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ASSESSMENT—LOVE IT or hate it, it is here to stay!

Many of us have a love–hate relationship with assessment. On the one hand, we see it as a great social leveller and value it as a source of social mobility. On the other hand, it can be a source of stress, both for parents and children. I still remember my first day in Primary 1 when the “test” was to see how fast we could draw stars. Inane though it was, I remember a distinct feeling of anxiety, especially when most of the other children seemed to have finished before me! Age does not always bring relief. Maturity brings with it a realization of the importance of assessment, which serves as another source of anxiety.

The last few years have seen important changes in the assessment landscape in Singapore. From the reduction of examinations in the early primary years to the through-train model in selected secondary schools, there has been growing attention on the role of assessment. More attention has also been paid to the utility of different types of assessment and how assessment can be used as an aid to or as a source of learning.

In this issue, we gathered views and findings from researchers who are looking at various aspects of assessment. Dr Shih Chih-Min and Dr Josh Wang are interested in teachers’ assessment practices in the classroom. In particular, they are interested in teachers’ attitudes towards alternative assessment and how they incorporate it in their daily practice. Dr Kim Koh and her colleagues worked on authentic assessment. They highlighted the way in which such assessment can provide a more realistic evaluation of children’s abilities in real-life contexts.

Dr Chew Lee Chin and Prof Anthony Seow describe an exciting computer application that gives teachers more flexibility in assessing oral responses. They hope that this application will make it easier for teachers to develop engaging formative assessments.

Dr Serena Luo is interested in linkages between assessment and children’s abilities to regulate their own learning. This is an important area that has attracted much attention locally and internationally.

A longitudinal study on teacher preparation, conducted by Assoc Prof Lee Ong Kim and Prof Goh Kim Chuan, together with a study involving detailed analyses of the PISA data conducted by Dr Lee Ji hyun, round out this special issue on assessment.

I hope this issue provides some new perspectives on this important topic and shifts your view of assessment more to the “love” side.
Alternative Assessment in the Classroom

PROJECT TEAM

Principal Investigator Shih Chih-Min, National Institute of Education, Singapore
Collaborator Josh Wang, National Institute of Education, Singapore

YOU NEVER know until you ask. And Dr Shih Chih-Min has been asking the question: What are teachers actually doing in the classroom when it comes to assessment?

Authentic Alternatives From interviewing 40 secondary school teachers in Singapore, Chih-Min from NIE’s English Language and Literature Academic Group has found alternative assessment to be one of the answers.

He explains: “People are not very happy with the traditional assessments like standardized tests because they don’t think those are authentic.”

“How often do you answer a multiple-choice question in real life? How often do you answer short-answer questions? Standardized tests don’t really tell us what students can do in real-life situations.”

In light of this, schools are increasingly turning to alternative assessment methods to facilitate and improve student learning. Such assessments are useful in helping students to learn and understand concepts.

Assessment for Learning “Teachers were positive about the use of alternative assessment,” notes team member Josh Wang, “but the most frequently mentioned limitation was time.”

Still, they seek to incorporate alternative assessment practices in their teaching. Why? Chih-Min sees this as a response to the changing educational landscape of the 21st century. It calls for a change in perspective.

“Initially when we talk about assessments, we’re doing assessments simply to look at student achievement,” says Josh. These include high-stakes exams like the PSLE or O-levels, and university admission exams.

“We seldom look at how we can use assessments as a vehicle to improve and to facilitate student learning. That’s the spirit of assessment for learning.”

A Useful Alternative One example is peer assessment. Students receive authentic feedback from their peers, who may have different viewpoints. Students can then revise and improve on their work based on the feedback.

For Josh, this is more than just a feedback loop. “It’s really good for them, for if students have to mark their friend’s work or give feedback, they first have to know the criteria or the rubrics.”

“This raises their awareness of the criteria,” adds Chih-Min. “Sometimes students don’t know what criteria will be used to assess them. And if they don’t know the criteria and expectations, then how can they achieve the learning objectives?”

In having to assess each other, students are forced to take responsibility for their learning. Teachers also stand to gain as they facilitate this process.

“While using alternative assessments, teachers can see the process and progress of students,” explains Josh. “It helps the teachers to know the learning limitations and difficulties that students encounter.”

But Chih-Min reminds us that more research must be done. In time to come, they hope their research will provide some answers to help teachers better apply alternative assessment in their classrooms.

“Right now, we don’t really know what might be the factors and variables that affect their assessment practices,” he says, “but we want to see how we can help teachers.”

