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Teachers as Researchers

Big Idea

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Why Should Teachers Do Research?

Why, indeed, when teachers are already busy teaching and managing their classrooms? Our Guest Editor Dr Hairon Salleh counts the ways research can help teachers face new challenges and become better practitioners.

Have you heard of the analogy of how the classroom is like a black box? So many inputs, such as teaching strategies, teaching resources, curricula and assessment tasks are earnestly fed into the box, and it is hoped that what comes out will be positive student learning outcomes.

But what is happening in the black box? For outsiders such as parents and the general public, it's often difficult to tell.

The Complex Classroom

More interestingly, it may be challenging for teachers as well. This is because the classroom is, if anything, a dynamic place. With so much going on at any given time, how can teachers be sure that what they're doing is making positive impact on students' learning?

"When it comes to teaching, it cannot be left to a certain magic formula," says Dr Hairon Salleh, an Assistant Professor at NIE.

Every classroom is different. It is this complexity in which they operate in that provides a compelling reason for teachers to look more closely into their own teaching practice. One way for them to do so is to conduct research, right in their own classroom.

"When a teacher knows whether and why the teaching is effective, I think the teacher will be a happier teacher, really. Because then, you can start to make improvements," Hairon notes.

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- Hairon Salleh,
Policy & Leadership Studies
Academic Group



An Institute of



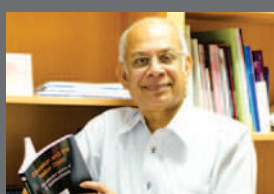
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Broader Student Outcomes, Broader Pedagogies

This need to find out whether teaching practice is effective has become more urgent, because student outcomes are now more wide-ranging.

“When you think of a broadened set of learning outcomes, you need to broaden your pedagogies,” says Hairon.

Increasingly, teachers find themselves faced with new and novel demands, with no right or existing models to guide them.



Instead of reusing the same old teaching strategies that have worked in the past, they may have to come up with innovative ways of teaching. Not only that, teachers are also encouraged to come up with their own curriculum initiatives.

“More and more so, school leaders and teachers want to know, really, how effective these approaches are,” says Hairon. “You’re doing something new here, you’re doing something creative here, you’re doing something innovative—does it really bring about any benefit to our students?”

“That’s one reason why teacher research has gained popularity.”

Teacher Learning and Development

Hairon dubs teachers the “superheroes in the classrooms” because of the challenging and ever-changing nature of the work they do every day. But to stay adaptable, even these superheroes have to learn, unlearn and relearn.

“The need for professional development is important,” he says. “The advantage of teacher research is that it brings teacher learning and teaching really close together.”

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- Hairon on the benefit of doing research

When teachers attend workshops and seminars and hear about new teaching ideas, they would be thinking to themselves: “How do I translate this in my classroom?” More often than not, something gets lost in the translation.

The difference with teacher research, says Hairon, is that it is embedded in teaching practice, and the application is immediate. The teachers continually learn as they teach.

“While they are thinking through the pedagogies that support their teaching, they’re also improving the classroom in a very simultaneous and seamless way. They’re not regarded as separate—that’s the advantage,” he explains.

Another way research can help teachers in their work is how it clarifies—and even challenges—their own beliefs and assumptions about teaching and learning. This happens very early on in the research process, when they are formulating their research questions.

“By doing it, you’re surfacing your assumptions up front and that in itself is sharpening your epistemology,” says Hairon. “It’s not just about your research skills. It also sharpens how you support your beliefs and assumptions on effective teaching.”

Research with Rigour

To Hairon, teachers do research for a different reason in contrast to academics.

“The objective in academic research is to produce new knowledge but for most teachers doing research, the purpose is to improve practice while being informed by theory at the same time. When they do literature review, they don’t have to be exhaustive. The purpose is to look for literature that pertains specifically to the classroom teaching strategy that they wish to try or explore,” Hairon explains.

Teachers don’t have to feel intimidated by the prospect of venturing into research. There are different levels of complexity, and Hairon’s advice is to start small.

“Starting small is important. You do something manageable and within your limits, whether in terms of your sample size or the research method and design that you choose. If you’re comfortable with qualitative, you do qualitative. If you’re comfortable with quantitative, do quantitative.”

However, teacher research need not be less rigorous or objective than that of the academic variety. Hairon advises teachers to follow the steps of doing research (e.g., setting the research problem, exploring the literature, establishing the research question) as closely as possible.

