*The Alberta Journal of Educational Research* *Vol. XLVI, No. 3, Fall 2000, 267-279*

*Cinde Lock*

and

*Hugh Munby*
*Queen's University*

# Changing Assessment Practices in the Classroom: A Study of One Teacher's Challenge

*This article details the challenges encountered by an elementary schoolteacher as he tried to introduce new assessment practices in his classroom. The case study seeks to identify and describe the factors that influenced this teacher's introduction of portfolios and student conferences in the context of the complexity of student assessment practices. The empirical work for the case study, which was set in the context of a collaborative research program, was conducted over a 12-month period with a grade 7-8 generalist teacher, George, in a small urban school. Several modes of data collection were used in the study: classroom observations, informal discussions, and scheduled interviews. Analysis identified four dominant influences on George's implementation of the new assessment program: (a) his beliefs about the nature of teaching and learning; (b) his understandings about these newer forms of assessment and their influence on his other classroom practices; (c) his involvement in the overall collaborative research program; and (d) the contextual influences of the school environment. The study concludes that, without altering his beliefs about teaching and learning and his teacher-centered instructional practices, George would find it particularly difficult to implement a student-centered assessment program in his classroom.*

*Cet article explique en détail les défis auxquels a fait face un enseignant en élémentaire alors qu'il a essayé d'introduire de nouvelles stratégies d'évaluation dans sa salle de classe. Cette étude de cas tente d'identifier et de décrire les facteurs qui ont influencé cet enseignant pendant son introduction de dossiers personnels et de conférences par les élèves dans le contexte complexe qu'est celui de l'évaluation des élèves. Le travail empirique pour l'étude de cas, accompli au sein d'un programme de recherche collaboratif, s'est déroulé sur une période de douze mois avec un enseignant généraliste en septième et huitième année (George) qui œuvrait dans une petite école en milieu urbain. On a eu recours à plusieurs méthodes de cueillette de données: les observations en salle de classe, les discussions informelles et les interviews organisés. Une analyse a permis de faire ressortir quatre facteurs dont l'influence a été déterminante dans la mise sur pied par George du nouveau programme d'évaluation: (a) ses croyances quant à la nature de son enseignement et de l'apprentissage; (b) ses connaissances au sujet des nouvelles formes d'évaluation et l'influence de celles-ci sur ses techniques générales d'enseignement en salle de classe; (c) son implication globale dans le programme de recherche collaboratif; et (d) les influences contextuelles du milieu scolaire. Les chercheurs arrivent à la conclusion que George éprouverait beaucoup de difficulté à mettre sur pied un programme d'évaluation centré sur l'élève dans sa salle de classe sans modifier ses croyances quant à l'enseignement et à l'apprentissage ainsi que ses techniques pédagogiques centrées sur l'enseignant.*

---

Cinde Lock is a doctoral student in the Faculty of Education. Her research interests include both classroom-based and large-scale assessment and program evaluation issues.
Hugh Munby is a professor in the Faculty of Education. His current research is on workplace learning and cooperative education.

## *Introduction*

This is a case study of a teacher attempting to implement a new student assessment program in his classroom. The case study pays particular attention to the beliefs and practices of the teacher and to how these and other contextual features influence the integration of newer forms of assessment into practice. It was a collaborative study, which enabled the teacher (referred to by the fictional name George) to select the assessment foci to be studied. George wished to introduce goal-setting, assessment portfolios, and student-led conferencing into his classroom. Consequently, this research was directed at detailing the influences on George's integration of these forms of student assessment into his professional practice.

This case study is part of a four-year research project that began in September 1996 and is being conducted at Queen's University and at the University of Victoria. The purpose of this larger project is to collaborate with school-based educators in order to determine optimal assessment practices that enhance teachers' abilities to assess student growth and achievement appropriately. The Queen's University research team for the larger project is the group that was involved in discussions and data collection for the research reported in this article.

As described in the background below, the study responds to the need for information on assessment practices and on change. A brief description of the qualitative methods used precedes the section that presents the findings with illustrations from the data. The fourth and final section discusses the implications of the case study for research on assessment and for teachers' professional development.

