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THE NATIONAL INSTITUTE of Education is in an arguably unique position in the global production of educational knowledge. It is intricately plugged into the national educational research and development ecology that fosters close, productive relationships between NIE, the Ministry of Education (MOE) and the various MOE academies, schools and institutes of higher learning (IHLs).

It engages in “upstream” work that develops strong research-based theoretical understandings of educational issues, as well as “downstream” developmental work driven by a passion for improving pedagogy and practice. Increasingly, NIE seeks to enhance practice, improve capacities and build a strong professional culture of teacher inquirers through research efforts.

The MOE Academies Fund (MAF) was set up to fund projects that involve MOE academies and MOE language centres. The projects will contribute to the enhancement of pedagogical practices or the professional development of teachers.

The MAF marries upstream and downstream research, shifting the focus towards developmental work that impacts where it really matters—in schools. Teachers and practitioners are encouraged to become involved, thereby creating collaborative inquiry-driven cultures that cut across institutional boundaries.

In this issue, we showcase some MAF projects which illustrate just this. Some projects focus on pedagogy. Associate Professor Lum Chee Hoo describes how a workshop for educators was developed for the teaching of local music traditions. Likewise, the pedagogy of Math teachers is strengthened in Prof Berinderjeet Kaur’s project.

Pupils can also benefit directly from research, as evident in Dr Tan Chee Soon’s reading programme for pupils. Cutting across these three projects is its impact upon schools, teachers and students.

Other projects result from close collaborations with the academies. Dr Tan Liang See and her team is collaborating with the Singapore Teachers’ Academy for the aRts (STAR) for the STAR CHAMP programme. Likewise, Associate Professor Steven Tan and Associate Professor Isabella Wong describe how their team works closely with the Physical Education & Sports Teacher Academy to promote school-based mentoring in the Physical Education fraternity.

As the MAF programme matures, we hope to see more of such proposals that capitalize on the significant network and capital that schools have with students, parents and communities. After all, education is a matter that involves school and society. In so doing, it is our hope that the impact of research and development is felt in schools and hopefully, in society as well. This is a tall order, but it is an important task.
Providing Support for Weak Readers

**PROJECT TEAM**

**Principal Investigator** Tan Chee Soon, National Institute of Education, Singapore  
**Co-Principal Investigator** Beth O’Brien, National Institute of Education, Singapore

**IN A TYPICAL CLASSROOM** of 40 pupils, it is quite a challenge for teachers to tell which pupils are experiencing reading difficulties. Weaker readers may try to mask their difficulties by keeping quiet during choral reading.

“Sometimes the teachers do not know the extent of struggle faced by their pupils until they start asking the pupils to read to them one to one,” says Dr Tan Chee Soon.

Chee Soon first became interested in helping weak readers when she was an educational psychologist. Many schools referred such pupils to her to be assessed for reading disabilities.

“But when I got more information from the school and parents, I found that some of them did not have a reading disability. Rather, it was a matter of not getting adequate reading instruction,” Chee Soon notes.

Instead of assessing individual children, she realized that the problem should be tackled at a systemic level because of the large number of pupils requiring additional literacy support.

“So that was what motivated me—to really help such schools with a large number of pupils with reading difficulties,” Chee Soon shares.

**Peer-assisted Learning Strategies** The research project focuses on Primary 3 pupils and involves providing reading support in two tiers.

The first tier is a class-wide peer-tutoring programme for all pupils. A stronger reader and a weaker reader are paired up and take turns to assume the roles of a reader and a tutor.

“The stronger pupil will be the reader first, and the weaker pupil will be the tutor,” Chee Soon goes on to explain. “The idea is for the stronger pupils to model the reading for the weaker pupils, so that when it’s their turn to read, they would have had the text read once to them.”

**Targeting Specific Difficulties** During the period when the pupils are receiving the tier-one reading instruction, data is collected every 2 weeks to monitor the pupils’ progress.

“If they are not responding sufficiently to the classroom instruction, we may put them on the next tier of intervention, which is done in smaller groups—ideally in groups of three,” says Chee Soon.

The second tier of intervention usually occurs three times a week, outside of curriculum time.

This is when teachers provide targeted evidence-based reading intervention strategies according to the specific difficulties of individual pupils.

“We use data to help us decide where the pupils’ problems lie, so that the appropriate intervention can be used to meet the pupils’ needs,” explains Chee Soon. “The data also helps us to observe if any progress has been made.”

