

The persistence of vision: An analysis of continuity and change in conceptions of assessment within a teacher education program

Christopher Charles Deneen

*The University of Hong Kong*

Gavin Thomas Lumsden Brown

*The University of Auckland*

**Abstract:** There is a significant and growing body of research that indicates teachers' conceptions of assessment affect their professional relationship to and literacy in assessment. This study examines how a graduate-level course on educational assessment influenced the beliefs, values, and attitudes (i.e., conceptions) held by a small but diverse sample of New York City pre-service and practicing teachers about the nature and purpose of assessment. This study employed a qualitative, phenomenographic approach to establish an understanding of the systematic variations and consistencies in how participants experienced and understood assessment as teachers and as students. The prevailing conception of assessment participants had was negative. Although other conceptual categories emerged and developed between pre-and post-course interviews, this negative conception of assessment remained dominant in both pre- and post-course interview sets, especially among practicing teachers. Both pre-service and practicing teachers indicated that assessment played a powerful role in personal history and pedagogy. The course appeared to be successful in contributing to teachers' knowledge about assessment, but attitudes towards assessment remained largely unchanged and negative. The implications for assessment literacy, teacher education and practice posed by this disparity between change in knowledge and persistence in conceptions are explored.

**Keywords:** assessment literacy, conceptions of assessment, teacher education

*Introduction to the problem*

The major purpose of teaching assessment in graduate education classes is to develop teachers' knowledge and understanding of assessment and their ability to appropriately administer and interpret assessments at both the classroom and jurisdictional levels. This has been called 'assessment literacy' which is "the ability to design, select, interpret, and use assessment results appropriately for educational decisions" (Quilter, 1998, p. 4). Assessment literacy, then, is highly consistent with Messick's (1989, p. 13) definition of validity as "an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the *adequacy and appropriateness of inferences and actions* based on test scores or other modes of assessment". Assessment literacy is increasingly important because current trends in making schools accountable for student learning require that teachers and administrators make appropriate interpretations and decisions based on analysis of school-wide assessment data (Cizek & Fitzgerald, 1996; Popham, 2008; Rust, Price, O'Donovan, 2003 Stiggins & Chappuis, 2005).

However, knowledge and skill alone do not necessarily lead to valid administration and interpretation of assessment. The beliefs and attitudes people have about any phenomenon influence their intentions and behaviors (Ajzen, 2005). Since there at least three competing purposes or goals in any assessment event (i.e., informing educational improvement, evaluating students, and evaluating schools and teachers-Brown, 2004), it seems important that a course in assessment literacy also aim to help educators develop a strong commitment to the purpose of

improving teaching and student learning as the sine qua non of assessment (Popham, 2000). Naturally enough, if the accountability purpose of assessment (i.e., evaluating schools and teachers) is given pre-eminence in the policy and practice discourse of a jurisdiction, teacher conceptions of assessment tend to turn negative in reaction against perceived unfair pressures on students or schools (Brown & Harris, 2009; Harris & Brown, 2009). Survey studies have shown, among New Zealand teachers, that beliefs about assessment purposes relate meaningfully to beliefs about teaching, learning, curriculum, and teacher efficacy (Brown, 2008a) and that endorsement of the various purposes of assessment predicted different kinds of assessment practices teachers reported using (Brown, 2009).

While New Zealand has a relatively low-stakes, improvement-oriented official policy and practice of assessment (New Zealand Ministry of Education, 2007), other societies place much greater consequences on the use of assessment, giving priority to other purposes. For example, Hong Kong uses school-based assessment as part of and as a predictor of the public examination system used to evaluate students (Berry, 2011; Choi, 1999). Teachers in that jurisdiction conceive of the student evaluation function of assessment as an inherent part of improvement (Brown, Kennedy, Fok, Chan, & Yu, 2009); whereas, New Zealand and Queensland teachers make strong distinctions between improvement and student accountability (Brown, 2008a). Hence, the official goals and processes for assessment seem to have a strong impact on teacher beliefs about assessment.