### *Background to the Case Study*

The study provides initial information about the complexities involved when teachers introduce new assessment practices into their classrooms. Both the ways by which teachers assess students in the classroom and the reporting of assessment information have changed considerably in recent years (Bachor, Anderson, Walsh, & Muir, 1994). For example, there has been exponential growth in the use of portfolios and performance assessments (Bateson, 1994). Changes like these suggest the need to develop new evaluation techniques because recent research in the area of measurement and evaluation has been directed more toward large-scale assessments and standardized testing rather than toward day-to-day classroom assessment. Anderson (1989) noted with concern the increasing disparity between the work of researchers and the practice of evaluation, and Wilson (1992) clearly directed attention to where the research might begin: "teachers evaluate the work of their students regularly, yet how they do it is relatively unexamined" (p. 13).

There is a growing understanding that introducing and supporting changes in school assessment practices is complex because of the inherent connections of assessment with planning and instruction (Calderhead, 1996; Shulha, 1996; Wilson, 1998). Bateson (1994) suggested that the use of portfolios has increased as teachers seek to be as fair as possible by linking assessment more closely to cognition, curriculum, and instruction. This link implies that teachers' use of new methods of student assessment will also influence their other classroom

practices. The nature and extent of this influence needs to be studied as part of the implementation of new assessment practices.

The beliefs teachers hold influence their behavior in the classroom (Calderhead, 1996; Nespor, 1987), so one cannot proceed far in studying implementation in classrooms without attending to the beliefs and knowledge held by the teachers involved. So an examination of assessment practices in a classroom must be integrated with an examination of the beliefs teachers hold about those assessment practices and about the nature of teaching and learning in general. The significance of this integration is illustrated in Briscoe's (1993) study, which showed that both cognitive and contextual factors influenced a teacher's thoughts and actions regarding assessment. The participant in Briscoe's research did not perceive that he had been successful in changing his practice when he tried to shift the focus of his teaching away from teacher-centered practices to practices that were student-centered with a problem-solving emphasis. Barriers to change in this case were partly due to conflicts between the teacher's beliefs about teaching and learning and his classroom practices. Verbal data pertaining to this teacher's beliefs and observational data related to assessment practice were integrated in the current study to create full understandings about the reality of the assessment practices of the teacher and the factors affecting change in those processes (Philipp, Flores, Sowder, & Schappelle, 1994; Stake, 1998).

Collaboration is a critical element in this research. Collaboration may be understood as a process of joint meaning-making that occurs between teachers and researchers as both parties become engaged as joint theorists or researchers in the construction of common meaning (Lee & Shulha, 1999). To this end, collaborators engage in iterative dialectic in order to construct common understandings and make implicit meanings explicit (Elliot & Woloshyn, 1997). Further, collaboration has been found to both create and support change in classroom practices. For example, Dawson and D'Amico (1985) advocated collaboration as an impetus for change when they stated that the generation and dissemination of new knowledge was enhanced with the creation of researcher-practitioner linkages. Shulha and Wilson (1995) argued that, "if real progress is to be made in understanding assessment practices, teachers need to become collaborators in developing that understanding" (p. 115). As McIntyre (1992) has suggested, collaboration becomes a necessary tool for understanding assessment practices because it can serve to bridge the worlds of the researcher and the teacher. This study provides evidence of the importance of collaboration in introducing classroom change.

## *Methods of the Case Study*

### *The Participant: George*

George, a 41-year-old Caucasian man, was teaching in a small urban school at the time of the case study. He had been teaching for 18 years, but was only in his second year of teaching at the intermediate level. George had 27 students in his split-grade 7-8 class, most of whom were from middle-class white families. The first author knew George through his involvement in the larger four-year assessment project for which his principal had selected him. George was invited to be the subject of this case study because he had expressed a keen

interest in learning about assessment issues. His participation in this study was noncoercive and self-selective.

Teaching was not the only responsibility for George during the study. In addition to being an active participant in the four-year assessment project and being involved in this case study, he also acted as student support teacher and curriculum resource teacher for his school. As the representative of one of the teacher federations, he experienced additional demands on his time during a teachers' job action that lasted for two weeks during data collection for this study.