“For example, if interviewing is chosen as the data-collection method, you should specify the details on the ‘who’, ‘when’ and ‘how’, and ‘what’ was found. If single group pre- and post-tests were done, specify the test details, scores, mean, standard deviation, and *t*-test results, if any,” he says.

As long as every step is done systematically, your research would have met the criterion of rigour.

Building Capacity for Teacher Research

The idea of teachers doing research will only be sustainable if teachers themselves want to embark on it. Here, the school leadership plays a very important role in enabling them to do so. Hairon, who studies educational leadership in Singapore, advises school leaders to build capacity through appropriate professional development.

Instead of action research workshops that last only a couple of days, teachers may benefit more from having an external consultant or teachers with experience in teacher research to guide them along every step of the research process. In this way, they can get “just-in-time” help as and when they need it, be it in reviewing the literature or choosing a suitable research design for their research project.

Research is something that takes time to learn and do, so teachers shouldn’t feel like they have to rush into it at full speed, says Hairon. “Research is learning by doing. It sounds logical. For example, if you want to learn how to drive, I can’t just give you a 2-day workshop, because your skill needs time to develop.”

The same certainly applies to research. But for teachers who’re curious to uncover what is in their black box, research would surely be a worthwhile endeavour.

Hairon Salleh is the Guest Editor of this issue. He is an Assistant Professor with the Policy & Leadership Studies Academic Group in NIE. His research interests and publications cover teacher professional development, specifically teachers learning in communities, action research, educational leadership, education change and reform, critical ethnography and critical theory.

Research

Opening Doors with Research

When teachers collaborate with academic researchers, both parties get to learn from one another. This helps to broaden their professional horizons.

Sometimes, when a researcher invites teachers to be part of a research project, they may wonder how this would help them in their teaching work.

But a close collaboration between teachers and researchers can benefit both parties and enhance their knowledge in each other’s fields. It might even present opportunities for the teacher to explore and improve their teaching and professional development.

This is just what happened when Ms Tay Su Lynn, the Subject Head of Physics at Catholic Junior College, was connected with a researcher from NIE.

The Perfect Match

Dr Jennifer Yeo from NIE and Su Lynn were first introduced in 2009, when Su Lynn helped Jennifer facilitate a group of students for a research project. They worked closely and had several discussions about the difficulties those students were having.

“I remember one of the questions that Su Lynn brought up was whether there was a structure to teach the students to construct explanations, or to answer qualitative questions,” says Jennifer.

When she looked at findings from another project of hers to find out how students develop an understanding of abstract concepts, Jennifer saw that constructing explanations was something that students struggle with in the A-Levels Physics exam.

It’s good to understand what struggles the students have during the lesson itself, and how to assist them.

- Tay Su Lynn,
Catholic Junior College



Jennifer Yeo (left) and Su Lynn feel that a teacher-researcher collaboration has brought about benefits for both of them

When Su Lynn went to the US for a modelling instruction workshop at the Arizona State University (see box story “Modelling Approach in Teaching” below) and came back to share with Jennifer what she had learned, things slowly fell into place. “All of that gave me an idea,” recalls Jennifer.

She noted that the modelling pedagogy Su Lynn is interested in has a strong explanatory component. “I see how my interest in students’ explanation can fit well with her pedagogy,” she explains.

They decided to work together and embarked on a research project that uses the modelling approach to help students construct better explanations.

Mutually Beneficial Collaboration

Su Lynn and Jennifer both think that the collaboration brought about benefits for both of them.

Su Lynn notes that Jennifer acts as a partner and observer in her classroom. Jennifer would listen in to

students’ conversations to find out whether they have any problems following the lesson while Su Lynn is busy teaching the class.

“It’s good to understand what struggles the students have during the lesson itself, and how to assist them,” says Su Lynn. “When I conduct a lesson, Jennifer will observe and give me feedback, which I try to address straight away.”

Besides feedback, Jennifer also lends a hand in lesson planning by suggesting teaching ideas and strategies to Su Lynn.

Jennifer shares that her perspective of how things work in the classroom may differ from Su Lynn’s. “As an academic, a lot of our approaches are based in research literature,” she observes. “We are not like teachers who can try something immediately. So it’s good working with Su Lynn because she is able to tell me if something is just not feasible in the classroom.”

