




Big Idea

issn 2010-1031

## Hopes for the Education Fraternity in Singapore

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*To mark SingTeach's 10th-year anniversary, the editorial team reflects on the purpose of our work. We also invite various educators to share with us their hopes for the education fraternity and education in Singapore.*

### A Note from the Editorial Team

When *SingTeach* was first launched in 2005, there was a dearth of publications dedicated to connecting education research and classroom practices for teachers in Singapore. We set out to fill that gap.

*SingTeach* has grown from strength to strength. Today, our print version reaches all primary and secondary schools, junior colleges and other educational organizations in Singapore. It is read by both local teachers and a worldwide audience from countries such as Malaysia, India, the Philippines, Australia, the US and the UK.

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 that end, we sought out and interviewed hundreds of researchers, educators, school leaders, teacher educators and policymakers. There is one thing about them that struck us: their quiet optimism.

It is said that teaching is the greatest act of optimism, because the true extent of its impact will only be known years later. The same can also be said of education research.

Shortcuts to success are hard to come by in education. These individuals have been working away, steadily and often quietly, to make small, incremental improvements to the education system, be it the NIE academic and ASEAN

It is said that teaching is the greatest act of optimism, because the true extent of its impact will only be known years later. The same can also be said of education research.

- *SingTeach* Editorial Team



An Institute of



## In this issue



Learning with Assistive Technology



Going beyond Concept Cartoons



*SingTeach*: 10 Years On

RESEARCH  
within  
REACH

Supported by  Marshall Cavendish Education



*The SingTeach Editorial Team:  
(From left) Nur Haryanti Sazali,  
Sahira Zulkifli, Clement Lim,  
Gina Goh and June Teng.*

*Photo courtesy of Dr Michael  
Tan Lip Thye, OER/NIE.*

Para Games medallist Dr Wong Meng Ee, who is introducing assistive technology into classrooms for special needs students, or the teachers from Pasir Ris Primary School who used concept cartoons to help their pupils understand science concepts, and have since expanded their efforts.

For this special issue, we catch up with them and other past interviewees to find out how their efforts have progressed or evolved since we last spoke. You can read about them in the Research and Classroom stories.

In the People Section, we talk to *SingTeach's* founding editor Professor S. Gopinathan on why he started the publication.

For this issue's Big Idea story, we also invite eight members of the education fraternity to tell us their hopes for their fellow educators and education in Singapore.

We would like to express our gratitude to all our readers for your support. A decade is a long time in this fast-changing world—thank you for staying with us. May we continue to be part of your teaching journey for the next 10!

Cheers,

The *SingTeach* Editorial Team (sgteach@nie.edu.sg)

### **Professor Tan Oon Seng, Director of National Institute of Education, Singapore**

How mature is the teaching fraternity in Singapore? To answer this question, we could perhaps look at how they handle the persistent blitz of the “latest” trends or innovations in teaching and learning.

Teachers who are confident in what they are doing will not be easily swayed by ideology, fads or marketing tactics. They will be more discerning than that. When it comes to thinking about which pedagogical approaches to approach, a mark of increasing professionalism is the extent to which teachers appreciate the value of research- and evidence-based pedagogical innovations.

*SingTeach* is one of the ways NIE informs and engages teachers in thinking about research pedagogical innovation. I am glad to note that today, copies of *SingTeach* reach all schools and junior colleges in Singapore. Readership has been growing steadily over the past decade.

In countries such as the US, it has often been lamented that practitioners and researchers have different orientations towards educational issues and that research is not informing practice. One major reason is the lack of communication amongst stakeholders and the lack of alignment in resources for greater convergence of goals. At NIE, we always say that the genesis of our research is the classroom and the impact of our research is on the learner.

At the recent *Redesigning Pedagogy International Conference 2015* in June, more than 90 schools and 10 Ministry of Education (MOE) departments presented papers, symposia and workshops. I was very heartened by the quality of research demonstrated by our school



**Prof Tan Oon Seng,**  
*Director, National Institute  
of Education*

teachers. The strong research-practice nexus characterizing our education community reflects the growing professionalism and the capacity of our teachers to learn and innovate in this fast-changing world.