*Data Collection and Analysis*

A pilot study was initiated during the 1996-1997 school year to establish a productive relationship with George and to examine potential issues of reliability and validity in the inquiry. (Themes from the pilot study were explored further and extended during data collection for the case study itself.) The data of the full case study were collected using a variety of methods during the first term of the 1997-1998 school year. These data include 19 classroom observations, seven after-school meetings with the teacher, five scheduled interviews, 10 joint meetings with the research team[1] and George, and five joint meetings with the research team alone. In addition to this substantial body of data, artifacts were collected as they were produced in the classroom by either George or his students. A fieldwork journal was maintained to identify issues, concerns, and insights that arose during the period of data collection. On average, the first author met with George in some capacity twice a week. When classroom observations were made, the time and day of the observations were varied to give a broader understanding of the classroom context. Detailed notes were taken during the classroom observations, and meetings and interviews were audiotaped and transcribed verbatim.

The theoretical framework used for data collection and analysis was justified by the need for the research to access human understanding. The research was, consequently, based on an interpretivist position that tries to understand people's perceptions of events, emotions, programs, organizations, and cultures (Patton, 1990).

The data were analyzed using an inductive method that began "with specific observations and built towards general patterns" (Patton, 1990, p. 44). Specifically, the data were first coded, and then categories were identified using a constant comparison method. Pattern analysis was conducted to "discover and test those linkages that [made] the largest possible number of connections to items of data in the corpus" (Erickson, 1986, p. 148). During this process the emerging categories were tested against data collected in each mode to ensure validity and reliability. In the context of the collaborative relationship, George was integrally involved in every phase of data collection and analysis. All interpretations and emerging themes were also discussed and confirmed by the research team in consultation with George. Themes were constantly checked against all the data to ensure that there was no contradictory evidence. George was invited to read the final analysis and to identify those parts with which he disagreed. He did not disagree with any of it.

### *Findings: The Influences on George*

In an interview at the beginning of the case study, George stated that he wished to implement student portfolios and student-led conferencing into his classroom practice. He began by getting the students to set personal goals for themselves. He wanted to structure his classroom activities so that students would collect evidence throughout the term to show that they had been working on and accomplishing their individual goals. The evidence would be collected in the portfolios and then shared with parents during a student-led conference at the end of the first reporting period. Although this objective was clear, George was unable to achieve it as it was envisaged; instead, a different version resulted. The data demonstrated this different version and allowed the researchers to identify four themes that capture major influences on George's efforts to implement the new assessment program in his classroom. The four themes are George's beliefs about teaching and learning, his understanding of these new assessment methods, contextual influences on George, and the nature of the collaboration in this research. These themes are presented below with examples from the data.

#### *Beliefs about Teaching and Learning*

The data were analyzed in order to understand George's beliefs about teaching, learning, and planning. How he saw his role as a teacher and his approach to teaching were also considered. A dominant feature of the data was his emphasis on the importance of factual knowledge in his instructional practices. Specifically, George interpreted the curriculum as information-oriented, and he assessed students based on the number of facts they supplied rather than on the quality of thought they put into their assignments. For example, when describing the first book report assignment given to students, George said, "The number of marks that a question is worth indicates the number of facts required for full marks" (04OBSe02).[2] When discussing this issue later, George commented that students would receive higher grades if they could "back up their answer ... with enough information from the story to ... convince me that they know more about it" (22GSJ9). Further, in his role as teacher George considered himself the authority figure in the classroom. When students disobeyed his wishes, George assigned consequences to show that it was he who was in charge. For example, he assigned an extra writing task to a student who had not completed an assignment appropriately, telling the student, "This is going to be your natural consequence because this is something you don't like doing" (46GSJ6). He explained this in an interview, "That's one of my prerogatives I figure" (40GSJ6). Observation data consistently supported George's assertions to illustrate that he adopted a teacher-centered approach to instruction and taught predominantly with presentations to the whole class and with large-group discussions that emphasized learning as the acquisition of factual information.

Because George's beliefs about teaching and learning were related to his understanding of teaching as involving primarily transmission of information, it was particularly difficult for him to conceive of a student-centered assessment practice. Indeed, even the students' tasks of completing their goal forms and producing covers for their portfolio work took place in a teacher-centered, large-group setting. Obviously, for the students to work at achieving their

individual goals, a more student-centered atmosphere was required (Darling-Hammond, 1993; Hebert & Schultz, 1996). Important was evidence that George did not believe that he was fulfilling his obligations as a teacher by giving the students time to engage in these student-centered activities. George's beliefs influenced how he viewed the contribution of assessment. Because he believed teaching and learning to be information-driven, he did not view assessment as having an effect on how instruction might occur. When a member of the research team asked George how his instruction would be adapted to facilitate the realization of students' goals, he responded that it was unclear to him how he would structure class time for the students to work on their goal activities. He stated that he had "not considered this yet" (07JNSe09). George's beliefs about teaching and learning remained unaltered throughout the course of this research.