**Early Intervention** Chee Soon hopes that her research project can cater to and benefit the schools, teachers and pupils.

Through this initiative, she hopes schools can become more systematic in identifying pupils with reading difficulties and support these pupils at a systemic level.

Chee Soon also wants to empower the teachers who believe that they can help the pupils.

Ultimately, the project aims to help weak readers get the targeted interventions that they need, and as early as possible.

As she puts it, “Don’t wait until the pupils are so far behind that they really can’t catch up with the rest anymore.”

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Chee Soon’s goal is to help young children read better.
You would probably think discussions about traditions and identity happen during Character and Citizenship Education or Mother Tongue lessons.

But NIE Associate Professor Lum Chee Hoo thinks that music can also lead to critical conversations about such issues.

His research project in collaboration with the Singapore Teachers’ Academy for the aRts (STAR) looks at music traditions in Singapore and how teachers can teach them in our classrooms.

Living Music Traditions Many general music educators have experiences in Western classical music traditions, and may not be as familiar with music traditions in Singapore.

But Singaporean music traditions are still alive and well. Chee Hoo is keen on what artists are doing with Chinese music now, and how far current Malay and Indian music have evolved from what we imagined it to be.

STAR recently developed a professional development programme for music teachers called “Teaching Living Legends” to enhance the teaching of different music traditions in Singapore for the general music classroom. Hence, working with STAR seemed like a mutually beneficial learning experience.

Practice, Pedagogy, Perspective During the 5-day programme for in-service teachers, music educators were guided with pedagogical ideas in collaboration with artists in Singapore on three areas: practice, pedagogy and perspective.

“The programme allows music teachers to be actively engaged in the musical practices of the local music traditions (practice), brought into the general music classroom (pedagogy), and have critical dialogues about issues of music identity through perspective-building activities (perspective),” describes Chee Hoo.

The notion of identity is hotly debated in Singapore, and Chee Hoo hopes teachers would probe deeper into it for themselves as well as the students they teach.

Chee Hoo hopes that Singaporean music traditions would help Singapore youths think about their identities.

For example, a segment of the programme focuses on the Singapore national anthem. For a perspective activity, teachers were asked to debate on issues of change and preservation as they examined different versions of the national anthem.

“‘Visible thinking routines’ were used to scaffold these perspective activities,” says Chee Hoo. "By presenting the question and starting a debate, we get a deep understanding of how they feel about the issue."

“What do they think about the national anthem being Malay? Is it still relevant? And what about its music and melody? This opens up the discussion of what makes Singapore music Singaporean. And it’s so important because it’s a continuous search for us looking at identity, and where we’re going from here."

Close Collaboration For Chee Hoo, a key highlight of this project is the collaborations forged for the programme. STAR connected with local artists, National Arts Council and National Archives of Singapore to create resources for teachers.

The end result is a comprehensive package of resources for teachers, which includes videos, web links and other useful documentations on the varied music traditions.

The whole process was complicated, shares Chee Hoo. "But the great thing was to see the trust and respect between STAR, the National Arts Council, the artists and us—all for a common cause to educate the future of Singapore in understanding our music traditions and critically thinking about our identities."
CALCULATE HOW MUCH 7 per cent of 10 dollars is. This is a straightforward, performative Math task.

Such tasks help develop fluency and accuracy in Math, says Professor Berinderjeet Kaur. But at the same time, they are “very skills-oriented and routinized, with little scope for students to think about”.

Such tasks are very common in the Singapore classrooms. However, they do not always provide opportunities for students to talk about Math, establish their understanding of Math knowledge and use them further.

Prof Kaur says that the way to move forward is to go beyond such performative tasks—it is time to get students to be more reflective about their own learning.

Prof Kaur wants to nurture learners to start thinking about their own thinking behind every Math problem. How do I solve this? Would finding X help me to solve Y?

To achieve this, she is working with 7 schools and 40 teachers, all of whom volunteered to be part of her project.

Knowledge-building Tasks The project has three different phases. The first involves getting teachers acquainted with knowledge-building (KB) pedagogy. KB encourages students to discuss and deepen their Math understanding.

Over 10 weeks and seven workshops, Prof Kaur worked closely with them with one common goal—to bring the best out of their students through using KB tasks.