**Professor David Hung, Associate Dean (Education Research), Office of Education Research; Professor, Learning Sciences & Technologies Academic Group, NIE**

*SingTeach* was launched at a time when education research was taking flight in Singapore.

The Centre for Research in Pedagogy and Practice was established in 2003 by NIE and funded by the MOE to examine and improve educational practices. The Learning Sciences Lab was set up in 2005 to explore teaching and learning not just in schools but also in informal learning contexts.

In 2014, the Education and Cognitive Development Lab was conceived to look into the impact of children’s cognitive and non-cognitive capabilities, disposition, and out-of-school influences on their learning and development.

Since 2003, we are happy to see that NIE researchers have worked with hundreds of schools for more than 300 research projects. As part of the growth of professional learning communities in schools and the call for teachers to be reflective practitioners, more teachers have also embarked on their own research endeavours. While education research is considered nascent here compared to other countries, we have done excellently as an education system, and NIE is ranked among the top in international rankings for its research.

These developments bode well for our education system. Our education fraternity is made up of many individuals who do not believe in resting on their laurels, or doing things in ways they have always been done. My hopes for my fellow educators and researchers would be to continue to keep oneself in the passion for learning, and doing meaningful and impactful research. Practice cannot be divorced from research in education, and I hope that my fellow educators would keep very close links to schools. How else would we be able to influence and make meaningful impact? We should always remember to put the learner at the heart of whatever we do, be it teaching or research. Let’s recognize that students have multiple talents and have a diversity of interests. Our job is to bring out the best in them.

As for my hope for education in Singapore, as a parent myself, I hope that every child would have ample opportunities to excel. As parents, we sometimes get hung up about grades, because they seem like the most obvious indicators of whether our children are doing well in life. But that is not the case. Our children have talents, which if we only took time to observe and to cultivate in them, would keep them in good stead for the demands of the 21st century. In my own research, I have observed students in informal learning and in co-curricular activities and I have found amazing propensities for contributions to the future, if we only knew how to harness their talents. These opportunities in learning fosters in our children an identity founded upon their interests, passions and purposes in life and these will highly motivate them to be useful citizens in the future.

**Ms Jenny Lee, Subject Head of Information Communication Technologies (Special Programme), Nan Chiau Primary School**

For the past century, most of what we know as educational change has been “doing old things in new ways”. Today, we are beginning to see educators do “new things in new ways”. I strongly believe that our educational beliefs impact our teaching-learning practices and our beliefs come from our own practical experiences and reflections as educators.

To me, I believe that the process of learning and teaching is by far more important than anything else. Teaching and learning should be borderless and seamless, where both teachers and students are passionately engaged in the subject matter in and outside the classroom. We will have lessons that integrate core and non-core subjects, including core curricular activities.

Learners need to participate in meaningful learning and be able to relate what they have learnt to their everyday life. Our role is not just teaching students; we are preparing the workforce of tomorrow. Thus, the desire and the skills to engage in lifelong learning is a goal I have, not only for my students, but also for myself.

**Online Extras!**

Read more on what others have to say about their hopes for the education fraternity in Singapore in our online version!



**Prof David Hung,**  
*Associate Dean (Education Research), Office of Education Research*



**Jenny Lee,**  
*Subject Head, Nan Chiau Primary School*

# Learning with Assistive Technology

*Introducing assistive technology (AT) to students with special needs can go a long way towards enabling them in their studies. But with so many choices to choose from, how do teachers pick out the right AT?*



(Assistive technology) helps to open up a whole sequence of questions the teachers pose to themselves, their team, or even the children they are working with, in a more systematic way.

- Wong Meng Ee,  
Early Childhood &  
Special Needs Education  
Academic Group

Assistant Professor Wong Meng Ee previously shared with *SingTeach* (see our previous article “Working for Students with Special Needs”, *SingTeach*, Issue 41) that as a visually impaired student, he struggled in a mainstream school in Singapore. This was because educational services for special needs students were limited in the past.

However, things got better when he enrolled in a school for the blind in the UK. He was thankful for teachers who understood his needs and helped him gain the confidence he needed to do well.