Thus, an important component of assessment literacy is to develop teacher beliefs and attitudes towards assessment such that teachers use their new knowledge and skills to improve student learning. Assessment literacy is at risk if teachers fear assessment and testing, have false perceptions about assessment, lack adequate training, or face strong pressure to place accountability purposes over-and-above improvement purposes (Arter, 2001; Hill, 1999; Stiggins, 1995, 1998; Timperley, 2003). Thus, a major challenge in teacher education is to not only add knowledge and skill to students but also to shape their beliefs about assessment. Research into changing teacher beliefs suggests that there is greater success when professional development is embedded in school practices and contexts rather than carried out in formal educational experiences (Richardson & Placier, 2001). Indeed, Brown (2008b) has reported that New Zealand primary school teacher beliefs about the purposes of assessment did not vary despite teachers having different amounts of formal assessment training. This suggests that a specific one-semester course on educational assessment may have some impact on knowledge but much less impact on the pre-existing beliefs teachers have about assessment.

Thus, there is need to understand better the effects a graduate teacher education course on both the knowledge and attitudinal aspects of the assessment literacy of students enrolled in the course. A benefit of this study is that it uses a pre- and post-treatment qualitative interview to examine the impact of the course on the conceptions of assessment a group of teachers. A second benefit of the study is that it is carried out in a high-stakes, school accountability-oriented jurisdiction, in contrast to previous survey studies carried out in low-stakes improvement-oriented jurisdictions (e.g., New Zealand or Queensland) or in high-stakes student accountability-oriented jurisdictions (e.g., Hong Kong). It was expected that the strong emphasis in the New York jurisdiction on school evaluation as the dominant purpose for high-stakes testing would generate a strongly negative conception of assessment.

### *Research questions and hypothesis*

In teaching the course, it was anticipated that students would become more skilled and

knowledgeable in the technical aspects of assessment. While it was hoped that certain conceptions would emerge as dominant; specifically those conceptions seen to positively correlate with student success (Brown, 2008a; Brown, 2009) it was also recognized that given the research on what is needed to achieve conceptual change, this might be unlikely. As suggested in the literature, assessment literacy is composed of both knowledge and attitudinal components. However, change in conception is challenging; potentially more so than acquisition of technical skill and knowledge. This led to a hypothesis: given the challenges of changing conceptions, students may achieve knowledge and skills without achieving assessment literacy.

This study was guided by three research questions:

1. What are the conceptions of assessment held by a sample of pre-service and practicing teachers in a teacher education program?
2. In what ways did these conceptions change through a course on educational assessment?
3. What is the relationship between participants' conceptions of assessment and their knowledge, as expressed through the course assessment?

### *Course design and implementation*

The course was a 12-week graduate level course on assessment, covering a diverse range of topics related to classroom assessment and larger-scale testing. The course focuses on developing participants' capacity in several critical areas of assessment, specifically, conducting classroom assessment, using assessment for learning, and interpreting and using standardized test score data. There were 32 participants in the course. The course curriculum was strongly oriented towards assessment for learning. Course materials supported this focus; for example, we used W. James Popham's (2008) book "Classroom assessment: What teachers need to know" as a central reading with additional supplementary readings focusing on assessment for learning throughout the course. The course was designed using constructive alignment (Biggs, 1996) so that teaching and learning engagement as well as assessment aligned with anticipated outcomes. Teaching and learning was designed to facilitate student achievement; assessment was designed to provide opportunity for evidence of achievement. The course design was subject to peer review prior to implementation. The course instructor had significant experience teaching in the field of assessment, and has received positive evaluations in similar courses from formal student, peer and administrative evaluation systems.