*Understanding the New Assessment Methods*

George's understandings of the assessment methods that he wished to use affected how he attempted to implement his assessment plan. He was uncertain about how to put these new methods of student assessment into practice, and he did not understand how they related to his planning and instruction in the classroom. He viewed each part of his customary assessment program as a separate entity, so he saw the new approaches as additional components that he needed to implement in his classroom. Thus he tried to add new assessment methods while maintaining all his other classroom practices. For example, he did not understand that the writing of report cards could be informed by his conferencing with students, or that the students could play a part in determining what was reported in writing. There was considerable discussion between George and the research team about the relationships among the components of his new assessment program, and he appeared to try to understand how the different forms of student assessment related to each other. But his view of their separateness prevailed: "In my own mind I kind of see all these things as sort of being ... sort of individual, distinct things instead of fitting together" (83GSJ9).

George's unchanging beliefs and his teacher-centered style of instruction conflicted directly with his understandings of the new student-centered methods of assessment that he was trying to implement in his classroom. This contradiction between his beliefs and practices resulted in George trying to implement his regular classroom practices in addition to new assessment-related practices. Due to the strain of this extra workload, George abandoned these additional practices when he thought that he could not cover the grade-level curriculum and perform his regular classroom practices while simultaneously implementing the new assessment practices.

Throughout the research, George repeatedly stated that he wished to implement the new methods of student assessment because he wanted the students to take ownership for their learning. However, he had a dichotomous understanding of control and ownership. He wanted the students to work on setting and achieving goals so that they could have more ownership in their learning, yet the way he structured the activities caused some of the students to place the onus on George to bring about the attainment of their goals. For instance, students phrased their individual goal statements in terms of how George

could help them to achieve these goals. One student who wanted to improve her public speaking abilities wrote that George could help her "by making me go up to the front of the class to do things" (13GSI2). Another student wrote that the teacher could "volunteer me to do drama" (17GSI2). George seemed not to understand that the students were placing the onus on him to ensure that their goals were met; instead he asserted that he wanted to structure the activity in this manner so that the students would determine both their own activities and his responsibilities. "I wanted a lot of it coming from the kid" (52GSJ9), "I wanted the ... kids to be responsible for most of" the writing of their goal forms (52GSJ9). Further, because George saw himself as the authority figure in the classroom, he saw it as appropriate for the students to identify methods of attaining their goals that put him in charge. Similarly, it was difficult for George to allow the students to take control and responsibility for their learning even though the goals they identified were specific to themselves as individual learners.

George often seemed not to know what steps he would take next in implementing his assessment plan. As a result, it was even more difficult for him to allow the students to be in control of their learning because he had not predetermined criteria for assessing their work. George also believed that under "any system" the students would produce a certain quality of work. Accordingly, the benefit of changing his instructional and planning practices to allow students to pursue topics of interest to them and to take responsibility for their learning was not apparent to George at the conclusion of this research.

*Contextual Influences*

Schools are busy places, so it is not surprising that the data contain evidence that the environment itself interfered with George's time to reflect on his practice and to plan his new assessment program. The features of his professional environment seem commonplace: constant interruptions to his instruction and planning; the need to accommodate a wide variety of student abilities; phenomena concerning student discipline; coaching and supervisory responsibilities; issues related to teaching intermediate-level students and a split-grade class; and the lack of teaching resources available in the school. As noted above, George had responsibilities beyond his classroom: his role as student support teacher and curriculum resource teacher for the school, his involvement as federation representative, and his participation in the four-year assessment project and this research all made claims on his time. George felt overwhelmed by the number of professional obligations he was trying to balance simultaneously (13OBOc01). He argued that he had neither the time nor the opportunity to reflect on his current practices or on the introduction of new practices (18INOc10). Accordingly, the context contributed to the difficulties George experienced in implementing the new assessment methods. Indeed, the context may have made it hard for George to inspect and then alter his more fundamental beliefs about teaching and learning and about the centrality of facts and information.