Meng Ee now focuses his research on special education and hopes to help special education teachers find the right tools to help their students. One area he is looking into is assistive technology (AT).

### What is Assistive Technology?

A simple set of rubber bands can be a form of AT for someone who is visually impaired, if they are creative enough. “Rubber bands act as indicators for my files—one rubber band wrapped around my file will mean this is for a certain class, two rubber bands indicates another class, and so on,” Meng Ee explains as he touches the files on his desk.

AT is any device or item that can be used to improve the lives of people with disabilities.

ATs can be categorized into low, medium or high technology—the rubber bands being an example of a simple, low-technology item. Medium ATs are devices that do not require much training to use, such as a talking calculator.

Modern technology has enabled many high ATs. Meng Ee’s computer, for example, comes with a software that reads out text on the screen.

“I send and read emails and I can do my work on this,” Meng Ee says. “It’s a great enabler for me, because without it, I can’t work or write papers or plan my lessons. You can see clearly how this AT device has given me a level playing field even with my visual impairment. Now, temporarily, I am working more or less on the same level as other people.”

While Meng Ee’s first project delved into students’ relationship with AT, his next one was more concerned with the teachers.

He noted that teachers clearly found AT to be useful, but they were not sure how they could marry the technology to their pedagogy. Also, with hundreds of AT devices available, Meng Ee wanted to know: How are teachers making choices to help match appropriate devices to the students?

### Meeting the Needs of Students

A person with any form of disability tends to have more than one need. Imagine a student with visual impairment. They would want to read but lack access to information; they would have mobility needs as they experience difficulties moving around.

Meng Ee advises that the teacher should decide which need they would focus on, and marry that with the help that the school can provide. The use of AT as an aid should not be ad hoc, but can continually help students as they progress through the school years.

However, teachers are finding it increasingly challenging to make choices among the many AT options available.

“When we asked the teachers to explicate their thought process of making a choice, they will generally attribute it to intuition or going with what works,” Meng Ee notes. Is there a way to help teachers become more systematic and informed when making their choices?

### WATI—Guided Choice Making

To aid the teachers, Meng Ee and his team introduced the Wisconsin Assistive Technology Initiative (WATI) tool kit. It acts as an easy guide for teachers to choose a device for their

students through a detailed questionnaire, and it is generic enough to apply to a range of disabilities. Best of all, they do not need to undergo formal training to learn how to use it.

“As teachers were not exposed to evaluative tools previously, they found this very useful,” Meng Ee shares. “Now they have a guide and they can work at least more systematically in asking the questions: What are these devices for? How can it help the students? When do you use it, and under what conditions?”

“This helps to open up a whole sequence of questions the teachers pose to themselves, their team, or even the children they are working with, in a more systematic way.”

Furthermore, WATI encourages a team approach. Related literature notes that choice making for AT generally should involve a team of people. Meng Ee explains, “It should involve the teachers, parents, therapists and even the users, who will be ones who are most critical about it.”

Making the decision is just one part of the process. Meng Ee continues, “The entire process should include decision making, training the teacher to use the AT device and marry it with pedagogy, recommending the device to the student, trying the device with the student for a month or so, and coming back to report on it. If the recommendation or the feedback is not very positive, they should run through the whole cycle again.”

However, he cautions against the tool kit being used as the final arbiter of the decision-making process. Ultimately, the student has to be comfortable with the AT device.

Meng Ee notes that those involved see the tool kit as “a formalized process by which a series of questions is asked to help teachers come to a more informed decision”.

### Addressing Different Disabilities

Even though Meng Ee has so far been working closely with only the visually impaired, his goal is to create a tool kit that addresses different disabilities. That would be the focus of his new research project.

“I would love to help teachers work with different disability groups,” Meng Ee says. “The tool kit we’re looking into creating in the next phase of our project should help teachers in the same way the WATI has: to guide them to make informed choices.”

Moreover, he hopes this project can help contribute to the new Tech Able, a facility aimed at helping people with disabilities to live and work independently. It will have a Technology Centre which focuses on AT.

