Rachel* (University of Brighton)

[WORKING GROUP]



Gifford, Sue*; Ineson, Gwen*

Early Years and Primary Mathematics' (EYPM) Working Group

This will be the fourteenth meeting of the Early Years and Primary Mathematics (EYPM) Working Group. In this meeting, Professor Camilla Gilmore (Professor of Mathematical Cognition, Loughborough University) will talk about the new ESRC Centre for Early Mathematics Learning. This centre will investigate the cognitive, social, and environmental influences on children’s mathematics development in the Early Years and Key Stage 1 and develop games, activities and resources to support mathematics learning. She will provide an overview of the activities planned as part of the centre, highlight issues with the existing evidence base and discuss challenges with translating research to practice. Extending our discussion of the research-practitioner interface, Dr Cath Gripton will then introduce the new Early Childhood Maths Group’s Spatial Reasoning Toolkit

(<https://earlymaths.org/spatial-reasoning/>) for practitioners working with children from birth to seven, produced in collaboration with Surrey University. There will also be an opportunity to share updates since our last meeting in November 2021, particularly examining ongoing impacts and implications of Covid-19 on Early Years and primary mathematics education. We look forward to welcoming both previous and new attendees to our meeting.

Mezue, Ijeaku (University College of London Institute of Education)

[PRESENTATION]



A Pedagogy of Trust: A knowledge creation perspective of learning mathematics in a secondary school classroom

In this session, I will discuss an action research project studying an innovative pedagogy designed to support the emergence of a special kind of agency that will enable students in a London secondary school mathematics classroom take responsibility for their individual and collective knowledge advancement. The research aimed to improve students' participation in all aspects of their learning to improve their relationship with and knowledge of mathematics. The original construct of shared epistemic agency derived from Damsa et al. (2010), was based on the group collaboration of undergraduates as they produced a knowledge object. I extended it to account for students advancing their individual and collective mathematics knowledge of the GCSE mathematics curriculum through moment-to-moment epistemic interactions. My analysis demonstrated that a participant of the innovative pedagogy can be positioned interactionally, in any given moment, by others as a knower or as a facilitator. They can be positioned reflexively, in any given moment, by themselves as a learner, as a knower, or as a facilitator, and they can be positioned institutionally by the pedagogy as a facilitator. A key finding is that as participants interacted in the classroom to learn mathematics, they assign flexible positions to themselves and other participants.

Misailidou, Christina* (National and Kapodistrian University of Athens)
Polydoros, Georgios

[PRESENTATION]



Using mobile devices to support mathematical problem solving in primary school

Mobile devices, i.e. portable, handheld computing devices, have been used as tools for facilitating mathematics teaching and learning. Although pupils seem eager to use them during their lessons, the research findings so far seem inconclusive as to whether such devices promote mathematics learning. This paper adds to the relevant literature by providing selected results from a study investigating the impact of mobile devices on primary school pupils' problem solving attempts. Thirty, sixth grade (11-12-year-olds) pupils were given a laptop to use at school and at home for six months. A mathematics software which facilitated problem solving by providing instant visual feedback was installed in each laptop. The study's results indicate that using these specific mobile devices was beneficial for the pupils: they were engaged in problem solving within an interactive and exciting environment which helped them perform better.

North, Marc (University of Nottingham)

[PRESENTATION]



Towards a framework for developing Subject Knowledge for Teaching: The case of Primary Mathematics

The prioritisation of a Teaching for Mastery agenda in England has ushered in heightened expectations on Primary Teachers for a high level of specialist mathematics knowledge. This has been challenging for many beginning, early career and experienced Primary teachers who do not have a mathematics specialism and whose personal learning experiences in mathematics do not reflect the current pedagogic approach. This session will present some initial thinking on the conceptual and theoretical underpinnings of a professional learning framework designed to support the development of Mathematical Subject Knowledge for Teaching. The framework integrates existing theories of subject knowledge development that prioritise both subject and pedagogical knowledge with a collaborative lesson design approach. The hypothesis is that collaborative engagement in iterative lesson design concurrently supports teachers' personal conceptual understanding and their capacity to teach conceptually. The framework is being tested empirically with a small number of Early Career Teachers as part of a local Maths Hub workgroup programme, and emerging reflections from this early application will be shared. Expectations are that this framework may have the potential to inform the structure and contents of future maths-specific professional development and Initial Teacher Education, and to wider initiatives that integrate agendas for subject knowledge enhancement and teachers' professional collaboration.

