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Peer and Self-Assessment in High Schools

Brian Noonan & C. Randy Duncan
University of Saskatchewan

Formative assessment is recognized as an important component of teachers' classroom assessment strategies; recent research has pointed to peer and self-assessment as a way to operationalize the principles of formative assessment. The purpose of this study was to explore the nature and frequency of high school teachers' use of peer and self-assessment. The results indicate that many teachers find peer and self-assessment useful and that there is potential for greater classroom applicability but that more research is needed to guide wide spread use of these assessment strategies.

The assessment reform movement has focused attention on improving student learning and on two principles that have helped to operationalize it, namely, i) assessment *for* learning and ii) formative assessment. Assessment *for* learning is based on a student-involved approach to classroom assessment and has been well documented by Guskey (2003), Stiggins (2002, 2001), and others. Formative assessment refers to the feedback provided by teachers during the formation stage of learning to check on student learning outcomes. Formative assessments are typically defined as being teacher and classroom based, as opposed to summative assessments that are used for promotion, or large-scale assessments that are outside the classroom. Black and Wiliam (1998) proposed that formative assessment was an essential component of classroom assessment based on the assumption that improved student learning is ultimately the responsibility of classroom teachers. Formative assessment encourages student involvement to facilitate the processes they use to improve their performance; however, Black and Wiliam also point

out that the teacher's role is critical to ensure students experience high quality formative assessment. Black, Harrison, Lee, Marshall, and Wiliam (2004) expanded on the nature of formative assessment, emphasizing that effective teacher feedback to students included four components: i) questioning, ii) feedback through grading, iii) the formative use of summative tests, and iv) peer and self-assessment. Of these four components peer and self-assessment are of particular interest to researchers and practitioners because more than the other three factors, peer and self-assessment are student-oriented with the teacher's role being less central to the feedback and learning process.

Although peer and self-assessment have been identified as important components of formative assessment, little research exists on the extent to which teachers have incorporated these strategies in classroom practice. Researchers have examined teachers' grading and assessment practices; however there is little evidence of teachers' use of peer and self-assessment as a form of classroom assessment

(Brookhart, 1995, 2003; Guskey, 2003; McMillan, 2001a, 2001b, 2003; Pilcher, 1994).

RELATED LITERATURE

It is generally agreed that *self-assessment* is the ability of a student to judge his/her performance, that is, to make decisions about one's self and one's abilities. Although the term self-evaluation is common in related literature, for the purpose of this study self-evaluation is considered to be similar to self-assessment. Although there are a number of definitions of the term self-assessment, the definitions are, for the most part, quite general. For example, Rolheiser and Ross (2000) defined self-evaluation as "students judging the quality of their work, based on evidence and explicit criteria for the purpose of doing better work in the future" (p. 3). Blatchford (1997) described self-assessment as a specific element of student self-concept, that is, academic achievement "involve(s) judgments of one's own attainment in relation to other children" (p. 2). This assumes however, that self-assessment is a more normative judgment, which some may see as contrary to the concept of self-assessment. Other definitions of self-assessment are set in the context of teachers' classroom assessment practices. For example, Gronlund and Cameron (2004) emphasize the importance of formative assessment where the purpose is to "monitor learning progress and to provide corrective prescriptions to improve learning" (p. 14). Montgomery (2000) provided a similar definition of self-assessment as "an appraisal by a student of his or her own work or learning processes" (p. 5). Thus although there are somewhat different definitions of the term 'self-assessment', a common understanding has developed of the purpose of self-assessment.

From the perspective of meaningful student learning, Kitsantas, Reisner and Doster (2004) suggest that self-evaluative judgments (self assessment) are closely linked to improved achievement outcomes and that performance predicts motivation and persistence in task completion. Kitsantas et al. also suggest that high school students' improved performance results from a focus on process goals and produces higher levels of self-efficacy. This view supports that of Black and Wiliam (1998) who concluded that self-