*Collaboration in the Research*

One focus for this study was the appropriateness of collaborative research for facilitating changes in assessment practice. Thus the nature of the collaboration

in the case study was analyzed for its influences on the implementation of George's assessment plan. It is not surprising that George admitted that his participation in the collaborative research added to his professional workload in terms of both time and effort. Yet he believed that the collaborative study gave him the opportunity to reflect in a group context on some of the practices that he was trying in his classroom.

An analysis of the roles of both researchers and participants is essential if one is to understand the influence of a collaborative effort on research outcomes. As Huberman (1995) encouraged the development of a "dense interpersonal network for sharing and discussing information" in collaborative studies, the first author made a conscious effort to interact with George on a regular basis and to be empathetic and honest during research discussions together. Consequently, we believe that an open and trusting relationship was developed throughout the course of the research. However, there was some concern about the influence of the researchers' perspectives on George. Indeed, sometimes it was apparent that George was looking to the researchers for answers to questions rather than for a discussion about the possibilities that might exist for him in relation to the implementation of his assessment program. His comment "You give me the unbiased opinion" (53GSJ6) was somewhat disconcerting because the researchers thought that George wanted to be led in the right direction in his assessments of students rather than to collaborate to discover together a good direction to pursue given the context in which he worked. Other comments also led us to believe that he wanted us to be the leaders in the collaboration. Consequently, we made a concerted effort to encourage George to see himself as an equal member in the collaborative effort.

King (1995) suggested that researchers should analyze the participation of all members of a collaborative team. In so doing the research team often discussed how each member could set up the interaction with George so that he would not incorrectly perceive us as possessing a preset agenda for the research. Specifically, we discussed the types of questions that might be posed to encourage meaningful collaboration. For instance, we asked George, Where do you want to go? (15JNOc06); What facilitates or inhibits what you try? (15JNOc06); Would you have done this without us? (05JNSe04). We believe that our efforts to create a meaning-making environment where we could learn together were realized during the course of this research. Indeed, our efforts to discuss the roles we each had in the collaboration, our concern to create knowledge and understanding of the research outcomes together, and the lengthy data-collection period helped to create a situation where each member of the research team (including George) was contributing in a meaningful way to the collaboration. On reflection, we believe that our collaborative efforts were meaningful and worthwhile and contributed to the development of deeper understandings about George's beliefs and practices, even though the collaboration did not itself result in a coherent implementation of new assessment practices.

### *Discussion*

This research is unique to the field of assessment in that it was conducted as a long-term case study in collaboration with a teacher in the context of his classroom. The two objectives of this study were to investigate the influences

on one teacher's implementation of a new student assessment program and to examine the evolution of this teacher's beliefs and practices in student assessment as they were displayed in the context of his classroom. A discussion of the findings is provided below, as is a discussion of the implications of this research both for teachers' professional development and for further research in the field of student assessment.

*Discussion of the Findings*

The results of George's efforts to implement a new assessment program and the influences on these results were categorized into four themes: beliefs about teaching and learning, understandings of new assessment practices, contextual influences, and collaboration in the research. The findings are discussed in relation to literature in each of these areas.

*Beliefs about teaching and learning*. Much research has been conducted on the influence of beliefs in learning to teach (Calderhead, 1996; Nespor, 1987; Richardson, 1996), and on the interplay between beliefs and teaching practices (Richardson, Anders, Tidwell, & Lloyd, 1991; Thompson, 1992). Briscoe (1993) argued that understanding the nature of a teacher's assessment practices and changes in them depends on an understanding of the teacher's beliefs. Evidence generated by this research supports this interdependency of beliefs and practice as George's beliefs were shown to be a critical element in influencing his classroom practices.

Behar-Horenstein, Pajares, and George (1996) confirmed the difficulty associated with understanding and changing teachers' traditional and long-held beliefs. These authors also suggested that changes in belief are fostered when teachers engage in new teaching practices of their own volition. In this research, however, George's beliefs did not change even though he was engaging in new practices of his own volition.

