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Exploring 'Black Boxes': Methodological approaches to uncovering the culture of formative assessment in mathematics classrooms

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Background

Both policy and research emphasise classroom inputs (curriculum, training, pedagogy) and outputs (evidences of student achievement), but the most pivotal learning processes occur within the activities of the classroom—a space referred to by Black and Wiliam as "the black box." In response to their work surrounding the still widely praised (Shepard, 2009) teaching strategies classified as "formative assessment", they asked, "how can anyone be sure that a particular set of new inputs will produce better outputs if we don't at least study what happens inside?" (Black and Wiliam, 1998b, p. 1).

This PhD research enters these black boxes—which I argue are plural and diverse—with the aim of investigating some of the attitudes to and practices of formative assessment amongst both teachers and students. Research reports a lack of consensus on what constitutes formative assessment as well as varied implementations (Stiggins, 2005; Bennett, 2009; Taras, 2008). Such practices within mathematics classrooms will be compared in two different cultural and policy contexts: Belfast and Los Angeles. The former provides an environment where recent policies, including a new curriculum, evince a shift in focus from summative assessments to the integration of 'Assessment for Learning' strategies (CCEA, 2007). The latter, however, represents an educational context where policies are still highly focused on high-stakes, standardised tests (Shepard, 2009).

Research Questions

Questions of Theory

1. What are the theoretical positions among teachers observed with regards to assessment and how students learn?
2. How do teachers perceive their roles in implementing assessment practises?
3. Do teachers' consider the socio-cultural influences on learning when planning assessments or interpreting student responses?

Questions of Practise

1. How are teachers incorporating practises of formative assessment into curriculum instruction in Belfast, Northern Ireland and Los Angeles, California? What does this "practise" of formative assessment involve?
2. How do teachers provide feedback to students in response to the information gathered through formative assessment practise and what actions follow?
3. From a socio-cultural perceptive, what are the similarities and differences of the classrooms observed?

Synthesis

1. In classrooms where formative assessment is practised, do teachers hold theoretical standpoints congruent with those underpinning its practise?
2. Does evidence exist in the contexts observed of socio-cultural influence on how formative assessment is carried out and its effects on student learning?

3. The theoretical underpinnings of formative assessment suggest the teacher move away from a traditional, directive role and act as mutual learner and guide. Do teachers' practises of formative assessment evidence a shift in role perception and feedback delivery?

Methods

This is an internationally comparative qualitative research study

Sample

Two teachers in each of four schools

Belfast, Northern Ireland: 1 grammar school, 1 secondary school

Los Angeles, California, USA: 1 low/middle achieving secondary school, 1 high achieving secondary school

Methods (all dialogue will be audio recorded and transcribed)

1. Analysis of background documentation
2. Questionnaire to all school staff
3. Pre-observation interview with teachers
4. Classroom observation of teachers
5. Post-observation reflective interviews with teachers
6. Student focus groups

Frame

The very nature of the insufficiently understood black boxes (Herman, 2006; Taras, 2008) necessitates theoretical and methodological choices, which allow for flexibility. I have chosen a socio-cultural approach, as it allows for unpredicted themes to emerge from the investigation of these multiple components. Although a variety of perspectives exist within this family of theories, they share a belief in the social nature of learning and a regard for multifaceted factors of influence (Haertel et al., 2008). A socio-cultural lens, for example, considers the effects of teachers' own social and cultural backgrounds on their views of learning, which then in turn impact their classroom teaching and assessment practises (Murphy, 1999; Greeno and Gresalfi, 2008; Moss, 2008). Rogoff's "three planes of analysis", for instance, help balance the focus of research on the individual, interpersonal and institutional planes (Rogoff, 2008), thus helping the researcher to see contexts through a wider lens.