Chih-Min and Josh want to know what assessment practices teachers are using in the classroom.
"IF YOU look at the conventional assessment tasks in Chinese Language classrooms, they are largely filling in the blanks and completing sentences," says Dr Kim Koh, from NIE’s Curriculum, Teaching and Learning Academic Group. But this routine isn’t suited for the 21st century learner.

Instead of making them do worksheet after worksheet, how about asking pupils to advertise a product? That’s what a Chinese Language teacher did with her class. Her Primary 5 pupils worked in groups to design posters promoting their own brand of toothpaste.

**Authentic Assessment** The focus for traditional assessment is on factual and procedural knowledge, says Kim. The tasks are decontextualized, so they don’t enhance students’ motivation to learn Chinese as a second language.

Authentic assessments, however, motivate pupils as they can see how the tasks are relevant to real life. For the poster task, pupils designed and drew the posters, wrote descriptions of them, and then presented them to the whole class.

The teacher who developed this task was a participant in Kim’s research project. For 2 years, teachers from eight schools attended Kim’s professional development workshops on assessment literacy. She also met them every month to review and discuss their assessment tasks and rubrics.

This intervention project arose from Kim’s findings on the quality of teacher assessment tasks and student work in Singapore classrooms, as part of a major study by the Centre for Research in Pedagogy and Practice.

Between 2004 and 2005, Kim and her research team collected and evaluated samples of these tasks and students’ work from 59 schools at the Primary 5 and Secondary 3 levels.

**A Need for Authenticity** Traditional assessment tasks are generally of low authentic intellectual quality. Authentic tasks call for higher-order thinking and problem-solving skills. Pupils have to analyse, interpret, evaluate and synthesize different sources of information to solve a problem.

But most of the samples they collected were worksheets and textbook exercises aimed at preparing students for high-stakes exams.

"The focus of the teachers in their day-to-day assessment and instruction is more of drill and practice of factual and procedural knowledge," says Kim. "There’s a lack of focus on the assessment and teaching of 21st century competencies."

Citing the posters as an example of a well-designed authentic task, she elaborates: “This kind of task allows teachers to incorporate most of the 21st century competencies: higher-order and critical thinking, creativity, communication, and collaboration.”

**Improving Assessment Literacy** Through authentic tasks, teachers can get a better sense of pupils’ understanding. In turn, such authentic, open-ended tasks motivate students as they “allow them to apply their knowledge and skills in a real-world context”.

But to carry out such assessments, teachers need to improve on their assessment literacy to suit 21st
century learning. “It is not like normal marking, where you only need to tick and tick!” says Kim.

“We need to provide teachers with sustained, ongoing professional development on assessment task design and rubric development,” she says. Her research has shown that this sustained approach is far more effective than one-off workshops.

So even though her project ended in 2008, Kim continues to help teachers develop their assessment literacy. She is teaching a Master’s course on authentic assessment for teachers, many of whom were trained back in the days when assessment was still defined by pen-and-paper tests.

She has also published a book to guide teachers in authentic assessment task design, which includes the scoring rubrics and manuals used in her projects. For Kim, the rationale is simple—better assessments can only lead to deeper learning, and that makes it worth all the effort.
TECHNOLOGY-ASSISTED TEACHING is not entirely new to us. Multimedia presentations, interactive whiteboards, video and game software are now being used in many classrooms to help pupils learn better. Can similar computer tools help teachers assess pupils’ understanding of what is taught?

Believing that schools need to adapt to changing times, Dr Chew Lee Chin decided to explore the use of computer-assisted assessment (CAA).

From Paper to PC Lee Chin’s team worked with industry partners to develop a Web-based application for English Language testing. They tried it with pupils from Primary 3 to 6 in 11 schools.

One feature that excited them was computer-assisted oral testing. “The current practice is one-to-one. A teacher poses questions to a pupil. The pupil responds and the teacher grades his oral production on the spot. There is no going back.”

“With technology, all can be captured,” she says. For instance, pupils respond to a reading task by recording their reading of a given passage on computers using microphones. Teachers can then listen to the digital recordings to assess pupils’ oral performances more carefully.

Lee Chin has also applied this technology to Science as she felt that it was “too good to be wasted”. She worked with curriculum specialists from the Ministry of Education and teachers from six secondary schools.

Advantages for Testing An obvious benefit of computer-assisted oral testing is the ability to play back the recordings. This also provides an avenue to develop formative assessment. Teachers can use the recordings to give feedback to pupils and also to guide them in more oral practices.

Another benefit was discovered when the teachers were roped in to co-design the tests. “We asked them to develop the tests and encouraged them to deploy multimedia stimulus in the test questions.”

