IMPROVING TEACHERS’ ASSESSMENT LITERACY IN SINGAPORE SCHOOLS
An Analysis of Teachers’ Assessment Tasks and Student Work

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THIS INTERVENTION STUDY aimed to improve teachers’ assessment literacy through ongoing, sustained professional development in authentic assessment task design and rubric development. After 2 years of professional development, the teachers in the intervention group designed assessment tasks with greater authentic intellectual quality than those in the comparison group. Their students also produced more intellectually complex work as a result of improved assessment tasks by their teachers. The findings indicate that effective professional development can enable teachers to incorporate greater authentic intellectual quality into their assessment task design, which will in turn result in high-quality student work.

INTRODUCTION
In Singapore, there have been many policy initiatives, such as Thinking Schools, Learning Nation (TSLN) and Teach Less, Learn More (TLLM), launched by the Ministry of Education (MOE) to reform the nation’s education system. All these initiatives have advocated teaching for higher-order thinking skills rather than rote memorization of factual and procedural knowledge. Hence, Singaporean teachers have been encouraged to move towards more constructivist teaching and learning approaches in order to promote students’ skills in higher-order thinking, real-world

KEY IMPLICATIONS
• Effective professional development in assessment literacy is essential for both teacher development and student learning.
• Planning and implementation of professional development programmes in teacher assessment literacy for in-service teachers needs to be more systematic and localized.
• Actualizing assessment reform at the school or classroom level is a long-term endeavour that requires sustained intervention.
problem solving, communication, and positive habits of mind.

As assessment is viewed as an integral part of instruction in a learning culture (Shepard, 2000), changes in pedagogical approaches should also be reflected in assessment methods. It has been felt that traditional paper-and-pencil assessment should be complemented, if not replaced, by alternative and more authentic assessments such as project work, performance-based assessment, and student self-assessment. In view of the need for changes in teachers' pedagogical practices, the MOE has provided teachers with resources, support and training using the TLLM Ignite! package and the PETAL™ framework. One of the key training areas is teacher assessment literacy.

The term assessment literacy was popularized by Stiggins (1999), who defined it as a way of defining the particular kinds of assessment skills teachers need. Baseline data from a large-scale project on classroom assessment in Singapore, by the Centre for Research in Pedagogy and Practice (CRPP Core Panel 5; see Koh & Luke, in press), has showed that teachers tend to use assessment tasks that mirror high-stakes examinations; the focus has been mostly on assessing students' reproduction of factual and procedural knowledge. The results also indicate that teachers need professional help and support in designing intellectually challenging assessment tasks.

This study therefore aimed to improve teachers' assessment literacy through ongoing, sustained professional development in authentic assessment task design and rubric development over 2 school years.

BACKGROUND

Teacher education programmes and professional development experiences are deemed to be essential for equipping teachers with contemporary knowledge about learning and assessment, especially the knowledge and skills needed to develop assessment tasks that would elicit students' higher-order thinking skills or to assess their growth and progress towards competence (Cizek, 2000).

Research in other countries has shown that many teachers are inadequately trained and ill-prepared to develop, administer and interpret the results of various types of assessments (e.g., Bol, Stephenson, O'Connell, & Nunnery, 1998; Stiggins & Conklin, 1992; Wiggins, 1989). Teachers who were less prepared and less skilled in developing authentic assessments, in general, perceived these to be more difficult to develop than traditional paper-and-pencil tests. Moreover, teachers' assessment practices were often not well aligned with their instructional goals and tended to demand a low level of cognitive processing. Many teachers were found not to be good judges of the quality of their own assessment tasks (Bol & Strage, 1996).

Wiliam and Thompson (2008) point out that any significant improvement in educational outcomes will require building the capacity of the existing teaching workforce, rather than looking for ways to replace it. Effective professional development will enhance teacher quality, which in turn will result in improved student learning and achievement. According to them, teacher professional development is more effective when it:

• is related to the local circumstances in which the teachers operates,
• takes place over a sustained period rather than being in the form of sporadic one-day workshops, and
• involves the teachers in active, collective participation.

As such, this study aimed to provide the participating teachers with ongoing, sustained professional development throughout the school year. Teacher capacities were enhanced through designing high-quality classroom assessment tasks and in using reliable and valid scoring rubrics to look at student work, based on the authentic intellectual quality criteria taught (Koh & Luke, in press).