“At the end, if our team can also contribute to that, it would be great to be involved on a community level,” Meng Ee says. “We can help make the evaluation of matching AT devices easier for people, and from there, if they are working in the school setting, they can get support from the teachers or administrative to get funds for the devices.”

**Wong Meng Ee** is an Assistant Professor at the Early Childhood & Special Needs Education Academic Group in NIE. His research interests include the transition and post-school outcomes of students with disabilities; teachers and their relationships with families, schools and communities; education of teachers of children with special needs; and assistive technology for the visually impaired.

## Classroom

### Going beyond Concept Cartoons

*Wanting to help young learners who were grappling with abstract concepts in Science, a group of teachers at Pasir Ris Primary School embarked on an action research project in 2009 to test the effectiveness of using concept cartoons.*

Concept cartoons are drawings that present “characters with different viewpoints around a particular situation” (Roesky & Kennepohl, 2008, p. 1355) (Read more about concept cartoons in “Cartoons in the Classroom”, Issue 18).

When we interviewed then Science teacher Ms Farah Aida Rahmat (currently Head of English Department at Pasir Ris Primary School) in 2009, she was testing out the use of cartoons on a Primary 4 class of high-ability students.

The study showed clear benefits of using concept cartoons in the classroom. “There was higher engagement and higher retention, so we were convinced back then that it is an effective tool,” says Senior Teacher and Covering Head of Science Department Mrs Jalene Chang, who was part of the team.

“We decided we wanted to use it in a more pervasive manner and not just limited to the Primary 4 classroom but to introduce it to other levels—from Primary 3 to 6.”

Jalene and other Science teachers eventually shared the approach with the other subject teachers as well so that they could use it in Math and English Language.



(From left) Mrs Jalene Chan, Mdm Dawn Tan and Mrs Indriana Seet with the Science Assessment for Learning (AfL) package they developed. It contains a variety of AfL tools that teachers can readily use in the classroom.

#### Reference

Roesky, H. W., & Kennepohl, D. (2008). Drawing attention with chemistry cartoons. *Journal of Chemical Education*, 85(10), 1355–1360.

#### A Valuable Tool

“Tell me, I will forget. Show me, I will remember. Involve me, I will understand.” Jalene believes in this Chinese proverb when placed in the classroom context. For pupils to benefit, they have to be actively engaged and involved in the learning process.

Besides higher engagement and retention, concept cartoons also helped pupils with poor language skills grasp abstract science concepts better.

The teachers were encouraged by the outcome, and decided to venture into using other kinds of assessment-for-learning (AfL) tools.

#### Expanding the Toolbox for Teachers

Getting teachers to design their own teaching tools on top of their daily teaching workload can be a rather tall order, says Jalene. “So we decided to support them by making resources available to them,” she adds. “We have to level up their competencies and build up their capacities.”

As part of that, Jalene gave a copy of the Assessment for Learning (AfL) book authored by Page Keeley to all Science teachers. The book contains a variety of AfL tools that teachers could pick from and implement in their classrooms.

“We do not want them to know just one tool but to also expose them to other AfL tools,” explains Jalene.

Using the Coyote Fund (a fund conceived by MOE in 2006 and aimed at encouraging educators and the Ministry to experiment with new and innovative ideas), the team developed their very own customized Science AfL package.

“We included a CD and hardcopy notes in the resource package,” explains Jalene. “The package is a continuous work-in-progress where tweaks and refinements are made along the way.”

The end product is a resource package that features a wide variety of AfL tools that is over and above teachers’ instructional materials, says Jalene.

#### Variety of Assessment Tools

Providing feedback to student on their performance via exam grades is not timely enough—at least for Jalene and her team. “We don’t want to wait until exams when it is already too late,” she says. “We want to monitor student learning daily.”

Here are two examples of the tools included in the AfL package besides concept cartoons:

##### Card Sorts

“Pupils are given a variety of cards,” explains Science Level Head Mrs Indriana Seet. “They are required to sort them according to categories.”

Living things and non-living things—these are some of the categories that pupils should identify. To do so, they first need to understand the characteristics of these categories.