Capitalizing fully on the features of multimedia testing enabled the teachers to conceive a whole new variety of test questions. The Science teachers, for example, came up with questions to test students’ understanding of electricity. Students were tasked to build an electrical circuit to light up a bulb using interactive Java applet software. They were then asked questions related to the task.

The technology effected a strong push for higher-order questioning and thinking, for both teachers and learners.

Leveraging Expertise Working with new technologies can be daunting. Collaboration among teachers is important for such a project to succeed.

In this case, when designing questions, the team needed to leverage the expertise of both the more experienced senior teachers and the more IT-savvy young teachers. Their combined expertise in test subject content and technology was important when they created a test item bank.

“Test item writing is not one person’s job, it needs group collaboration. The senior teachers contribute more in their understanding of the subject matter and management skills while the younger teachers contribute more of their IT skills and experience.”

Pushing the Limits CAA can play an important role in schools. Lee Chin thinks that we may eventually see a day when questions are “pushed” to pupils’ mobile devices.

“Things are changing fast with mobile devices. The challenge is getting teachers onboard to use technology for testing and to know how to design good questions,” notes Lee Chin.

It comes down to changing teachers’ mindsets and equipping them with the necessary skills to design good tests using technology. We may be pushing the limits now, but this future is not too far away.

Lee Chin sees a promising future for computerized testing.
Assessment and Self-regulated Learning

WHEN WE look at assessment, we often focus on students’ results. But there is more to it than just the scores. It has to do with learning.

According to Dr Serena Luo, “Self-regulated learning is also the outcome we want to achieve.”

Taking Ownership of Learning What is self-regulated learning (SRL) and why is it desirable?

“It is learner initiated and controlled by the students themselves,” explains Serena, who is a Research Scientist with the Centre for Research in Pedagogy and Practice. “They plan for their learning, set their own learning goals, and dynamically monitor their own progress.”

In other words, self-regulated learners take ownership of their own learning. They are highly motivated to learn, even when faced with challenging tasks. They are also aware of their strengths and weaknesses and can adapt their learning strategies through the learning process.

Assessment and SRL are thus closely linked. For Serena, both concern three key questions: Where are the students going in their learning? How are they getting there? And where do they go next?

Assessment as Feedback Serena is involved in a large-scale study to find out the relationship between classroom pedagogy, assessment practices and student learning.

On the importance of assessment for the purpose of learning, she says: “If there are no assessments, students and teachers won’t know where exactly they are in the learning process. It is like driving without the traffic signs—we don’t know where we are.”

Assessments allow teachers an avenue to provide students with feedback on how they can improve. “We should provide clear and specific feedback in terms of where students are in relation to their learning goals and what they should do next.”

If used well, assessment can help to promote SRL behaviour. For example, teachers can enhance students’ commitment and help them regulate their learning when the goals are clear and manageable.

Serena notes that while assessments are given by teachers, students can also use the information from assessments to know their own level of understanding level and progress in learning. “Students themselves play a very important role in assessment practices.”

Assessment for Classroom Learning SRL behaviour also affects the effectiveness of assessment.

“If students take their learning seriously, they will take their teachers’ feedback seriously, and they may even actively seek feedback and look at their own progress. They’ll then transform the feedback into actions of learning.”

Serena suggests that such feedback can be included in classroom interaction, and not limited to tests and exams. Class discussions and tasks elicit evidence about student learning, which can be used to make instructional adjustments.

To achieve this, a positive classroom climate is important. Students shouldn’t have to feel bad about making mistakes. Teachers can encourage them to constantly improve themselves and steer them towards mastering new knowledge and skills.

Serena’s research holds much promise for the formative and transformative potential of assessment for learning in Singapore classrooms. There is still much to be discovered!
longitudinal study to evaluate the impact of NIE’s teacher preparation programme by following student teachers from the initial preparation years through to the beginning years of teaching.

“We wanted to see how our student teachers perceive themselves with regard to three areas: their attitude towards teaching, skills in teaching, and knowledge about teaching,” explains Kim Chuan.

“Our interest, in teacher education, is in things like growth in teaching skills and in their attitude towards teaching,” adds Ong Kim. “These are, to me, very interesting things to measure and to track over time.”

Both quantitative and qualitative approaches were adopted for this longitudinal study. The 2005 cohort of student teachers was surveyed at different points, including the point of entry, when they graduated, and during their first 3 years of teaching.

“It provides a good baseline and understanding of Singapore teachers,” Kim Chuan notes. “No study of this nature has been done in Singapore.”

Tracking Perception Changes

So what have we learned about NIE’s student teachers? Looking at the statistics from the longitudinal study, we can draw conclusions about both their attitudes and motivations.