But Su Lynn appreciates the research literature and theoretical perspectives that Jennifer brings to her attention, as these broaden her horizons as a teacher. “Jennifer knows the perspectives outside my classroom which I would otherwise not have known,” she remarks.

“It’s really helpful because it takes time to read all this, and while I do some, I can’t be as well-informed as she is. With her knowledge, I can try to align what I’m doing with research evidence to have a clear rationale of why I’m doing certain things in the classroom.”

In working with Su Lynn, Jennifer not only gets to carry out her research study in a classroom and collect relevant data, but also gains a better understanding of challenges that teachers may face.

In this way, she gains contextual knowledge that will help in her future research collaborations with schools.

Modelling Approach in Teaching

Modelling is an inquiry approach where students observe a phenomenon, and then explain how it happens using models. In this case, the models can be diagrams, graphs or verbal explanations.

“There are many modes which they can use to try to explain the phenomenon,” Su Lynn says. “So it’s a constructivist approach which gets them to share their ideas.”

“Students work in small groups to come out with explanations. Each group is given a white board, so they can draw, write and do anything in order to express their ideas,” Jennifer elaborates. “Afterwards, each group will present their ideas, and the teachers will facilitate a discussion around those ideas, evaluate, critique, and refine their models from there.”

Su Lynn adds that her classes take a social approach to learning. “It’s not a very traditional way where we go into a class and just tell them things,” she says. “We try to get them to open up, make their thinking visible, and share how they come to construct knowledge.”

Opportunities for Professional Development

Besides improving her teaching pedagogy, this research collaboration has also opened up more professional development opportunities for Su Lynn. The duo have been working together to conduct seminars for other teachers.

“We ran a workshop for Lead and Senior Teachers at the Academy of Singapore Teachers,” Jennifer says, adding that they will be doing another sharing session with A-Level Physics teachers soon.

On top of that, Su Lynn is also embarking on a Masters programme. She is incorporating her research interest into her studies by looking at the teacher’s pedagogical moves in the modelling-based classroom for her dissertation. Jennifer works with her here as well, as her supervisor.

“What I hope is to be able to make it more explicit the things that could help students in their learning,” explains Su Lynn. “I hope I can assist other teachers who are also trying to explore these areas and trying to engage students more as well.”

In Su Lynn’s case, working with an academic researcher has opened more doors to opportunities for professional and personal development. And having a passion for that area of research keeps her going. “I see the value in this research, and that’s why I’m doing it.”

Jennifer Yeo is an Assistant Professor with the Natural Sciences and Science Education Academic Group at NIE. Her research interest is in understanding how people learn science, and her earlier studies looked at students’ sense-making in problem-based learning and knowledge building environments. **Tay Su Lynn** is the Subject Head of Physics in Catholic Junior College. She has been teaching for more than 8 years.

Classroom

Research as Professional Growth

Just sharing good practices among themselves is not enough for teachers at Yu Neng Primary School. There, every teacher is encouraged to become involved in action research, for the benefit of their pupils.

Teachers as Leaders

All teachers are leaders in the classroom: This is a belief that Interim School Staff Developer Mdm Zuraida Akbar shares with many teachers at Yu Neng Primary School.

What they do in the classroom matters, and their central question is always, “How would my pupils benefit from what I’m doing right now?” Because of this belief, the teachers get together and share their good practices.

But Zuraida sees a need to go beyond such sharing. “We always go by tests results, our gut feel, and our conversations,” she says.

“Now we do research. With action research, we go a step further. When we say that this is the way to go, we are now backed by data—it is data-driven.” This allows the teachers to better understand their pupils’ needs.

Empowering Teachers

The school adopts action research as the collaborative tool in their Professional Learning Community (PLC). Within the PLC, teachers decide what issues are pressing and should be looked into. From there, they then propose their research ideas.

The reason for giving teachers such autonomy to decide is simple: They are being groomed as teacher-leaders.

“That it is not dictated is something that makes us more independent as teacher-thinkers. It really makes us think,” shares teacher Mdm Eymani Helmi.



(From left) Pauline Ng, Eymani Helmi, Zuraida Akbar and Nicholas Tan believe that research is integral to a teacher’s professional growth

Yu Neng Primary School has a variety of ongoing action research projects. Read more about them online.

I always believe that without knowledge comes uncertainty.