“Knowledge-building tasks require students to think about what they are doing, and the kind of Math they are working with,” explains Prof Kaur. An example would be asking students: Would you give me 10% of your pocket money if I give you 10% of mine?

It requires the students to calculate the amounts and also make a logical decision based on the numbers. “It makes students more reflective of their own learning,” Prof Kaur says. This is unlike performative tasks, which usually ask for straightforward answers.

Generating Knowledge Together The second phase saw teachers integrating their learning into classrooms. The teachers from each school enacted lessons they planned during the workshops in their school groups.

After enacting their lessons, the teachers reported back what happened to the project group, to obtain feedback from the researchers and other teachers to deepen their learning.

The project is different from many others, says Research Associate Ms Divya Bhardwaj, in that university scholars, researchers and teachers are generating knowledge whilst working together in the project.

Teachers as Agents of Change In the last phase, Prof Kaur wants to empower teachers to go forth and spread what they have learned.

“We want to empower the teachers to be agents of change,” she says. Three of the schools are already planning to share their work at both international and national platforms.

Through her research, Prof Kaur wants to find out how teachers’ use of mathematical tasks changes over time.

At the same time, she also asked the teachers to write lesson narratives that detail their own learnings from this project. “To me, as an educator, the satisfying thing is to know that there are people using what they have learned—that no one has put this on the back burner.”

Prof Kaur (centre, with Divya and Mr Mohd Salim bin Ramli from Orchid Park Secondary School) feels that it is important to nurture Math learners to be reflective about their learning.
Lessons and mentoring sessions were video-recorded to capture the “baseline” data on the learning and pedagogical status of the mentees and the mentoring practice of the experienced teachers. The team also used examples from the videos to engage in developmental analysis and discourse.

From there, the teachers worked with the project team to identify specific goals for themselves in teaching and mentoring, based on the PELOT characteristics. Subsequent lessons were then video-recorded to track and enhance their progress.

“The main theme of reflective practice in the process is key to this mentoring framework,” Isabella notes. It is about teachers reflecting in action (while they are in the act of teaching and mentoring); reflecting on action (thinking back on how the lesson or mentoring session went); and reflecting for action (what should be done next to further their growth or enhancing the students’ learning).

“The intention at the end of it all is to encourage, enable and empower PE teachers, be they beginning teachers or mentors, to engage in developing themselves,” Isabella continues.

A Fruitful Collaboration

Other than the mentoring framework, Steven and Isabella’s work with PESTA will eventually also yield resources such as videos, reading materials, templates, protocols and a guiding manual to support the framework.

They feel that working with PESTA colleagues and the schools has been meaningful and informative. The collaboration has and continues to raise understandings and issues around optimum PE instructional and mentoring practices.

“PE teaching is a complex practice, and if it is not reasonable to expect beginning teachers to completely master effective PE instructional practices independently from experience alone, then purposeful, sustained and well-structured continuing professional support is critical,” says Steven.

Steven, Isabella and their team are promoting school-based mentoring in the Physical Education fraternity.
Creating a Teacher-led Culture

PROJECT TEAM
Principal Investigator Tan Liang See, National Institute of Education, Singapore
Co-Principal Investigators David Hung, Letchmi Devi d/o Ponnusamy, National Institute of Education, Singapore
Research Assistant Keith Tan, National Institute of Education, Singapore

NURTURING TEACHER LEADERS is a key goal of the Singapore Teachers’ Academy for the aRts (STAR), because they are championing the idea of a teacher-led culture in Singapore schools.

They decided to introduce the STAR CHAMP programme 3 years ago. It comprises a series of workshops for Art and Music teachers to help them become teacher leaders.

But did the programme work? To find out, Mrs Rebecca Chew, the Principal of STAR, enlisted the help of a group of NIE researchers headed by Dr Tan Liang See to find some answers.

Star Leaders Liang See, who is the Head of Research of Centre for Research in Pedagogy and Practice, has always believed in the importance of creating a culture of teacher-led learning in schools.

When teachers take up new ideas and new ways of teaching from their peers, they will be motivated to improve on their teaching. In turn, they will share these good practices with other teachers.

The community of Art and Music teachers is small and this makes the sharing among teachers across schools even more valuable.

Teaching to Teach “At STAR, their mission is really to establish a teacher-led culture in the field and train teachers to teach these subjects in an engaging manner,” says Liang See.

The workshops at STAR are conducted by Master Teachers. They introduce teacher leaders to different strategies, such as the thinking routine and frameworks to better engage students in learning Art and Music.