assessment is an essential component of formative assessment if it is to be used to improve student learning. Similarly, McDonald and Boud (2003) describe self-assessment as a skill to be developed in high school students and that training in self-assessment may have a positive effect on students' school performance. Such skill acquisition is seen as a process of constructing, validating, applying, and evaluating criteria applied to students' work. Students can be taught to make choices about how to respond to the presented material (e.g. evaluate their work and make use of assessment activities) at their own developmentally appropriate pace. Self-assessment training was more effective than coaching, relative to content of examinations, due to the focus "on general self-assessment skills for 'real life' that became student-driven with the teacher acting as facilitator" (McDonald & Boud, 2003, p. 214). In some curriculum areas (e.g. business studies, humanities, science, technical studies) students trained in self-assessment practices performed significantly better on standardized examinations than the control group. Arter and McTighe (2001) also agree with instructional benefits in teachers using more generic rubrics and in teaching students to use them as well. From a similar perspective, Bruce (2001) proposed that self-assessment is a way to operationalize the current focus on standards-based assessment. To use rubrics successfully she suggests that setting clear goals for oneself and using effective feedback from others provides the opportunity for the self-correction and reflection that improves student learning.

Peer assessment has a somewhat different focus than self-assessment, and is generally recognized as an integral part of formative assessment. Some experts view peer-assessment as a strategy on its own, but more often it is seen to be complementary to self-assessment (Black, Harrison, Lee, Marshall & Wiliam, 2004). Definitions of peer assessment have been quite varied although evaluators generally agree that peer-assessment involves one student's assessment of the performance or success of another student. Peer-assessment has also been described as a strategy involving students' decisions about others' work that would typically occur when students work together on collaborative projects or learning activities.

METHOD

Peer assessments are usually intended as formative assessment early in the learning process (Johnson, 2004). To optimize peer assessment activities they should be scheduled as soon as students begin learning a concept or skill and preferably before any skill errors are habituated (Johnson, 2004). Teachers use peer and self-assessment to enhance learning: (1) to increase student involvement in the learning process (e.g. students assume teaching responsibilities), (2) to increase social interactions and trust in others, (3) to facilitate individual feedback, and (4) to focus students on the process rather than the product. Peer assessments used as formative evaluations are especially useful with group instruction and can both enhance the learning experience and positively influence student achievement (Johnson, 2004).

Limited research evidence exists of the effects of using peer-assessment as a classroom assessment strategy. Some disciplines where performance is explicit (such as physical education or the arts) have described the value of peer-assessment. For example, Butler and Hodge (2001) studying the effects of peer assessment in high school physical education, found that peer assessment had practical applications and value for students. The results of their study emphasized the importance of both feedback in peer assessment and in developing trust among peer assessors. Additional practice opportunities, based on peer interaction, are considered an important element in dispelling student misconceptions about how a skill test is graded (Johnson, 2004).

In summary, peer and self-assessment provide a perspective on the extent to which assessment reform is influencing teachers' classroom assessment practices. Specifically they provide a basis for examining the usefulness of formative assessment and assessment *for* learning as promoted by Stiggins (2002), Black, Harrison, Lee, Marshall and Wiliam (2004) and others. The purpose of this study was to explore the nature and frequency of teachers' use of self-assessment and peer-assessment as classroom assessment strategies.

Data for this study were collected as part of a survey of 118 high school teachers' assessment practices in a mid-sized urban school jurisdiction in Western Canada. The survey, adapted from one used by McMillan (2001b), was used to collect data for a study of high school teachers assessment practices. In addition to 34 forced choice items on grading and assessment practices, the survey included several open-ended questions on teachers' assessment practices.

One question asked teachers about the extent to which they used peer and self-assessment in the classroom. The responses to that question, which provided the data for this study, were transcribed verbatim and then analyzed in three stages. First, to examine the frequency of teachers' use of peer and self-assessment, the responses were grouped according to the subject taught using three general categories i) Mathematics and Sciences, ii) Social Studies and English, and iii) Other. The third category would typically include subjects such as fine arts, physical education or practical arts. Although these are somewhat general categories they helped to organize the responses and to give some preliminary indication as to factors (such as subject) that may affect teachers' use of peer and self-assessment.

