

Training Tomorrow's Maths Teachers



Dr Wong Khoon Yoong (left) knows our student teachers can do better!

PROJECT TEAM

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IN A TEST of maths pedagogical knowledge, NIE student teachers were presented with the following problem: A pupil uses a calculator and finds that 6×0.2 is smaller than 6, and $6 \div 0.2$ is bigger than 6. He is puzzled by this and asks for a new calculator.

There are two misconceptions underpinning this scenario: that multiplication always gives larger answers; and that division always gives smaller answers.

When asked what the misconceptions were, 68% of Singapore's student teachers were able to identify at least one, compared to the international average of 42%. They did well, says Dr Wong Khoon Yoong, but they can and should do even better.

"We were expecting 90% or more!" says Khoon Yoong, the lead investigator for Singapore in the Teacher Education and Development Study in Mathematics (TEDS-M). This study, conducted under the aegis of the International Association for the Evaluation of Educational Achievement, compares pre-service maths teachers and their training programmes across 17 countries.

FROM GOOD TO GREAT In this study, our student teachers emerged among the top three countries in terms of their maths content knowledge (MCK) and maths pedagogical content knowledge (MPCK).

Also, more than 80% of NIE's student teachers considered teaching as a possible lifetime career; the mid-career student teachers were more positive than those for whom teaching was a first career.

With such strong foundations and motivations, Khoon Yoong has high expectations of our future teachers. "By international standards, we're very good, but we want it to be better!"

CORRECTING MISCONCEPTIONS To this end, the maths teacher educators in NIE have been analysing the student teachers' responses to the test items. One of the things they hope to uncover is possible misunderstandings of maths concepts.

"We need to look carefully at some of these misconceptions and see how our courses can help to address them." By building an even stronger foundation in both MCK and MPCK in our students, we ensure that their students would have a clearer grasp of maths concepts.

A comparison of the MCK and MPCK scores of our student teachers with the performance of Singapore's pupils in TIMSS 2007 shows a strong correlation between the quality of teacher training and student performance in schools. But Khoon Yoong is quick to point out that other factors, such as the quality of educational resources, can affect pupils' performance as well.

INTERNATIONAL BENCHMARKS The TEDS-M study enables NIE to benchmark our programmes and our student teachers' performance against international standards.

The initial findings show that teacher education policies vary widely across the countries. The good news is that Singapore has one of the strongest and most co-ordinated quality assurance systems. NIE's student teachers are also more positive about the effectiveness of their training than their peers elsewhere.

One way NIE can improve on its programmes is to learn from other countries that are also doing good work in maths teacher training. The research team hopes to glean more useful insights once the national reports from participating countries are out.

Our programmes may be effective, but what we want is nothing short of excellence.

Glossary

- TEDS-M = Teacher Education and Development Study in Mathematics
- MCK = Mathematics Content knowledge
- MPCK = Mathematics pedagogical content knowledge
- TIMSS = Trends in International Mathematics and Science Study

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