Rycroft-Smith, Lucy* (University of Cambridge)

[WORKSHOP]



Gould, Tabitha*

"And then you just arrive at zero again": ways that representations of the number line in board games may support or impede a sense of number

A huge variety of board games exist, some to explicitly support mathematical learning, but most without this goal – and yet almost all games represent number in some way. In this talk, we explore some of these ways, examining them in light of the literature that exists to connect ways of representing number spatially – that is, as number lines, tracks, wheels, grids, arrays, serpentine, or boards – and what this might imply about qualities of number for those playing the games. We wonder about some of the ways that representations of numbers in space in board games might support or impede the development of number sense in both adults and children.

Saralar-Aras, Ipek* (Ministry of National Education, Turkey)
Tiflis, Ozdemir*

[PRESENTATION]



Comparison of Chinese and English Mathematics Teachers' Technology Use: An Analysis from a Sociocultural Perspective

Recent research showed that culture affects how individuals act and communicate (Knutson, 1994; Schwenk, 2011); thus, it seems important to see how cultural differences including teaching and learning experiences impact how teachers teach (Ben-Peretz et al., 2003; Berlak and Berlak, 1977). This case study aimed at investigating Chinese and English maths teachers use of technology in their lessons, and to what extent this is related to their cultural experiences of learning. The data was generated from 4 Chinese and 4 English teachers through 25 to 40 minutes of semi-structured interviews. Content analysis in NVivo was used for analysis. The socio-cultural theory was particularly chosen as it helps us to examine how ideas and values are passed down to future generations (Berk, 2007; Mahn and John-Steiner, 2012). The results showed that all Chinese maths teachers reported learning through videos/Internet sources and Office tools during teacher training. These teachers then mostly chose to use similar technologies, only one of them named an alternative technology: Mentimeter. Whilst this was the case for Chinese maths teachers, English maths who learnt with statistical tools and DGEs during their training preferred to integrate alternative technologies, e.g., Autobot, Mr Carter and GeoGebra. To conclude, the results showed that both Chinese and English teachers were found to be teaching as they learnt. Hence, we suggest further research investigating why this might be the case.

Siddiqa, Mariam (Staffordshire University)

[PRESENTATION]



How do resit Mathematics learners at FE colleges describe their experiences of ability sets at secondary schools?

This paper investigates the impact of ability sets at secondary schools on resit Mathematics learners' long-term attitudes and learning apprehensions at FE colleges. In particular, I wished to study resit Mathematics learners' experience of ability sets. I also included interviews with Mathematics teachers from secondary schools and FE colleges to understand the situation better. Hence, the research questions are: How did learners feel about learning in Mathematics ability sets? Did learning experience in ability sets influence Mathematics understanding, attitudes, and achievement? I interviewed 16 resit Mathematics learners from different vocational areas using focus group interviews. Adopting a growth mindset, I suggest that such students might be termed slower developing, and I recommend that learners in lower ability sets should be treated fairly by providing an equal chance to progress.

Thoma, Athina* (University of Southampton)
Güler, Mustafa; Papadopoulos, Ioannis

[PRESENTATION]



Investigating Science Education Students' mathematical writing – the case of mental brackets

This study reports on first-year Science Education students' mathematical writing when solving tasks involving functions, logarithms, derivatives and integrals. This presentation focuses on students' use of mental brackets, a concept which up to now has been mainly studied in primary school students' scripts. When using mental brackets the students do not write the brackets however they evaluate and manipulate the expressions as if the brackets are present. In this study, which is a pilot for a larger study, forty Science Education students were asked to complete tasks that required the use of brackets in the above-mentioned topics. Students' scripts were analysed focusing on instances where the students performed operations as if brackets were written. These occasions of mental brackets in students' writing were further analysed using thematic analysis. The findings show that mental brackets in students' scripts were used in instances related mainly to the application of a rule, successive signs and grouping terms.