Second, teachers' responses for each of the three subject groups were separated into two general categories, i) teachers who reported using those strategies in their classrooms and ii) teachers who reported no use of peer or self-assessment. The researchers then reviewed the first group (those who reported using peer and self-assessment) and categorized them into two sub-themes, first, those who reported 'little' use of peer or self-assessment, and second those who reported 'some' use of peer or self-assessment. Thus, the responses were considered in one of three categories (*no use, little use, some use*). These categories served to assist the researchers in exploring teachers' perceptions and the nature and extent of teachers' use of peer and self-assessment.

Third, once all responses were grouped by category, they were analyzed to explore the nature and extent of teachers' use of peer and self-assessment. Because the data were all forms of narrative, a constant comparison form of analysis, as described by Lincoln and Guba (1985), was used to analyze and interpret the data. This method of processing narrative data provided both descriptive and explanatory categories from the data.

RESULTS

Of the 118 teacher responses 110 were used in the data analysis; 8 respondents either had no comment or responded that the question was not applicable in their case. The results of the

preliminary analysis (Table 1) showed that 26 teachers (24%) reported they did not use peer or self-assessment. Of the remaining 84 responses, fifty-four teachers (49%) reported using peer or self-assessment 'a little'. Responses such as 'seldom', 'rarely', or 'use 5% of the time' were typical of this category.

The third category included 30 teachers (27%) who reported using peer or self-assessment 'somewhat'. Those teachers used phrases such as 'self-evaluation for attitude and effort', 'used on an informal level', 'part of grading', and 'used for group work' as responses in this category. It was also noted that Math and Science teachers used peer and self-assessment less than the other two groups of teachers.

Table 1 Frequency of teachers' use of peer and self-assessment by subject area.

	<i>Math/Sc i</i>	<i>Soc/Eng</i>	<i>Other</i>	<i>Total</i>
<i>None</i>	14	6	6	26 (24%)
<i>Little Use</i>	12	26	16	54 (49%)
<i>Some Use</i>	6	13	11	30 (27%)
<i>Total</i>	32	45	33	110

Note: Percentages are rounded to nearest one percent

A subsequent analysis examined the relationship between teachers' use of peer and self-assessment and the subjects being taught. Table 1 provides a profile of the frequency of teachers' use of peer and self-assessment by subject area. There was a relatively similar number of respondents in two of the three subject groups with slightly more in the Social Studies/English group. About 75% of the respondents reported using some form of peer and self-assessment, with somewhat fewer Math/Science teachers using peer and self-assessment compared to the other two groups. A larger proportion of teachers reported using peer and self-assessment 'a little' than reported using those strategies 'somewhat'.

An analysis of the responses in each of the two categories of use provides an insight into the nature and extent of peer and self-assessment in high school classrooms. Teachers who use peer and self-assessment 'a little' (n=54) seemed somewhat ambivalent about the value or appropriate use of

such strategies. Where there was some form of elaboration the teachers' comments included statements such as "students do not understand how much they know", "I have to monitor it", or "students do not know what to look for", "very little of either, it is rare to see the maturity necessary for this kind of grading". Such comments suggest that some teachers were hesitant or cautious about using peer and self-assessment. On the other hand, some teachers indicated that they could see the value in using peer and self-assessment as shown in comments such as "limited, maybe two major projects/presentations", or "Not much, from time to time to allow students a chance to become more of an active participant in their evaluation".

The researchers also examined the comments of teachers who used peer and self-assessment 'a little' with three broad themes emerging. First, peer and self-assessment encouraged and facilitated student reflection on their achievement. Second, peer and self-assessment were useful in assessing group work and third, they were useful in assessing students'

projects and presentations.

Teachers who reported using peer and self-assessment *'somenwhat'* (n=30) tended to be more specific in their comments, explaining that such assessments are used for group projects, presentations, or small assignments. Some teachers were more concerned with levels of achievement for example, *"some self-evaluation for attitude, effort, and participation"*, or *"working well in class, homework completion"*. Others emphasized peer and self-assessment, for example, *"to get some idea of how a student thinks he/she is doing"*, *"to be accountable to themselves and their peers"* or *"peer and self-assessment in my class are used on an informal level-more to create learning opportunities"*. Twenty-two of thirty teachers were specific in identifying their preference; thirteen used self-assessment, and nine used peer assessment. The reason for using self-assessment varied among teachers with a number of single responses reported (such as small assignments, conducting individual projects, creating learning opportunities, and monitoring homework). Other teachers indicated a preference for self-assessment because it benefited students by helping them to reflect on their performance (e.g., attitude, effort, participation). In general, teachers indicating a preference for peer assessments did so because they felt it facilitated group work and /or activities.