After sorting them, they will also have to justify their answers. This is a quick way for teachers to gauge their level of understanding.

##### Four Corners

Animals, fungi, plants, and micro-organisms—each corner of the classroom is assigned one of these four categories.

In this activity, the teacher flashes a list of items that fall under those categories on the screen. Pupils then pick an item each and write it down on a card. They will then individually proceed to the categorized corner which befits the items they have chosen.

For example, a pupil who picks a toadstool will move to the fungi corner and tiger, the animals corner.

Pupils will discuss with their friends within the same group on why they picked that corner and if required, they will make the necessary changes. “As a group, they will show their cards and as a class, they will discuss if they are in the correct group,” says Indriana.

The teachers also find this activity an instant remedy for restless pupils. “Sometimes, the lesson can get quite tiring so this helps pupils to be more actively involved in the lesson,” shares Mdm Dawn Tan, also a Science Level Head.

## Addressing Misconceptions Immediately

The team feels that sometimes, learners may give the right answers to questions in class, but that does not necessarily mean they have truly understood the science concepts. The activities in the AfL package allow them to quickly assess their students before the end of the lesson.

“It is important to assess whether the children have understood the learning outcomes for the day,” Indriana shares. “These short activities don’t take a lot of time and they allow us to gauge their understanding level.”

Dawn also adds that she uses simple “True or False” questions to assess her students. It often creates teachable moments as well.

“Pupils will have the chance to actually articulate their thoughts in class,” she says. “You can then use that moment to correct any misconceptions for the class as a whole.”

While it has been 6 years since the first AfL tool was tested, the team is constantly looking at expanding the package further. In fact, one of their aims is to ensure that all their Science teachers are professionally equipped and competent to create their own AfL activities.

As Jalene puts it, “We want to empower the teachers and let them know they can do it!”

**Mrs Jalene Chang** is a Senior Teacher and Covering Head of Department (Science). She has been teaching for 25 years. **Mdm Dawn Tan** and **Mrs Indriana Seet** are both Level Heads (Science) and have been teaching for 12 and 10 years respectively. They are currently teaching at Pasir Ris Primary School.

## People

### SingTeach: 10 Years On

*For the 10th anniversary of SingTeach, we sat down with founding editor and veteran teacher educator Prof S. Gopinathan who started it all a decade ago. He shares why he saw the need to spread the word about local education research.*

When the Centre for Research in Pedagogy and Practice (CRPP) was set up in NIE in 2003, it heralded an era when researchers started to study Singapore schools in a coherent and systematic manner.

Professor S. Gopinathan was then CRPP’s Vice-Dean. He had always been a strong advocate of education research done locally. He also believes that research has to reach those who urgently need answers to questions in education. These are the school leaders, teacher educators, policymakers and especially the teachers.

But Prof Gopinathan could not find a research publication meant for them. His solution: Start one at NIE!

Together with his CRPP colleagues, he kick-started *SingTeach*, the first online publication in Singapore intended to inform teachers about the latest in education research and practice. *SingTeach* was thus tied very closely to CRPP’s mission to advance knowledge that improves teaching and learning in Singapore and worldwide.

Prof Gopinathan shares with us the genesis of *SingTeach* and his views on its role in informing teachers about research.

#### Q: How did the idea of *SingTeach* come about?

I had a publishing background and was aware that very often, research was seldom read by people for whom it was intended. It’s largely because academics were writing for academics and hoping that teachers and principals might read it. And I was conscious early on that this wouldn’t work.

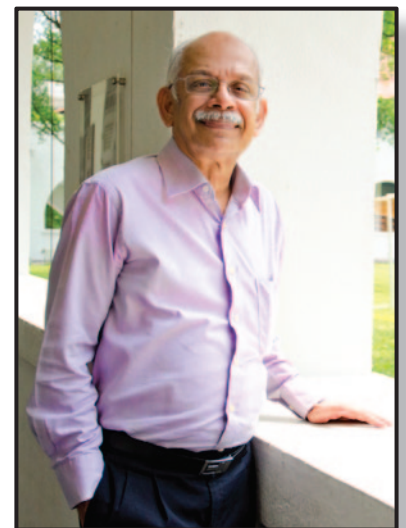
At one end, you have the scholarly books published by major academic publishers. At the other end, you have newsy newsletters full of pictures and events.

