

Improving Teachers' Assessment Literacy through Professional Development

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Abstract

This paper described and explained the findings of a 2-year longitudinal, quasi-experimental intervention study of improving Singapore teachers' assessment literacy in designing and implementing authentic assessment for use in their day-to-day classroom instruction in Years 4 and 5 English, Chinese, Science, and Mathematics. The participants consisted of teachers from four intervention schools and four comparison schools, which were matched on type of school and topics taught in the subject area. In the intervention group, teachers were involved in ongoing and systemic professional development in designing classroom assessment tasks and associated rubrics that were well aligned with the authentic intellectual quality criteria. Teachers from the comparison group received a single professional development workshop towards the end of each year. Data sources included (a) pre- and post-survey of teachers' assessment practices; (b) collection of teachers' assessment tasks and associated student work samples in the beginning of the first year of the study and over the course of the study; and (c) twice yearly teachers' interviews about their conceptions of authentic assessment. The findings show that teachers' assessment literacy from the intervention group has increased significantly in the second year of professional development.

Introduction

In the waves of education reform in many countries, assessment has become a key policy lever for improving education. Basil Bernstein has long held that assessment will ultimately pull curriculum and pedagogy along. As pointed out by the researchers of the Queensland School Reform Longitudinal Study (Lingard et al., 2001), developing productive assessment will act as one of the best levers for engaging teachers with pedagogic change for higher intellectual demand. Many educators and policymakers in the United States believe that 'what gets assessed is what gets taught' and the format of assessment influences the format of instruction (O'Day & Smith, 1993). Due to the external pressures for accountability of student learning, many teachers tend to modify the

content and format of instruction to fit those of a high-stakes test (i.e., teaching to the test). Moreover, classroom assessments or teacher-made tests tend to mimic high-stakes standardized tests, which often focus too much on assessing students' discrete bits of knowledge and skills (Fleming & Chambers, 1983).

An obvious reform strategy is to change the content and format of assessment to enhance the coverage of higher intellectual learning outcomes (e.g., complex thinking, reasoning, problem solving, communication, and conceptual understanding of subject matter) and to move curriculum and instruction in the direction of developing these skills (Smith & O'Day, 1990). In response to these ideas, many assessment programs were revised over the past two decades to include more open-ended assessment tasks and to reflect more challenging learning goals. The use of authentic assessments has become increasingly important in the classroom context. Researchers and policymakers who advocated assessment reform have also recognized the importance of changing teachers' assessment practices through ongoing, sustained professional development in authentic assessment. However, a common problem encountered by many countries in assessment reform is the relative lack of assessment literacy among teachers and school leaders. Research in the 1990s has pointed out that some of the problems in trying to develop and use performance assessments were the relative lack of assessment literacy among educators and the need for extensive training in order to implement alternative assessments (e.g., Aschbacher, 1991; Stiggins, 1991a).

The term *assessment literacy* was introduced by Stiggins (1991b) who coined it as an understanding of the principles of sound assessment and also as a way of defining the particular kinds of assessment skills teachers need. Given the negative consequences of

testing and teachers' lack of assessment literacy, he urged for "immediate implementation of national, state, and local programs of professional development designed to enhance the classroom assessment literacy of America's practicing educators." (Stiggins, 1999, p. 198).

Background of the Study

Studies on classroom assessment have consistently 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 skilled in developing authentic assessments, in general, perceived them to be more difficult to develop than traditional paper-and-pencil tests. Moreover, teachers' assessment practices were not well aligned with their instructional goals and tended to demand a low level of cognitive processing. Many teachers were also not good judges of the quality of their own assessment tasks (Bol & Strage, 1996). Sato, Wei, and Darling-Hammond (2008) conducted a longitudinal study to track the changes of mathematics and science teachers' classroom formative practices as a result of their participation in the National Board Certification process. The National Board Certification provided teachers with professional development experiences in using rigorous assessment and teaching standards. Sato et al. (2008) found pronounced changes in teachers' use of a variety of assessments and the way assessment information was used to support student learning. Their results also indicated that effective professional development strategies, as in the case of the National Board Certification, are essential for improving teachers' assessment practices.