Teachers who did not use peer or self-assessment reported a variety of reasons why they did not use those strategies. Three of twenty-six secondary teachers commented that high school students lack the maturity to be truthful and/or objective in peer and self-assessment. Statements were as follows *'not always truthful in their evaluation'*, *'students have difficulty in being objective in the company of peers'*, and *'I don't find them strong enough to evaluate each other'*. This rationale is also supported by the comments of the small number of teachers who used peer and self-assessment *'a little'*. These teachers offered statements such as, *'used sometimes but very unreliable'*, *'it's rare to see the maturity necessary for this type of grading'*, and *'they can be too negative with themselves and others'* as a rationale for peer and self-assessment.

A final analysis compared the use of peer and self-assessment in the four academic areas

(Mathematics, Science, English, Social Studies) and showed that Social Studies and English teachers used peer and self-assessment somewhat more frequently than the other teachers. This suggests that the school subject may be an important factor in teachers' decisions to use peer and self-assessment; however, the small sample used for this study does not provide any strong evidence that peer and self-assessment are apt to be used more in any particular school subject. More research is needed to better understand the use of peer and self-assessment in particular courses or school subjects.

In summary, the results of the analysis provided information on the nature and extent that teachers use peer and self-assessment in their classrooms. The results also showed that teachers were aware of peer and self-assessment techniques and had reasons why they did or did not use them in their classrooms.

DISCUSSION

The results of this study show that a fairly large proportion of high school teachers used some type of peer and self-assessment as part of their classroom assessment practices. This suggests that these teachers have operationalized an important component of Stiggins (2001) assessment *for* learning concept, that is, using assessment information to improve learning. It is not clear from this study whether teachers see either peer or self-assessment as the more valuable in a high school learning environment. However, it is apparent that teachers see the value of the reflective, self-analytic benefits of self-assessment. Similarly, teachers understand the importance of collaborative, shared learning experiences, which may be enhanced through peer assessment strategies.

The results of this study provide a perspective on how assessment for learning and formative assessment have been implemented. Recent literature on teachers' classroom assessment practices point out that the principles and practices inherent in assessment reform need elaboration and development beyond generally accepted practices (McMillan, 2003; Brookhart, 2003). An important

component in operationalizing the principles of assessment for learning and formative assessment is determining the appropriate role for teachers and students in using peer or self-assessment. More extensive research is needed to determine how high school teachers can best use peer and self-assessment and whether teachers' assessment strategies are subject-dependent.

There are several other aspects of peer and self-assessment that merit further examination based on the results of this and other studies. For example, it is not clear if the nature and extent of peer and self-assessment in high schools in this study represent a desirable level of implementation. Although a large proportion of the teachers in this study used peer and self-assessment 'a little' or 'somewhat' it is not clear whether an acceptable level of utilization had been achieved. It is also not clear if the quality of peer and self-assessment used by teachers is appropriate or if the extent to which peer and self-assessment affects teachers' grading practices. Based on the results of this study and others three factors appear to influence teachers' use of peer and self-assessment: i) the nature of student involvement, ii) the quality of the peer and self-assessment process, and iii) the role of the teacher. It would seem that the use of peer and self-assessment is primarily based on teacher expectations and there is a need to better understand the nature of student involvement in those practices.

Peer and self-assessment: Future considerations. The results of this study identify four areas that may be considered for future research on peer and self-assessment i) the nature and extent of student involvement in such assessment, ii) the quality of peer and self-assessment processes, iii) improving instruction, and iv) the role of the teacher.