Thouless, Helen* (St Mary's University, Twickenham)
Gifford, Sue*; Edgar, M.; Pearson, K.

[PRESENTATION]



Introducing pattern to nursery children with autism

This presentation focuses on a nursery teacher of children with autism, and how she utilized and explored patterns in her classroom. The data is based on a thematic analysis of three online interviews that this teacher had with her previous Deputy Head and the presenter. The presentation will explore the four themes that emerged from the data: patterns within nursery routines; patterns in familiar nursery stories and songs; patterns in play; and pattern experts. It will also explore the implications of these findings.

Thouless, Helen* (St Mary's University, Twickenham)
Hilton, Caroline*; Saralar-Aras*, Ipek; Zerafa, Esmeralda*

[WORKING GROUP]



SEND and Maths' Working group

This is the second meeting of the SEND and maths working group. This working group is open to all and aims to promote research that looks at the intersection of SEND and maths. This working group has four goals: 1) to connect researchers who have an interest in this topic; 2) raise awareness of the topic; 3) bridging the gap between theory and practice; and 4) bridging the gap between the fields of mathematics education, psychology, and special education. The core members of this group come from three different countries, so we incorporate an international perspective into the topic. In this session we will discuss an example of cross-cultural collaborative work on the topic that one of our members is already engaged in. We will also discuss what we currently offer our beginning teachers to help them understand the intersection of SEND and maths, and what else they wish they knew.

Wright, Pete* (University College of London, Institute of education)
Hilton, Caroline*

[WORKSHOP]



Developing the concept of socio-mathematical agency

This workshop will explore the potential of a new theoretical construct: socio-mathematical agency (SMA), which we define as students' ability to use mathematics effectively to argue collectively for social change. Participants will be asked to consider the opportunities that teaching and learning mathematics presents for developing students' critical mathematical understanding and collective agency. We will discuss how SMA might enable today's learners to play a future role in addressing the environmental, economic and social challenges facing our society, reflecting recent calls for a more humanistic and socially-just school curriculum (OECD, 2018; UNESCO, 2015). We will consider the following questions: What might SMA look like in practice? In primary schools? In secondary schools? What teaching and learning strategies might foster SMA? How might SMA be measured/assessed? Note this workshop may be of particular interest to those who have been involved in BSRLM's Critical Mathematics Education Working Group.

References: OECD, 2018. The Future of education and skills: Education 2030.

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UNESCO, 2015. Rethinking education: Towards a global common good?

<https://unevoc.unesco.org/e-forum/RethinkingEducation.pdf>

Yeung, Sze Man* (University of Exeter)
Fujita, Taro

[PRESENTATION]



Practices for developing both procedural skills and higher-order skills

Productive practices are well-designed packages of arithmetic learning environments that attempt to promote higher-order thinking skills while practising essential arithmetic skills. These practices allow students to understand and explain phenomena in a mathematical way with greater motivation. Regarding the whole learning environment as a complex ecosystem with continuous development, design-based research (DBR) is going to be conducted and both quantitative and qualitative data will be collected for answering the research questions. This study aims at investigating how the design and the implementation of productive practices generate the process of mathematical thinking, thereby supporting deep procedural learning. Moreover, this study is expected to provide some insight into the further development of arithmetic practices and to reveal a suitable way for embedding productive practices into daily mathematics learning. 2 pilot lessons (180 mins each) have been conducted in an online setting with the use of Zoom and Geogebra Classroom. Five Grade 2 students (7-8 years old) in Hong Kong joined the pilot lessons. The lessons were recorded by Zoom recording and the students' performances were captured when they inputted the answers in Geogebra. Some of the preliminary discoveries will be discussed in this paper.