Research findings

This paper will draw upon PhD research to be completed September 2009 - May 2010 as well as the literature on assessment research and qualitative methodology to highlight potential considerations for the review of current studies as well as the undertaking of others in the future. It will first clarify the rationale and aims of the research while also describing the contexts in which the research occurs and the reasoning for these selections. It will then provide support for how these very aims and contexts dictated the chosen sociocultural framework and how this theoretical lens then dictates a multi-instrument qualitative methodology. Finally, the paper will provide accounts of unpredicted challenges and how they were confronted, as well as lessons learned.

References

References

Assessment Reform Group (ARG) (2002) Testing, motivation and learning. [Online].

Available at: http://www.assessment-reform-group.org/publications.html

(Accessed 12 November 2008).

Bennett, R. (2009) A Critical look at the meaning and basis of formative assessment. ETS

RM-09-06, Educational Testing Service, Princeton New Jersey [Online]. Available at:
http://www.ets.org/research/contact.html (Accessed 15 September 2010).

Black, P., Harrison, C., Lee, C., Marshall, B. and Wiliam, D. (2003) Assessment for

learning: putting it into practise. Maidenhead: Open University Press.

Black, P. and Wiliam, D. (1998a) Assessment and classroom learning, Assessment in

Education: Policy and Practice, 5 (1), pp. 7 - 74.

Black, P. and Wiliam D. (1998b) Inside the Black Box: Raising Standards Through Classroom

Assessment. London: Kings College.

Biggs, J. (1998) Assessment and Classroom Learning: a role for summative

assessment?, Assessment in Education: Policy and Practice, 5 (1), pp. 103 – 110.

Council for the Curriculum, Examinations and Assessment (CCEA) (2007) The statutory

curriculum at key stage 3: rationale and detaile. [Online]. Available at:

www.nicurriculum.org.uk/docs/key_stage_3/statutory_curriculum_ks3.pdf (Accessed 23 May 2009).

Chudowsky, N. and Pellegrino, J. (2003) Large scale assessments that support learning:

what will it take?, Theory into Practice, 42 (1), pp. 75 – 83.

Clarke, S., McCallum, B. and Lopez-Charles, G. (2002). Gillingham partnership formative

assessment project: interim report on the first term of the project, Institute of Education, University of London. [Online]. Available at:
http://209.85.229.132/search?q=cache:FhRTwR5nVCIJ:www.aaia.org.uk/pdf/Gillingham1.pdf+gillingham+partnership+formative+assessment+project&cd=1&hl=en&ct=clnk&gl=uk (Accessed 25 April 2009).

Crooks, T.J. (1988), The impact of classroom evaluation practices on students, Review

of Educational Research, 58 (4), pp. 438-481.

Elwood, J. (2006) Formative assessment: possibilities, boundaries and limitations,

Assessment in Education: Principles, Policy and Practice, 13(2), pp. 215 - 232.

Fuchs, L.S., Fuchs, D., Karns, K., Hamlett, C.L., Katzaroff, M. and Dutka, S. (1997)

Effects of task focused goals on low achieving students with and without learning disabilities, American Educational Research Journal. 42 (3), pp. 513 – 543.

Gardner, H. (2006) "Assessment in context." In Gardner, H. The Development and

Education of the Mind: The Selected Works of Howard Gardner. London:

Routledge.

Greeno, J. and Gresalfi, M. (2008) "Opportunities to learn in practice and identity." In

Moss, P., Pullin, D., Gee, J., Haertel, E., & Young, L. (Eds.). (2008). Assessment Equity and Opportunity to Learn. Cambridge: Cambridge University Press.

Hall, K., Murphy, P., and Soler J. (eds) (2008) Pedagogy and practice. London: The Open

University.

Haertel, E., Moss, P., Pullin, D., and Gee, J.P. (2008) "Introduction." In

Moss, P., Pullin, D., Gee, J., Haertel, E., & Young, L. (Eds.). (2008). Assessment Equity and Opportunity to Learn. Cambridge: Cambridge University Press.

Herman, J.L., Osmundson, E., Ayala, C., Schneider, S. & Timms, M. (2006) CRESST

Report 703: The Nature and Impact of Teachers' Formative Assessment Practices. [Online]. Available at: http://www.cse