Kim Chuan notes with some concern that many student teachers begin with high hopes and expectations. However, there is a significant decline in their attitudes towards teaching as they encounter the realities of the classroom.

“We can do two things: one is to bring the classroom situation into the lecture hall and tutorials; the other is to do something about it during their practicum. By giving them much earlier acquaintance with the real school situation, perhaps this may help reduce a little bit of the reality shock.”

Our student teachers are also very much motivated by altruistic and intrinsic motives. Their main focus is their students and how they can make a difference.
“There seems to be a persistence of motivation, particularly with regard to orientation to students,” says Kim Chuan. “In the early years, they don’t think very much about themselves; they are much more concerned about students.”

After the first few years of teaching, students still remain their main priority. But teachers will also start to pay more attention to professional development and improving their teaching skills. Kim Chuan believes this pattern is enduring and not likely to change significantly across cohorts. This has implications for the retention of teachers. He hopes this understanding can inform how student teachers are trained, to smooth their transition to school and ameliorate any possible decline in their motivation to teach.

**Bidding Farewell** After 7 years, most of the research is now done and the project is winding down. The conclusion of the project also marks the close of this chapter in their lives. Both will bid farewell to NIE at the end of 2011.

Ong Kim leaves to join his family in the US after 12 years at NIE. Kim Chuan will now have time to smell the roses, literally, as he retires after almost 40 years in education, with 20 years spent in NIE. The loss in expertise and experience cannot be quantified and they will certainly be missed.
Looking Beyond Test Scores

PROJECT TEAM

Principal Investigator  Lee Jihyun, National Institute of Education, Singapore
Collaborator  Chong Wan Har, National Institute of Education, Singapore

ASSESSMENTS MAY BE useful for students to know how well they have done and for countries to know how they rank. But for Dr Lee Jihyun, a good understanding of assessment data can also shape the future of a nation’s learners and change the course of our students’ destinies.

Beyond Ranking  Not so long ago, Jihyun was involved in developing the survey instrument for the OECD’s Programme for International Student Assessment (PISA), which assesses how far 15-year-old students have acquired the knowledge and skills needed in adult life.

Now an Assistant Professor with NIE’s Psychological Studies Academic Group, she is interested in looking at things from the other side of the lens. She draws on PISA data collected from over 60 countries for her research.

“PISA has a wealth of data collected, but most of the time, people are only interested in the ranking. But there is a lot more,” she notes.

Why use data from an international study, you may wonder. Why not just study our own students?

“We can look at ourselves by looking at others,” explains Jihyun. “Looking at international assessments, like PISA, will tell you what Singapore is lacking. Looking just at ourselves, we don’t know what we are doing right and what we are not doing so well in.”

Jihyun wants to give students more control over their learning.

Empowering Students  As an educational psychologist, Jihyun is interested in the factors that give rise to the results. In other words, what drives student achievement?

She identifies three groups of variables that may affect achievement. The first is variables that students are born with and that are out of their control, such as parents’ occupation, education and socio-economic status. The second is school factors, such as the type of school.

Her main focus though is the third group: variables related to the student. For example, what are students’ attitudes towards learning? How does this affect their learning behaviours?

Jihyun believes the answers to these questions may be found through a secondary analysis of the PISA data. By looking at countries that are successful in achieving strong learning attitudes and behaviours, she hopes to give students more control over their “destiny”.

“Our goal is that each student can control themselves and not be so affected by the factors that they do not have control over,” she says. “My main interest is to give more power to students, to empower them.”

Changing Mindsets  Jihyun’s research is important not only for identifying factors that affect student achievement. It is also about changing how we look at assessments.

“A good test result and knowledge are different,” she stresses. “Focusing on tests too much is not very conducive to learning. If you focus just on getting good test results, your mind is fixed. It prevents you from being creative or thinking critically.”

Jihyun hopes her research can help policymakers and curriculum developers look beyond test scores, to know where and how to target their interventions—whether to focus on changing attitudes or behaviours.

Ultimately, it is about enabling the next generation of learners. “Learning goes beyond testing,” she reminds us. “At the end of all learning, you should be able to apply your learning to all situations.”
CONGRATULATIONS TO our NIE colleagues whose research projects were approved for funding in the 6th Request for Proposals by the Office of Education Research.

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The full list of approved projects is available on the NIE website (www.nie.edu.sg) under Research@NIE.

Legend
- **Programme 1**: Teacher Learning
- **Programme 2**: Technology in Formal and Informal Learning Environments
- **Programme 3**: Leadership and Organizational Change
- **Programme 4**: Pedagogy and Classroom Practice
- **Programme 5**: Student Motivation, Cognition and Learning Outcomes