“The participants have to translate and interpret the strategies learned at the workshop for their students,” explains Liang See.

The teachers will then mount roadshows at the cluster level to teach other Art or Music teachers how to adopt these strategies into their own classrooms.

Liang See and her research team visit the schools to document the process, talk to the teachers and interview the students.

“My team and I document what these teachers are doing at each stage of the development and have conversations with them,” Liang See notes.

Enhancing Pedagogy STAR is revamping its teacher leadership programme for Music teachers in 2016, and Liang See and her team have provided useful insights and findings for the revamp. “Our study aims to come up with possible recommendations for them,” she says.

In March 2016, her team will be sharing their findings and observations with a new batch of participants (many of them are returning teacher leaders).

“Many teachers who participate in the programme enjoy the sense of community in learning from one another,” shares Liang See. “They enjoy being exposed to new pedagogical ideas, trying the ideas on their own students, and sharing them with cluster colleagues.”

One hopes that through these efforts, a stronger community of Art and Music teaching professionals—and a school culture that is increasingly teacher-led—will emerge.
OER Researchers Conduct Practitioner Inquiry Workshops for Schools

At the request of the S5 School Cluster, OER researchers Dr Tan Liang See and Dr Lee Shu Shing held a series of workshops of practitioner inquiry for eight teachers from three schools: St. Andrew’s Junior School, St. Andrew’s Secondary School and Anglo-Chinese School (Junior).

The invitation to conduct the workshops arose from the OER Cluster Roadshow that was held in January 2015, where Associate Dean (Education Research) of OER Prof David Hung and OER Senior Teaching Fellow Mr Paul Chua dialogue with S5 Cluster school leaders on the research and pedagogical needs of their schools.

Over the course of 7 months, Liang See, the Assistant Dean (School Partnerships) of OER and Head of the Centre for Research in Pedagogy and Practice (CRPP), and Shu Shing, a CRPP Research Scientist, guided the participants in choosing and investigating a real-life problem in their classrooms, and the collecting and analysing of data to reach conclusive findings.

One thing that Chinese Language teacher Mdm Chong Kin Yan from St. Andrews Secondary likes about the workshops is how the instructors gave teachers the freedom to choose a research question related to a real-life problem they were encountering in the classroom.

“They don’t set us boundaries and they give us the freedom to explore different things: This is the one thing I like about this course. It’s different from other workshops, where the presenters would tell you what you need to do,” she says.

Throughout the workshops, Liang See and Shu Shing emphasized on the practical aspects of inquiry, even though the process of doing literature review or the analysing of data may seem daunting for some.

“They both reassured us by sharing that we are first and foremost teachers, and we’re doing this to find a way to sharpen our own teaching and to improve our own thinking and practice,” says Ms Tan Ming Ju from Anglo-Chinese School (Junior). “I found that quite useful, instead of thinking about yourself as a researcher. But of course it’s interlinked—research skills help us in many ways, such as in our analytical thinking.”

The workshops were hosted by St. Andrew’s Junior School, and Principal Mrs Tan Bin Eng hopes that the teachers would extend their journey into practitioner inquiry by documenting their studies and sharing with their fellow teaching colleagues.

Kin Yan, who looked into composition writing of her pupils, agrees with Mrs Tan. “I will definitely share with my department what I have been doing for these few months so that they benefit from my findings.”

Mrs Wong feels heartened by those teachers who expressed that they would like to “deepen” their inquiry efforts even after the workshops have concluded, and thinks the sessions are a good platform to get teachers interested in research.

“I hope more of our teachers would become practitioners who would look into inquiry,” she says. “Many a times, we say something works, but we’re not able to give evidence why it works. It’s then not as sustainable and scalable—it doesn’t multiply! That’s something that I’m very passionate about: It must be something which we can multiply or scale up so that we can continue to improve and deepen the practice.”

To Liang See, practitioner inquiry is the way to go if teachers wish to develop themselves. “It is a way where teachers can systematically reflect and investigate real classroom situations and problems. Giving them the autonomy to find and solve learning and teaching issues is a great way to promote professionalism.”

Shu Shing feels that she has learned much from the teachers and their efforts to enrich teaching and learning. She says: “Our teachers have shown tremendous dedication in their inquiry to address students’ needs. I hope that they continue to refine their inquiry and share their learning experiences with other colleagues in their schools.”
Dunman High School Visit by OER Researchers

A group of OER researchers met up with the Principal of Dunman High School (DHS), Dr Foo Suan Fong, on 3 August 2015 to discuss the research needs of the school.