Assessment within the course was designed for formative and summative purposes; there were three assessments spaced evenly throughout the course, with the first assessment occurring after the first three sessions. Extensive instructor feedback was provided and each assessment was returned within two weeks of assignment submission. Preemptive feedback (Carless, 2007) was also integrated into the formal course design, which allowed for guidance on assignments prior to final submission and scoring. This was intended to link formative and summative assessment together as well as provide enhanced opportunities for formative guidance to proactively affect student assessment scores. Summative assessments were marked according to rubrics that had been subject to external validation; cross-marking was conducted on the final assignment to increase rater reliability.

The assessments served as three data points for collection of student work. The course assessments consisted of:

1. An analytical paper on an assessment-related article
2. An assessment tool constructed by the student with an accompanying self-critique and description of use

3. A final examination consisting of a take home essay in which students were asked to apply course knowledge to a hypothetical assessment scenario

### *Sample*

The sample consists of six participants from a population of teachers and pre-service students enrolled in a course on educational assessment as part of a graduate-level program in education in New York City. Although limited in number, the sample provides representation of a diverse population of practicing and pre-service teachers. At the time of the interviews, three participants were pre-service teachers and three were practicing teachers. Four participants are women, two are men, three are naturalized Americans, two of whom are from Eastern Europe, and one from Russia. One participant self-identifies as African American.

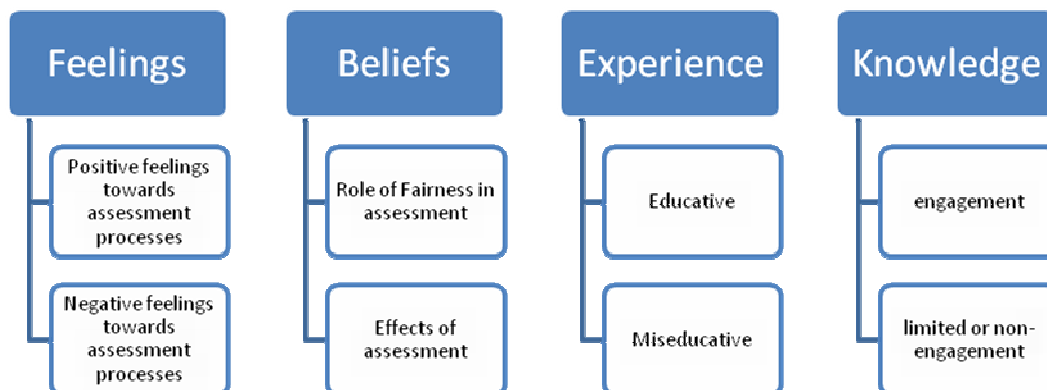
### *Data collection*

Researchers conducted twelve 45-minute interviews, with each participant interviewed twice. The first interview took place at the beginning of the assessment course, the second after the final meeting of the class, some 12 weeks later. These interviews were semi-structured, drawing on an ethnographic interviewing technique developed by Spradley (1979). The interviews were structured around the initial four conceptions of assessment identified by Brown (2002); while specific items from the *Teachers' Conceptions of Assessment* abridged inventory (Brown, 2006) were used to initiate dialogue, room was left for participants to express their own understanding of assessment.

### *Analysis*

A phenomenographic approach to analysis was utilized. Transcript data were initially organized according to relevance and frequency. From the results of this, a “data pool” (Marton, 1986) of material was established. From this data pool, conceptual categories were assembled according to variation of concepts and “structural relationships” (Akerlind, 2005) among concepts and the surrounding transcribed context. Finally, criterion attributes of each conceptual category were established. This allowed for the construction of a final hierarchical “outcome space” (Akerlind, 2005) from which this study draws its findings. While the process was sequential, it was also highly iterative, with the researchers revisiting the data and analytical categories multiple times, both independently and as a team. The analytical process was facilitated through the use of ATLAS Ti software, which allowed for ease of processing.