*Understanding new assessment practices*. Darling-Hammond (1993) and Saurino and Saurino (1994) viewed these newer forms of assessment as motivational tools for students. Izard (1993) noted that students' willingness to engage in certain tasks influences their level of achievement on those tasks. Further, Brookhart (1994) discussed how methods of student assessment can affect students' motivation, emotional state, and academic achievement. In addition, Rotta and Huser (1995) commented that these newer, student-centered methods of assessment are motivational because they allow students to pursue topics of interest to them. It was evident, however, that George did not understand these newer assessment practices as fundamentally different from the other practices (i.e., teaching, learning, and planning) that he employed in his classroom. Indeed, he believed that under "any system" the students would produce a certain quality of work. It was not surprising, then, that the benefit of changing his instructional and planning practices was not apparent to George at the conclusion of this research.

*Context*. Wilson (1994) discussed the complexity of the context of a classroom when he wrote that teachers deal with "spontaneous, idiosyncratic, unpredictable, context-dependent, time constrained, group-influenced learning" (p. 14). In addition, Wilson and Rees (1990) argued that studies in assessment that do not locate themselves in the institutional context are doomed to inadequacy. Erickson (1986) argued that an understanding of context is best

garnered through a qualitative approach to research. He further asserted that a qualitative approach is best suited for developing the necessary rich description of the beliefs and practices of a teacher in the context of the learning environment. The multiple, complex, and demanding contextual influences on George's implementation of new assessment practices underscored the need to study context in this research. And contextual influences were found to constrain George in his attempts to conceptualize and implement his new assessment plan.

*Collaboration.* In this research a collaborative, holistic approach was taken to study the complex and interrelated activity of student assessment. Cousins and Earl (1995) argued that the continuous and direct involvement of the participant is necessary to make meaning of the practice of student assessment. Taylor (1992) added that having the teacher play a meaningful role in research is a means to address questions of assessment at the classroom level. Shulha and Wilson (1995) concurred by stating, "If real progress is to be made in understanding assessment practices, teachers need to become collaborators in developing that understanding" (p. 115). The results of this research indicate that a collaborative study was indeed useful to garner understandings about the influences on George's implementation of new assessment practices. In addition, George's participation in this research facilitated his thinking and learning about new methods of assessment and about how these practices might be conducted in his classroom. This study also served to help bridge the gap between educational research and teacher practice in the area of assessment as George was introduced to researchers and to the details and merits of their work.

*Implications for Professional Development*

George attended many professional development sessions provided by his Board of Education (School District) and by the researchers involved in the larger assessment project in which he was enrolled. Also, he was involved with putting together workshops about his learning to provide professional development to other teachers. Further, George's relationship with members of the research team and his role as an active member in this collaborative research, provided him with the opportunity to discuss and reflect on assessment issues and other related classroom concerns. Indeed, most teachers in a typical year would not be exposed to the types of in-depth, professional development opportunities that were available to George. Despite the benefit of these opportunities, George's attempts to implement new assessment practices were constrained by the context of the teaching environment and by the beliefs he held about teaching and learning.

Research has been conducted on how the process of professional development is enhanced by training that encourages teachers to become reflective practitioners (Brookfield, 1995). As illustrated, George did not reflect extensively on his practice even though he was involved in this in-depth collaborative research that promoted reflection. George's lack of critical thinking in this context implies that the methods used for delivering professional development may be crucial if teachers are to change or to improve their classroom assessment practices. These results suggest that further research needs to be con-

ducted on the methods of professional development used to encourage teachers to implement new practices or to change existing ones.

Unfortunately, boards of education (school districts) and ministry guidelines often mandate that teachers implement new practices and that in particular they implement new methods for conducting student assessment (Maguire, 1992). The merits of mandating new assessment practices to teachers are questionable as this research revealed the difficulty that one teacher experienced in implementing new practices even when the elements of professional support, available resources, and teacher volition were present. Indeed, further research is required to understand in more depth how new practices become or do not become implemented in classrooms. This research has implications for the methods of conducting teacher professional development to encourage the enhancement of student assessment practices and critical reflection in teacher-practitioners.