Also present at the meeting was the DHS Head of Curriculum, Ms Khoo Geok Hwa and her other colleagues.

So far, DHS has partnered with NIE on three research projects. One of them is a project on Productive Failure (PF) in Math learning.

Dr Foo is known to never turn down researchers who wish to work with his school. This is because he used to conduct research himself, and others had helped him then.

But Dr Foo has other reasons for welcoming NIE researchers into his school. “I want my teachers to feel confident (about classroom observation), and that researchers are not here to find fault. They’re here to help us to see what our strengths and weaknesses are.”

Some areas that Dr Foo and Geok Hwa identified as areas of research that DHS would like to explore next are design thinking and assessment for learning. They singled out assessment for 21st century competencies as a “great” need.

When asked how research has helped the school, Geok Hwa commented that they have yet to find a way to measure the impact quantitatively, but their teachers do get qualitative feedback by students.

It was clear to the teachers that there was impact. For example, some delegates from the International Association for Educational Assessment (IAEA) Conference observed a Math lesson that was part of the PF project and were delighted to see how the students came up with their own problem-finding framework, which the teacher then implemented.

“You could really tell the students are finding and coming up with their own problems, rather than just solving the problems,” Geok Hwa notes. “We can see the impact, and if OER would like to study this we can consider working together.”

Dr Foo thinks that researchers can help the school by briefing teachers on their strengths and areas for improvement after a project has wrapped up. If researchers can work with teachers on improving their pedagogy, it can pave the way for deeper cooperation.

SingTeach Celebrates 10th Year Anniversary

Back in 2005, there was a lack of publications to help teachers in Singapore connect education research and classroom practices.

SingTeach (http://singteach.nie.edu.sg) was created to fill that gap. Today, this magazine for teachers is distributed to all schools, junior colleges and other education organizations in Singapore.

The editorial team notes, “Ten years on, our mission remains the same: We want to tell compelling stories of research that improve teaching and learning in schools, and innovative practices that teachers are trying in their classrooms.”

To celebrate the milestone, they held a series of contests on their Facebook page (http://facebook.com/SingTeach), and published a 10th year anniversary special issue in December 2015.
Events by Office of Education Research

NIE welcomes the International Research Review Panel

The Office of Education Research (OER) was honoured to host Professor John Furlong, Emeritus Professor of Education, University of Oxford; Professor Cheng Yin Cheong, Research Chair Professor of Leadership and Change, Hong Kong Institute of Education; and Professor Pierre Dillenbourg, Academic Director of the École Polytechnique Fédérale De Lausanne (EPFL) Centre for Digital Education, at the International Research Review Panel (IRRP) from 12 to 15 October 2015 in Singapore.

Established during the third tranche of the Education Research Funding Programme (ERFP) to offer scholarly advice to the MOE and NIE Education Research Committees (ERC) on large grant proposals, the IRRP is held thrice over a 5-year period, with the first in November 2013.

During their time in NIE, the team of international and eminent experts reviewed and offered professional perspectives and critical insights on grant proposals by NIE researchers. They also met with the Permanent Secretary for Education, Ms Chan Lai Fung; participated in roundtable sessions with MOE Directors; dialogued with NIE’s mature and emergent researchers; and provided feedback on OER’s research impact, knowledge mobilization and grants management processes.

The expert opinions and recommendations offered by the panel serve as an invaluable resource to OER as it plans ahead for the fourth tranche in 2018.

New Publication

NIE Research Brief Series

The latest briefs from the NIE Research Brief Series are now publicly available for download on the NIE website. This series, which sports a new look and feel, features research projects on biliteracy, leadership, teacher professional development and more.

Conceived as a channel for communicating NIE’s research findings to policymakers, school leaders and researchers, the research briefs are aimed at translating research findings to impact policy and practice.

For download or more information about the research briefs, please visit: http://www.nie.edu.sg/research/publication/nie-research-brief-series
### Research Highlights

**CONGRATULATIONS TO** our colleagues whose research projects were approved for funding in the 14th Request for Proposals by the Office of Education Research (OER).

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The full list of projects is available on the OER website (www.nie.edu.sg/offi ce-of-education-research).