The analytical process yielded the following outcome space:



## *Discussion*

### Skills and knowledge acquisition

As anticipated, the class of 32 graduate students demonstrated an overall trend of increased knowledge and skills. This was evidenced through student assessment scores. The most common trend among students was initial high performance with students sustaining that performance across all three assessment tasks. Several students exhibited low scoring on the first assessment and then demonstrated increased score gains, suggesting that the feedback model had some positive effect. There were a small number of students who demonstrated consistently low outcome achievement and earned a low final course score. Through the formal process of the graduate program's academic warning system, it became apparent that in most of these cases, this scoring pattern reflected an overall trend in the relevant students' achievement across their program of study and was not course-specific. The overall picture of students' knowledge and skills acquisition was positive. Interestingly, there did not appear to be any discernable correlation between the six study participants' assessment scores/final grades and their conceptions of assessment.

During the first set of interviews, pre-service teachers expressed conceptions vividly and with highly emotive language, both positive and negative (i.e. "It transformed me." "It was awful," "I felt horrible."). Their vocabulary though was frequently vague and their conceptions less frequently grounded in exemplars than that of practicing teachers. Many preconceptions emerged around participants' personal histories and experiences as students. Exhibited content knowledge and skills were absent from their discourse. This changed, somewhat between pre- and post interviews. Pre-service participants demonstrated more concretized language in the second interviews and utilized definitions and concepts that were congruent with the course curriculum.

Participants who were practicing teachers employed a more concretized vocabulary and greater use of teaching as an exemplar/illustrative during the first interview. As with the pre-service teachers, conceptual language was vivid and participants' frequently grounded the discussion in personal experience as students. Unlike pre-service teachers, practicing teachers also included examples that related to their professional practice. However, their knowledge of assessment was often based on apparent misinformation and was contrary to or at least divergent from the content and skills taught in the course on assessment. Within the second interviews of practicing teachers, there was change in knowledge and skill elements of literacy, but less so than in the pre-service teacher group. Participants expressed concepts and utilized vocabulary and concepts that related to the course curriculum, but this appeared to be synthesized with pre-existing knowledge. As some pre-existing knowledge appeared incongruous with the course curriculum, this led to the prevalence of some expressed knowledge that may be considered incorrect or misinformed.

### Validation of the TCOA Framework

To a large extent, the findings from this study were in congruence with the existing TCOA Framework (Brown, 2002) of improvement of teaching and learning, accountability of teachers and schools, accountability of students, and irrelevance. Although the coding process yielded a different structure than that of the TCOA, the elements of the TCOA, were threaded through the discussion, with one notable variation. Brown (2002, 2004) notes that the conception of irrelevance may be divided into the conceptions of assessment as bad and as unimportant. In this

study, none of the participants expressed the conception that assessment was unimportant; in fact in both pre and post interviews, all participants firmly expressed the conviction that assessment was important and that it mattered, for good or ill. This may, however actually coincide with the NZ and Queensland results if we consider the mean score and correlations of the irrelevance factor. The mean score is low in the marginal negative territory and the correlation with improvement is negative .70 to .80. This means that they don't believe it is irrelevant and improvement is actually positively correlated with relevance as opposed to irrelevance; rationally, a conception of assessment cannot be for improvement if it is irrelevant.

#### Changing teacher beliefs and the teacher belief problem

A dominant conception within both pre and post course interviews of assessment was that assessment was negative. In her first interview, Svetlana, a practicing teacher describes her experience with assessment as a student:

Horrible. As a child, I felt embarrassed if I didn't pass something or if I spelled words wrong in dictations; If my math results were the worst in the class, I felt so bad. It just killed my personality and I got so many complexes and (have) so many bad memories about being tested.

This vivid response was demonstrative of a general trend among participants. Brown (2004, 2008) has shown that the conception of assessment as irrelevant includes notions that assessment is "bad" for sound pedagogical practice or does not interact with pedagogy (Brown, 2004). Certainly, participants made the connection to issues of practice as well as the perception of practice, as Iris, a pre-service teacher suggests:

Well, I just heard it from one of my friends ...who was working for eleven years; someone from the district came in to observe her and they just wrote a few things...The principal came in and said that she didn't get really a good assessment....the person who really is in the system.....should be the one who is assessing, not the one who is not.