*Implications for Educational Research*

The lack of research conducted to date on the topic of assessment indicates that little knowledge exists about what teachers actually do in their classrooms in relation to student assessment (Wilson, 1992). Further, few studies have been conducted on how these newer assessment methods are being conducted in practice or on how their use could be improved (Anderson & Bachor, 1992). A call for research in these areas is especially important considering the interrelatedness of assessment with other instructional practices that has been illustrated in this study and discussed in the research of others (Briscoe, 1993; Calderhead, 1996). Moss et al. (1992) commented on the significance of this interrelatedness by asserting that assessment influences what students learn and what teachers teach. This research revealed the importance of these links between planning, instruction, and assessment as George's beliefs about teaching and learning constrained him from practicing new methods of student assessment.

The need remains, however, for further research of this kind to be conducted. This call is especially significant considering that most past research conducted in the field of assessment has been quantitative in nature and related to the design and implementation of large-scale assessments. With the introduction of these newer techniques for conducting student assessment, it is necessary now more than ever to pursue research that will explore the meaning behind what is actually happening in today's classrooms in relation to student assessment.

*Notes*

1. The team involved in data collection refers to the group of researchers from Queen's University that participated in the larger four-year research project (this project is scheduled to finish in June 2000). This team comprised two professors from the university, two graduate students, and one teacher-participant (in addition to George).
2. All data documents have been coded. For example, 04OBSe02 represents the fourth document created in the study from classroom observation (OB) field notes and indicates that the observation was made on September 2. All dates refer to 1997 as the year of data collection. Similarly, 22GSJ9 represents the 22nd block of speech by George (GS) made during the ninth joint research meeting (J9) for the study.

*References*

Anderson, J.O. (1989). Evaluation of student achievement: Teacher practices and educational measurement. *Alberta Journal of Educational Research, 35*, 123-133.

Anderson, J.O., & Bachor, D.G. (1992). What should a classroom testing program look like? The functional factors of an assessment program in primary classrooms. In D.J. Bateson (Ed.), *Classroom testing in Canada* (pp. 59-68). Vancouver, BC: Centre for Applied Studies in Evaluation, University of British Columbia.

Bachor, D.G., Anderson, J.O., Walsh, J., & Muir, W. (1994). Classroom assessment and the relationship to representativeness, accuracy, and consistency. *Alberta Journal of Educational Research, 40*, 247-262.

Bateson, D.J. (1994). Psychometric and philosophic problems in authentic assessment: Performance tasks and portfolios. *Alberta Journal of Educational Research, 40*, 233-245.

Behar-Horenstein, L.S., Pajares, F., & George, P.S. (1996). The effect of teachers' beliefs on students' academic performance during curriculum innovation. *High School Journal, 79*, 324-332.

Briscoe, C. (1993). Using cognitive referents in making sense of teaching: A chemistry teacher's struggle to change assessment practices. *Journal of Research in Science Teaching, 30*, 971-987.

Brookfield, S.D. (1995). *Becoming a critically reflective teacher*. San Francisco, CA: Jossey-Bass.

Brookhart, S.M. (1994). Teachers' grading: Practice and theory. *Applied Measurement in Education, 7*, 279-301.

Calderhead, J. (1996). Teachers: Beliefs and knowledge. In D.C. Berliner & R.C. Calfee (Eds.), *Handbook of educational psychology* (pp. 709-725). New York: Simon and Schuster Macmillan.

Cousins, J.B., & Earl, L.M. (Eds.). (1995). *Participatory evaluation in education: Studies in evaluation use and organizational learning*. London: Falmer Press.

Darling-Hammond, L. (1993). Setting standards for students: The case for authentic assessment. *NASSP Bulletin, 77*(556), 18-26.

Dawson, J.A., & D'Amico, J.J. (1985). Involving program staff in evaluation studies: A strategy for increasing information use and enriching the data base. *Evaluation Review, 9*, 173-188.

Elliot, A.E., & Woloshyn, V.E. (1997). Some female professors' experiences of collaboration: Mapping the collaborative process through rough terrain. *Alberta Journal of Educational Research, 43*, 23-36.

Erickson, F. (1986). Qualitative methods in research on teaching. In M. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 119-161). New York: Macmillan.

Hebert, E.A., & Schultz, L. (1996). The power of portfolios. *Educational Leadership, 53*(7), 70-71.

Huberman, M. (1995). The many modes of participatory evaluation. In J.B. Cousins & L.M. Earl (Eds.), *Participatory evaluation in education: Studies in evaluation use and organizational learning* (pp. 103-112). London: Falmer Press.