In Graham's study (2005), teacher candidates in the US reported that they were strongly influenced by professional dialogue about planning and assessment in both teacher training

program and mentored field experiences. Most teacher candidates grew to accept alternative assessment as valuable evidence sources indicating student learning but were concerned about their skills in identifying goals and designing rubrics as well as determining the technical accuracy of assessments. These findings were supported by Volante and Fazio's study (2007) of primary/junior teacher candidates in Canada. They found that the majority of the teacher candidates reported a low level of assessment literacy and expressed the need for improving their assessment knowledge through specific courses in classroom assessment and evaluation and good mentorship in the field setting. Although both studies involved pre-service teachers, the findings did suggest that ongoing support and professional development opportunities should be given to in-service teachers who would serve as mentors for teacher candidates in the application of effective assessment practices in the school context.

As pointed out by Wiliam and Thompson (2008), any significant improvement in educational outcomes will require building the capacity of the existing teaching workforce rather than looking for ways of replacing it. In other words, effective professional development will enhance teacher quality, which in turn will lead to improved student learning. In the extant literature, many researchers believe that teacher professional development is more effective when it is related to the local circumstances in which the teachers operate, 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.

In Singapore, there are many policy initiatives launched by the Ministry of Education to reform the nation's education system. "Thinking Schools, Learning Nation", "Innovation and Enterprise", and "Teach Less, Learn More" (TLLM) are the government's initiatives

for developing a productive, resilient, and lifelong learning nation to face the challenges of the 21st century knowledge-based economy. All these initiatives have advocated teaching for higher-order thinking skills rather than for rote memorization of factual and procedural knowledge. Hence, teachers are encouraged to move toward more constructivist teaching approaches and authentic assessment strategies in their efforts to promote students' higher-order thinking skills, real-world problem-solving skills, positive habits of mind, and communication skills. In view of the need for the changes in teachers' pedagogical practices, the Ministry of Education has provided teachers with resources, support, and training or professional development over the past four years. The large-scale baseline data on Singapore teachers' assessment practices (Koh & Luke, in press) have showed that Singapore teachers tend to use assessment tasks that mirror high-stakes examinations and the focus has been mostly on assessing students' reproduction of factual and procedural knowledge. The results also suggest 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 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. 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.

Methodology

The study was designed as a longitudinal, quasi-experimental intervention study for tracking teachers' assessment literacy over two school years (2006 and 2007). Year 4 and 5 teachers, who were teaching English, Chinese, Science, and Mathematics from 8 neighborhood schools, were involved in the intervention and teachers from 8 other neighborhood 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 analyze 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 the teachers from the comparison group.

The participating 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 over the course of the study. 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. Toward the end of the study, they were also interviewed by the researcher about their conceptions of authentic assessment.

Results and Discussions

At the end of the intervention, the majority of teachers had improved their attitudes toward authentic assessments and rubrics and endorsed the use of such new assessment strategies in education reform. The teachers from the intervention group had also increased the use of authentic assessments in their day-to-day classroom practices. Most of them enjoyed greater autonomy when they designed and implemented authentic assessments as they reported that the rationale for doing so was neither required by the syllabus nor required by their school leaders. Even preparing students to do well in high-stakes examinations was no longer a top priority. Compared to the teachers in the intervention group, teachers from the comparison group reported that their assessment practices were often driven by the high-stakes examinations.

For all the subjects, except Mathematics, the mean scores of teachers' assessment tasks after intervention had increased substantially for 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 in all the subjects except Mathematics. In Mathematics the improvement was

only slight and 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. The post-intervention interview data showed that there were positive changes in teachers' conceptions of authentic assessments after their professional development experiences in the project.

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

Educational Implications

Actualizing assessment reform at the school or classroom level is a long-term endeavor that will not happen as the result of a single or sporadic workshop. Under the TLLM initiative and with the use of 'white space' (10-20% curriculum time was freed up for professional training and innovation), in-service teachers' assessment literacy can be improved through ongoing, sustained and high-quality professional development. It is also important to ensure that the planning, implementation, and perhaps evaluation of teacher professional development programs is more systematic.

As evidenced by the negligible change of teachers' assessment practices from the comparison group which received only two assessment workshops over the course of the study, 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 within-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. Given that many teachers do not carry out coursework in their pre-service programs to develop their assessment skills, the National Institute of Education Singapore may wish to consider including one or two assessment courses in the pre-service teacher training program. The professional development materials used in the current study can be modified for use by trainee teachers.

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 & Timberly, 2007). However, given that this study focused only on improving teachers' assessment literacy in designing authentic assessment tasks and rubrics, future studies should include building teachers' capacity through formative assessment practices.

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