- Nicholas Tan,
Yu Neng Primary School

Nicholas Tan is the Vice-Principal of Yu Neng Primary School. **Zuraida Akbar** is Interim School Staff Developer and Primary 2 Level Advisor, and has been teaching for 8 years. **Pauline Ng** is the Primary 4 Level Facilitator and has been teaching for 14 years. **Eymani Helmi** is a Primary 2 form teacher and has been teaching for 6 years.

When it comes to professional development, going for courses may be helpful but research have the potential to empower teachers to become more self-directed in seeking improvement in their teaching practice.

“Engaging in research brings us to a different level—we are our own boss in our teaching and learning,” explains Eymani.

For teachers, being able to take charge of their professional growth and learning not only helps their own development, but their pupils’ too. “We believe that when our teachers grow professionally, our pupils will definitely benefit from it,” says Zuraida.

Support from School Leaders

Getting teachers involved in action research is something that aligns with one of Yu Neng Primary’s strategic thrusts, which is “Growing Staff Innovative Leadership”, says Primary 4 Level Facilitator Mrs Pauline Ng.

And it is through the strong support provided by their school leaders that made action research possible for teachers.

But engaging in research isn’t always a comfortable idea for some teachers. “I always believe that without knowledge comes uncertainty,” says Yu Neng’s Vice-Principal, Mr Nicholas Tan.

To help them ease into the idea of research, he brought in a research expert from NIE, Dr Hairon Salleh, to conduct introductory courses in action research for teachers. The teachers’ misconceptions of research were addressed during the course and it also helped boost their confidence when they embark on their projects.

A challenge arises, however, when it comes to data analysis because not all teachers are equipped with statistical knowledge and skills. To address this, some teachers in Yu Neng conducted in-house workshops for their colleagues.

These teachers are natural statisticians who often lend their analysing expertise to colleagues as and when they need it, says Mr Tan. “They are very comfortable in handling data so they are there to support them and analyse data, and then give it back to the research group.”

Such transference of skills is aplenty among the different research groups, which helps foster teacher bonding. Teachers are also encouraged to share their research findings.

“We have a sharing day within the school,” says Pauline. “We also encourage teachers to share beyond the school, in cluster events and international conferences.”

“I feel it’s very important that we must celebrate successes,” says Mr Tan. “We may not see overnight that the teachers become very competent in research, but I always feel that we must be there to encourage them and to celebrate together what they have found, and let them report their findings.”

And with a genuine passion to help pupils and the strong school support, these teachers are motivated to further explore innovative teaching strategies using research.

People

The Impact of Education Research: Then and Now

In 1997, Prof S. Gopinathan made an observation that education research wasn’t making enough impact on policy or practice. Are things any different now? We caught up with the founding editor of SingTeach to find out.

As a veteran teacher educator and researcher, Professor S. Gopinathan has always believed in power of research. But even more so, he believed that research has to be documented, shared and disseminated for its impact to be felt.

To this end, he helped establish the Education Research Association of Singapore (ERAS), and spearheaded its many annual conferences. When the Centre for Research of

Pedagogy and Practice (CRPP) was established, he also helped launch the Redesigning Pedagogy Conference.

This also explains why he notched up more than 140 published works over a long and illustrious career in education, and edited publications such as *SingTeach* and the *Asia Pacific Journal of Education*.

A notable work is *Education and the Nation State: The Selected Works of S. Gopinathan*, which was published just last year. The book is a compilation of his best works, including book chapters and research articles.

2013 also saw CRPP celebrating its 10th year anniversary. Prof Gopi had helmed the Centre and was instrumental in establishing and expanding CRPP to what it is today: a leading force in education research in Asia.

We caught up with Prof Gopi recently and asked for his views on the current state of education research in Singapore, and the role of teacher research in improving the teaching force.

Q: In a 1997 conference keynote address, you observed that research has not impacted upon policy and practice as much as researchers would like. Has that changed now?

I think we're looking down 16 years, and the answer to your question is, yes. A point I made was that in the past, the worlds of the policymaker, the practitioner and the researcher were three separate worlds. The policymakers were dealing with substantial issues on education policies and reform, big-picture issues. Sometimes they had research to draw upon, sometimes they didn't, but nevertheless they had to make decisions.

The world of the practitioner was largely the school. They had very little input into policy. They were basically "policy consumers", if you would like. But it wasn't always the case that they understood well why a policy was formulated in a particular way but they recognized their role was to implement it.