So, in between, there was a gap. The challenge was: What would entice teachers to read research? The key, we thought, was that research had to be presented in a way simpler than academic writing. But it’s not dumbing it down! It’s got to be something that speaks to teachers’ immediate concerns.

If it was responsive to their concerns, and written in a language that they could easily understand, and if the implications of research for practice were drawn out, I think there would be a greater chance that they would read, and that they would continue to read.

#### Q: How were the early years like?

I think we in CRPP had a sense of excitement because we were starting on something new; we were breaking new ground. For me, it was a transformation from research done by



Going forward, we want more educators to base their decisions on evidence, or at least be informed.

- Prof Gopi on his hopes for education and teacher education in Singapore

individuals that occasionally went into journals, into something much more systemic and rigorous.

It was really a new phase, both in education research in Singapore, and in teacher development and preparation. We now have an evidence base to say to schools or NIE colleagues, or internationally, that this is the way to improve Math; this is the way to teach critical and creative thinking.

We now have an evidence base for saying it rather than just relying on the preference or prejudice of one person or expert. It was a start to evidence-based teacher preparation, policy making and evidence to improve teachers' practices. That, I hope, still remains the ideal.

**Q: What are your hopes for education and teacher education in Singapore? And what role would *SingTeach* play?**

Going forward, we want more educators to base their decisions on evidence, or at least be informed. If we want to improve any kind of teaching, we really require exposure to evidence. Now, many get their evidence from textbooks or journal articles. But the articles may not be specifically about research in the Singapore context. *SingTeach* is therefore signalling to them that it's not that the best Math research comes out only from China, the US or the UK; we're also doing Math research here!

Particularly for subjects like Social Studies or the languages, the local context is important. So it's a way of saying, "Hey we're doing research in Singapore, and I must be aware of this research, and I must start thinking about how I could possibly use this research."

For those training to be teachers in NIE, it's also an early exposure to research in the local context, to supplement what they may be reading of research from elsewhere.

The next step is using this in professional development. There are experienced teachers who'd say, we continue to face certain problems, and what better answer to those than local research?

Across the board, from policymakers at MOE, teacher education faculty at NIE, initial teacher trainees to postgraduate students and in-service teachers, it potentially infuses this notion of the importance of data and research in education.

**Q: Do you have hopes what *SingTeach* would be like?**

For me, it's still that holy grail. We do a lot of research—that's a valuable resource. How can we increase demand for it? How can we increase the utilization of research? It's really, if I have a problem, where do I find the answer? It's reconciling what the teachers want with what the researchers are prepared to do. There's prestige in publishing in journal articles but the question is, who reads them? Do teachers read them? Or is it just a small community of researchers talking to each other?

We have to look at the next phase of Singapore's education development. Every 10 to 20 years, there're new educational challenges. The nature of our student body is different. Technology is changing communication patterns. How do we understand the changes in our students, and the purposes for which they come to school? What about the nature of teaching and the focus on learning? All these things are relatively new and challenging old fields of teaching and learning.

How are we going to find a pathway without research, without data, without analysis by people who understand the context, who have gathered the data and talked to students and teachers? So I see the context changing. I see the demand for answers going up, and therefore I think researchers have a big challenge and opportunity to influence the direction of teacher education and the future of education goals.

**Professor S. Gopinathan** is Adjunct Professor at the Lee Kuan Yew School of Public Policy and Senior Advisor at the HEAD Foundation. He is a well-regarded expert in the evolution of Singapore's education policy and practice. He has written extensively on education development, language and values education policies, higher education and teacher education. He was Dean, School of Education (1994–2000), Dean, Foundation Programmes (2000–2003), and Vice Dean, Centre for Research in Pedagogy and Practice (2003–2007) at NIE. He is also a founder member of the Educational Research Association of Singapore. He has consulted with the World Bank and UNESCO, amongst others.

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## Online Exclusives



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