Izard, J. (1993). Challenges to the improvement of assessment practice. In M. Niss (Ed.), *Investigations into assessment in mathematics education* (pp. 185-194). Dordrecht, Australia: Kluwer Academic.

King, J.A. (1995). Involving practitioners in evaluation studies: How viable is collaborative education in schools? In J.B. Cousins & L.M. Earl (Eds.), *Participatory evaluation in education: Studies in evaluation use and organizational learning* (pp. 86-102). London: Falmer Press.

Lee, M.W., & Shulha, L.M. (1999, June). *The emergence, anatomy, and implications of teacher-researcher collaboration*. Paper presented to the Annual Meeting of the Canadian Society for Studies in Education, Sherbrooke.

Maguire, T.O. (1992). Grounded authentic assessment and teacher education. In D.J. Bateson (Ed.), *Classroom testing in Canada* (pp. 82-90). Vancouver, BC: Centre for Applied Studies in Evaluation, University of British Columbia.

McIntyre, I. (1992). Classroom assessment: What research do practitioners need? In D.J. Bateson (Ed.), *Classroom testing in Canada* (pp. 69-74). Vancouver, BC: Centre for Applied Studies in Evaluation, University of British Columbia.

Moss, P.A., Beck, J.S., Ebbs, C., Matson, B., Muchmore, J., Steele, D., & Taylor, C. (1992). Portfolios, accountability, and an interpretive approach to validity. *Educational Measurement: Issues and Practice, 11*(3), 12-21.

Nespor, J. (1987). The role of beliefs in the practice of teaching. *Journal of Curriculum Studies, 19*, 317-328.

Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Philipp, R.A., Flores, A., Sowder, J.T., & Schappelle, B.P. (1994). Conceptions and practices of extraordinary mathematics teachers. *Journal of Mathematical Behavior, 13*, 155-180.

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula (Ed.), *Handbook of research on teacher education* (2nd ed., pp. 102-119). New York: Macmillan.

Richardson, V., Anders, P., Tidwell, D., & Lloyd, C. (1991). The relationship between teachers' beliefs and practices in reading comprehension instruction. *American Educational Research Journal, 28*, 559-586.

Rotta, L.M., & Huser, C.A. (1995). *Techniques for assessing process writing. A report for Mississippi State University*. (ERIC Document Reproduction Service No. ED 393 893)

Saurino, D.R., & Saurino, P.L. (1994, November). *Collaborative teacher research: An investigation of alternative assessment*. Paper presented at the annual meeting of the National Middle Schools Association, Cincinnati.

Shulha, L.M. (1996, June). *Understanding pre-service teachers' thinking about assessment: A window into the world of classroom assessment practice*. Paper presented at the annual meeting of the Canadian Society for Studies in Education, Brock University, St. Catherines.

Shulha, L.M., & Wilson, R.J. (1995). Inviting collaboration: Insights into researcher-community partnerships. In J.B. Cousins & L.M. Earl (Eds.), *Participatory evaluation in education: Studies in evaluation use and organizational learning* (pp. 115-139). London: Falmer Press.

Stake, R. (1998). Some comments on assessment in U.S. education. *Education Policy Analysis Archives, 6*(14), 1-8.

Taylor, A.R. (1992). Emerging needs of the practitioner in B.C. classrooms. In D.J. Bateson (Ed.), *Classroom testing in Canada* (pp. 75-81). Vancouver, BC: Centre for Applied Studies in Evaluation, University of British Columbia.

Thompson, A.G. (1992). Teachers' beliefs and conceptions: A synthesis of the research. In D.A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 127-146). New York: Macmillan.

Wilson, R.J. (1992). Evaluation of student achievement: Perception vs. reality. *Canadian School Executive, 11*(10), 13-16.

Wilson, R.J. (1994, June). *Back to basics: A revisionist model of classroom-based assessment*. Invited presidential address to the annual meeting of the Canadian Educational Researchers Association, Canadian Society for the Study of Education, Calgary.

Wilson, R.J. (1998, November). *Aspects of validity in student assessment*. Paper presented at the Invitational Conference in Large-Scale Assessment, Banff.

Wilson, R.J., & Rees, R. (1990). The ecology of assessment: Evaluation in educational settings. *Canadian Journal of Education, 15*, 215-228.