The researchers were in a slightly different position. They could draw upon international and regional research and they were less pressurized by time. But for many, while they knew what the important research questions of the day were, there wasn't a substantial amount of money for high-quality research.

As a result of the commitment in 2003 by MOE to fund the establishment of CRPP, substantial funds became available to researchers. Secondly, the Ministry had acknowledged clearly that policymaking in the future had to be either evidence-based or evidence-influenced. NIE researchers were tasked with providing that evidence.

We're in the situation now where the impact on policy and practice is much greater in 2013 than it was in 1997. Also, we've been able to develop a larger pool of well-qualified researchers, as our system matured. We now have a critical mass.

Q: Tell us about your experience in CRPP.

Oh, I think it was a very exciting time! It was a major commitment by the MOE to say that we'll need to plan reform, not on the basis of ideology or by being reactive to circumstances, but to plan reform for the long term. The only way in which that reform was going to be credible and acceptable, was that if it was grounded on good, solid evidence. It was a huge commitment on the part of the Ministry, and an act of confidence in the ability of NIE. For me it ushered in a new era of research and policy coming together.

Also, we committed ourselves to a lot of sharing with MOE and bodies like the Academy of Principals and Academy of Singapore Teachers. In my view, that needs to continue and that needs to be even more substantively encouraged. We are sitting on a body of extremely



Prof Gopi believes that teachers must be open to new knowledge in a changing education landscape

There is a need for teachers to think of themselves as researchers, but not necessarily in the mould of university-based or scholarly researchers.

*- Prof S. Gopinathan,
Policy & Leadership Studies
and Curriculum, Teaching &
Learning Academic Groups*

valuable, nuanced research on what is happening in the classrooms that very few systems can claim to have.

And the only way that this research can improve practice is if more teachers, principals, heads of departments know about it, the more it is going to stimulate thinking and discussion. *SingTeach* and the Redesigning Pedagogy conferences, for example, are all efforts that we need to continue so that a majority of teachers will become familiar with research.

Q: What do you think of teacher research, or teachers doing education research?

The field of teacher research in Singapore had emerged in the past 15 to 20 years. And the reason is because policymakers and others are beginning to recognize that teachers cannot always be only policy consumers. The needed reforms are of such a magnitude that you need to have teachers thinking of themselves as knowledge workers. They will have to begin to understand some of the complexities of change, and what will be required to change. Teachers will need to take ownership of the change process.

So how do we get a more professionalized teaching force? How do we get them to think of themselves as knowledge workers? They must have an affinity and openness to new knowledge and understandings, and research.

There is now a conviction that teachers have a lot of tacit knowledge. They may not express it in the way a researcher asks his questions, but it is very real to them. So you now see action research and the emergence of communities of learning and lesson study: These are all examples of teachers coming together, identifying their pedagogical issues, and sharing their expertise.

There is a need for teachers to think of themselves as researchers, but not necessarily in the mould of university-based or scholarly researchers. They need research of a different kind, for different purposes. For them, there is a certain immediacy. For example, teachers would come together and say: "We've got an issue with our Math achievement in our primary classes. There is a body of research that NIE has done, but does this address the particular problems that we think we have? Or can we do something ourselves?"

So that is where I see teacher research coming into play. But that needs capacity building. I'm glad to see the Ministry is investing in more and more teachers doing their Masters. It's an endorsement of teacher research, so that teachers will have some formal understanding of research, research methodology, asking the right questions and so on.

Prof S. Gopinathan is Professorial Fellow at the Policy & Leadership Studies and Curriculum, Teaching & Learning Academic Groups at NIE. He served as the Dean of the School of Education (1994–2000) and was the former Dean of Foundations Programme (2000–2003) and Head, CRPP (2008–2009). He is also a founder member of the Educational Research Association of Singapore.

Announcement

SingTeach welcomes our panel of Editorial Advisers on board for 2014:

Assoc Professor Lubna Alsagoff	Assoc Professor Jonathan Goh
Assoc Professor Mark Baildon	Dr Christina Lim-Ratnam
Dr Charles Chew	Dr Teh Laik Woon
Professor Michael Chia	

Find out more about them at <http://singteach.nie.edu.sg/about-us>

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Growing as a Group



From Conversations to Research



Researching for Better Teaching