First, peer and self-assessment practices are intended to empower students to make decisions (e.g. construct knowledge) that contributes to the individual's learning experience). Peer and self-assessment are intended to emphasize individual and interpersonal learning and promote the power of reflective processes and shared reflection (Gagnon Jr. & Collay, 2001). Thus, teachers who design learning activities so students can make both

personal and shared meaning are developing a positive assessment environment. From an educational perspective peer- and self-assessment are grounded constructivist philosophies that "whatever a person discovers himself is what they really know" (Shapiro, 2003, p. 329). Although the general purpose of peer and self-assessment has a theoretical basis, it is still unclear as to the extent, and under what circumstances, teachers ought to use such approaches to classroom assessment. Based on the principles of assessment *for* learning and formative assessment, it seems that the use of peer and self-assessment ought to be limited and not used, for example, in summative student assessment.

Second, the use of peer and self-assessment raises a question as to the quality of those strategies as classroom assessment practices. As with any assessment practice the developer (student or teacher) must ensure, as much as it is possible, that the instruments and processes used are valid, reliable, and appropriate. For example, teachers have the option of developing criteria (i.e., holistic scoring rubrics) on their own or cooperatively with students. A cooperative approach may result in greater understanding of the criteria by students and positively influence their motivation to complete assignments (Gronlund & Cameron, 2004). Student involvement at the assessment or instructional design stage (e.g. rubrics as part of lesson planning) would emphasize the process of developing and understanding the rubric to provide a context for a subsequent peer and self-assessment activity. This raises a question about the relative merits of peer and self-assessment. This study collected data on both peer and self-assessment without clearly discriminating between them. It is unclear if one or the other process is favored by teachers and if so under what conditions. Although studies on peer and self-assessment in physical education found that peer assessment (Butler & Hodge, 2001; Johnson, 2004) and self-assessment (Ussher, 1999) were being used, more research is needed to better clarify the characteristics and relative merits of each of peer and self-assessment.

Third, if improving instruction/assessment is a goal of peer and self-assessment strategies, this may be achieved by teachers adopting a coaching role to

encourage knowledge formation and metacognitive processes for judging, organizing, and acquiring new information (Bruning, Schraw, & Ronning, 1999). As such, teachers may use materials that promote students interaction with their learning environments, use activities that promote student observations and data gathering, and/or use classroom processes that promote cooperative learning and discussion (Bruning et al., 1999). A question raised from this and other related studies is whether teachers can invest the time and energy to share the assessment work with students (i.e., train them in specific assessment practices such as rubric-based grading) to enhance their learning experience.

Finally, the role of the teacher in peer and self-assessment needs to be clear. If assessment for learning and formative assessment principles are to emphasize student-involvement in classroom assessment, teachers need help to acquire the skills to develop and use peer and self-assessment strategies with students. Boston (2002), Rolheiser and Ross (2000) and others have emphasized the importance of training and professional development for teachers to help them better understand and implement effective practices that are the important elements of formative assessment. The teacher's responsibility for the classroom environment (i.e. curriculum objectives, pace of instruction) is fundamental to effective learning; therefore students' success through peer and self-assessment is moderated by individual teachers' knowledge and skill in instructional planning and delivery. Some of the high school teachers' comments in this study questioned whether high school students were able to accurately and fairly engage in peer and self-assessment. This suggests there is a need to engage in a broader discussion with teachers, students, administrators and, perhaps, parents with respect to the nature and extent of peer and self-assessment.

The results of this study have indicated that peer and self-assessment are viewed positively across subject areas, which suggests that there is potential for a greater applicability of these strategies than may be generally accepted by educators. As was stated earlier this study was a small-scale exploratory examination of peer and self-assessment in high schools. A follow-up study,

with data collected from a larger sample of high school teachers would better determine the extent to which peer and self-assessment are used in high schools. Results of such a study will provide further evidence, and a better understanding, of teachers' use of peer and self-assessment.