The authentic intellectual quality criteria for task design were: depth of knowledge, knowledge criticism, knowledge manipulation, sustained writing, clarity and organization, connections to the real world beyond the classroom, supportive task framing, student control, and explicit performance standard or marking criteria. Likewise, six criteria were used for the teachers to look at the quality of student work: depth of knowledge, knowledge criticism, knowledge manipulation, sustained writing, quality of student writing/answers, and connections to the real world beyond the classroom.

In addition, the use of authentic intellectual quality criteria in judging assessment tasks and related student work samples during teacher
moderation sessions served as a heuristic for professional development.

**METHODOLOGY AND DESIGN**

The study was designed as a longitudinal, quasi-experimental intervention study for tracking teachers' assessment literacy over 2 school years (2006 and 2007). Primary 4 and 5 teachers of English, Chinese, Science and Mathematics from 8 neighbourhood schools were involved in the intervention. Teachers from 8 other neighbourhood schools served as a comparison group.

Teachers from the intervention group received ongoing, sustained professional development throughout the school year. They were engaged in a series of professional development workshops, which focused on authentic assessment task design and rubric development in their respective subjects and grade levels. The researchers also met with the teachers in their in-school professional learning communities to discuss issues regarding the implementation of authentic assessment tasks and rubrics.

For the comparison group, teachers were given a one-day professional development workshop in each school year. The workshops provided an overview of authentic assessment and two hands-on sessions on task design and rubric development. The teachers were also taught how to analyse the quality of assessment tasks and student work using the authentic intellectual quality criteria given, over the course of two teacher moderation sessions. However, no monthly follow-up visits or close monitoring of the implementation process was carried out with this group.

The teachers from both the intervention and comparison groups completed pre- and post-surveys on their assessment practices. Their assessment tasks and associated student work samples were also collected before and after the intervention. Teacher moderation sessions were conducted at the end of each school year. The participating teachers were trained to judge the quality of the assessment tasks and associated student work using the authentic intellectual quality criteria provided.

**KEY FINDINGS**

It was found that the mean scores of teachers’ assessment tasks after intervention had increased substantially for all subjects, except Mathematics, on the following authentic intellectual quality criteria: advanced concepts, comparing and contrasting knowledge, critique of knowledge, analysis, synthesis, evaluation of knowledge, application of knowledge, generation or construction of knowledge new to students, sustained writing, and making connections to the real world.

Such improvement was also observed in the quality of student work for all subjects except Mathematics, where the improvement was only slight. This could be attributed to the nature of the subject, which tends to emphasize factual and procedural knowledge. For both teachers’ assessment tasks and student work, the intervention group had higher mean scores than the comparison group for the criteria that assessed high authentic intellectual quality.

**IMPLICATIONS**

The findings from this study suggest that teachers’ assessment literacy can be improved through ongoing, sustained professional development, with the aid of an in-school professional learning community.

**For Policy**

Actualizing assessment reform at the school or classroom level is a long-term endeavour that will not happen as the result of a single or sporadic workshop. Using the “white space” provided under the TLLM initiative, in-service teachers’ assessment literacy can be improved through ongoing, sustained and high-quality professional development. It is important to ensure that the planning, implementation, and perhaps evaluation of teacher professional development programmes is more systematic.

**For Practice**

Professional development can no longer be viewed as an ad hoc event that occurs only on a few days of the school year. Rather, it must be part of the daily professional practice of teachers. Because of this, teachers should also be encouraged to collaborate actively through in-school professional learning communities. This will change school culture in the long term.

Teachers need to be encouraged to take the lead in redesigning assessments at their own schools and to act as change agents of assessment for school
improvement. In the long run, the change in their assessment practices will be beneficial to both teacher development and student learning.

For Teacher Training

Since 2006, the Curriculum, Teaching and Learning academic group at NIE has been offering a module on “Mastering the Art of Authentic Assessments” as part of its MEd in Curriculum and Teaching programme. In the module, participants are exposed to both theory and practice in authentic assessment. The contents and format of delivery of the module are structured to improve in-service teachers’ assessment literacy.

Given that many teachers do not carry out coursework in their pre-service programmes to develop assessment skills, NIE may wish to consider including one or two assessment courses in its pre-service teacher training programme. The professional development materials used in the current study can be modified for use by trainee teachers.

For Research

In addition to designing assessment tasks of high authentic intellectual quality, teachers also need to be competent in using the assessment information to assist student learning through timely and informative feedback (Black & Wiliam, 1998; Hattie & Timperly, 2007)—that is, assessment for learning. Future studies could include a focus on building teachers’ capacity in formative assessment practices.

REFERENCES


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