Here, Iris suggests expands assessment to include assessment/evaluation of the teacher and as a control and monitoring mechanism. This bears some similarity to the belief in assessment as means of control and monitoring of teachers (Brown, 2008a). Although other conceptual categories emerged and developed between pre-and post-course interviews, this negative conception of assessment remained dominant in both pre- and post-course interview sets, especially among practicing teachers. For example, Svetlana who had described assessment as "horrible" had this to say in the post-course interview:

They are checking the abilities for all the students, the same age, the same group of kids and so on; but at the same time, they're all different. That's what isn't fair... This is the data and we need it but... as the teacher, I would prefer to grade my students not based on their unit tests, standardized test, but I would rather than test them, include different ways to assess... and incorporate that into their grades.

Svetlana's post-course interview response, while negative is also tinged by the expressed desire to engage with elements of innovative assessment, such as those discussed and

implemented in the course she had just taken. Her comment above constraints placed upon her as a practicing teacher prevent her from doing this. This suggests that the persistence of her negativity may be an ecologically rational response (Gigerenzer, 2005) to her experience as a practicing teacher; her experience as a practicing teacher while not preventing knowledge acquisition, may be inhibiting the conceptual element of change necessary for change in assessment literacy.

Svetlana's responses were demonstrative of a general trend; while there was some change in participants' knowledge of assessment techniques and methods between pre- and post-interviews, the potency and presence of negative conceptions of assessment were only slightly mitigated by the course on assessment. This was especially true for participants who were practicing teachers. Practicing teachers generally expressed negative conceptions in the first interview set and demonstrated nominal variance in the second set of interviews.

### *Conclusion*

Participants conceptualize assessment as always mattering. However, the ways in which assessment matters are disproportionately negative and suffuse any number of other conceptions of assessment, such as participants' personal history, their practice in the classroom, and even their perception of assessment as a means of surveillance and control of teachers.

The course on educational assessment may have had some positive mediating affect on conceptions as well as other factors in assessment literacy achievement for pre-service teachers. However, the degree of change in both areas was not profound and opens some questions as to the efficacy of this model of course/program design to achieving assessment literacy.

The course on assessment had a very limited effect on the pre-conceptions of practicing teachers. Given both the lack of change and the negativity of these participants' conceptions, the degree of assessment literacy acquired by these participants may have been less than that of pre-service teachers. This is further supported by the degree of "wrong" information participants entered the course with, and held onto through the course. This may have significant implications for how in-service teacher education is approached, in terms of raising assessment literacy. This may also have implications for understanding the powerful relationship between practice, conceptions, and change in knowledge and skills.

Consistent with Richardson and Placier (2001), we conclude that a knowledge-transfer model of pre- or in-service professional preparation or development used in this assessment course is insufficient to modify deeply held conceptions teachers have about the negative role assessment plays in contemporary educational settings. Alternate models for designing courses that lead to conceptual change include Ajzen's (1991) theory of planned behavior and Gregoire's (2003) cognitive-affective model of conceptual change, both of which emphasize the importance of attitudes, intentions, and sense of personal control. At a minimum, it seems essential that assessment courses deal directly with the negative perceptions of assessment and their factual basis as part of a program to improve the quality of teacher assessment literacy.

Previous studies of practicing teachers (Brown, 2008; Brown & Lake, 2006; Brown, Kennedy, Fok, Chan, & Yu, 2009; Harris & Brown, 2009) have shown that teachers are aware of multiple conceptions of assessment. While multiple categories were identified within this study, the dominance of irrelevance (i.e., assessment is negatively related to pedagogy) represents a contrast with existing literature. This result may be a consequence of the small sample and the data analytic technique; however, it may also reflect the realities of how assessment is used in the school contexts in which the teachers are employed or seek to be employed. Future research

is warranted through conducting a larger-scale study employing both surveys and interviews with teachers in the high-stakes school-accountability environments of the American school system.