REFERENCES

- Arter, J., & McTighe, J. (2001). *Scoring Rubrics in the Classroom*. Thousand Oaks, CA: Corwin Press.
- Black, P., Harrison, C., Lee, C., Marshall, B. & Wiliam, D. (2004). Working inside the black box.: Assessment for learning in the classroom. *Phi Delta Kappan*. 86 (1), 13-22.
- Black, P. & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. Retrieved January 20, 2005 from <http://www.pdkintl.org/kappan/kbla9810.htm>
- Blatchford, P. (1997). Students' self assessment of academic attainment: Accuracy and stability from 7 to 16 years and influence of domain and social comparison group. [Electronic version] *Educational Psychology*. 17 (3) 345 15 pgs.
- Boston, C. (2002). The concept of formative assessment. *Practical Assessment, Research & Evaluation*. Retrieved March 23, 2005 from <http://PAREonline.net/getvn.asp?v=8&n=9>
- Brookhart, S. M. (Summer 1993). Teachers' grading practices: meaning and values. *Journal of Educational Measurement*, 30 (2), 123-141.
- Brookhart, S. M. (2003). Developing measurement theory for classroom assessment purposes and uses. *Educational Measurement: Issues and Practice*, 22 (4), 5-12.
- Bruce, L. B. (2001). Student self-assessment: Making standards come alive. *Classroom Leadership*. 5 (1), 1-6. Retrieved July 13, 2004 from http://www.ascd.org/publications/class_lead/2001/09/bruce.html
- Bruning, R. H., Schraw, G. J., & Ronning, R.R. (1999). *Cognitive Psychology and Instruction (3rd ed.)*. Upper Saddle River, NJ: Merrill.
- Butler, S A. & Hodge, S. R. (2001). Enhancing student trust through peer assessment in physical education. *Physical Educator*, 58 (1), 30-42.
- Gronlund, E. & Cameron, I. J. (2004). *Assessment of Student Achievement*. Toronto: Pearson.

- Gagnon, G. W. & Collay, M. (2001). *Designing for Learning: Six Elements in Constructivist Classrooms*. Thousand Oaks, CA: Corwin Press.
- Guskey, T. R.. (February, 2003). How classroom assessments improve learning. Retrieved from http://www.ascd.org/publicationsed_lead/200302/guskey.html
- Johnson, R. (2004). Peer assessments in physical education. *Journal of Physical Education, Recreation, & Dance*. 75 (8), 33-41.
- Kitsantis, A., Reisner, R. A., & .Doster, J. (2004). Developing self-regulated learners: Goal setting, self-evaluation, and organizational signals during acquisition of procedural skills. *The Journal of Experimental Education*. 72 (4), 269-288.
- Lincoln, Y. & Guba, E. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications
- McDonald, B. (2002). Self-assessment skills used by high school students without formal training. [Electronic version]. *School Psychology International*. 23 (4), 416-424.
- McDonald, B. & Boud, D. (2003). The impact of self-assessment on achievement: The effects of self-assessment training on performance in external examination. *Assessment in Education*. 10 (2), 209-220.
- McMillan, J. H. (2001a). *Classroom assessment: Principles and practices for effective instruction*. Toronto: Allyn and Bacon.
- McMillan, J. H. (2001b). Secondary teachers' classroom assessment and grading practices. *Educational Measurement: Issues and Practice*. 20 (1), 20-32.
- McMillan, J.H. (Winter, 2003). Understanding and improving teachers' classroom assessment decision-making: Implications for theory and practice. *Educational Measurement: Issues and Practice*. 22 (4), 34-43
- Montgomery, K. (2001). *Authentic Assessment: A Guide for Elementary Teachers*. New York: Longman.
- Pilcher, J. K. (1994). The value-driven meaning of grades. *Educational Assessment*, 2 (1), 69-88.
- Rolheiser, C. & Ross, J. (2000). Student evaluation-What do we know? *Orbit*. 30 (4), 33-36.
- Shapiro, A. S. (2003). *Case Studies in Constructivist Classrooms and Teaching*. Lanham, MD. Scarecrow Press.
- Stiggins, R. J. (2001). *Student-involved Classroom Assessment* 3rd edition. Upper Saddle River, New Jersey. Merrill-Prentice Hall.
- Stiggins, R.J. (June, 2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*. 83 (10), 758-765.
- Ussher, B. (1999). Student self assessment and physical education. *Journal of Physical Education*. 32 (1), 11-14.

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Authors

Brian Noonan has a PhD in Measurement and Evaluation and is an Associate Professor in the Department of Educational Psychology & Special Education, University of Saskatchewan.

C. Randy Duncan is a PhD candidate in the Department of Educational Psychology & Special Education, University of Saskatchewan.