### *Implications*

The Elementary and Secondary Education Act (ESEA) of 1965 established the importance of accountability as part of education in the United States. In the last iteration of ESEA, No Child Left Behind, the lives of professional educators became increasingly suffused with an urgency for data and accountability, leading to educators' professional success and survival becoming linked to their literacy in assessment (Popham, 2004). As a response, educational reformers and experts have called for building the capacity of teachers to be "literate" in assessment through teacher education (Stiggins, 1999, Popham 2004). This has become of special importance in high stakes urban environments, like New York City where there are large populations of at-risk students. Increasing standards for assessment competency and increasing calls for assessment literacy among teachers has provoked the response in teacher education programs of increasing focus on educational assessment within the existing curriculum, and including courses that focus exclusively on assessment (Stiggins, 1999). It would seem from the literature, validated by the results of this study that this response is of limited value in enhancing assessment literacy. While a course in assessment may, predictably lead to increases in knowledge, it would appear the critical component of conceptions goes unaddressed. This is problematic for those individuals entering teacher training who possess negative conceptions of assessment. It is equally problematic that practicing teachers entered the course with firmly held negative conceptions and knowledge that was incorrect. As this study suggests, conceptions can be challenged with slight success in pre-service teachers, but once teachers enter the profession, conceptions and knowledge tend to be cemented in place. Given the clear evidence that conceptions play a pivotal role in achieving assessment literacy, it may be necessary for teacher education programs to engage with and challenge conceptions of assessment as part of the explicit curriculum. Further, challenging conceptions and knowledge of assessment may be especially important for working with practicing teachers, as both seem especially well-entrenched in this population.



## References

- Akerlind G.S. (2005). Variation and Commonalities in Phenomenographic Research Methods. *Higher Education Research & Development* 24(4), 321-334.
- Ajzen, I. (2005). *Attitudes, personality and behavior* (2nd ed.). New York: Open University Press.
- Arter, J. A. (2001, April 11-13). *Washington assessment professional development program evaluation results*. Paper presented at the Annual Meeting of the National Council on Measurement in Education (NCME), Seattle, WA.
- Berry, R. (2011). Assessment trends in Hong Kong: Seeking to establish formative assessment in an examination culture. *Assessment in Education: Principles, Policy & Practice* 18(2), 199-211.
- Biggs, J.B. (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32, 1-18.
- Brown, G. T. L., & Harris, L. R. (2009). Unintended consequences of using tests to improve learning: How improvement-oriented resources heighten conceptions of assessment as school accountability. *Journal of MultiDisciplinary Evaluation*, 6(12), 68-91.
- Brown, G. T. L., Lake, R., & Matters, G. (2011). Queensland teachers' conceptions of assessment: The impact of policy priorities on teacher attitudes. *Teaching and Teacher Education*, 27(1), 210-220. doi:10.1016/j.tate.2010.08.003
- Brown, G. T. L., Kennedy, K. J., Fok, P. K., Chan, J. K. S., & Yu, W. M. (2009). Assessment for student improvement: Understanding Hong Kong teachers' conceptions and practices of assessment. *Assessment in Education: Principles, Policy & Practice*, 16(3), 347-363. doi: 10.1080/09695940903319737
- Brown, G. T. L. (2002). Conceptions of assessment III abridged survey. *Research Survey Published by the University of Auckland, NZ*. Retrieved July 26, 2007, from <http://www.arts.auckland.ac.nz/FileGet.cfm?ID=0839d599-6870-480a-b922-40ccb60fa1e5>
- Brown, G. T. L. (2004). Teachers' conceptions of assessment: Implications for policy and professional development. *Assessment in Education: Principles, Policy & Practice*, 11(3), 301-318.
- Brown, G. T. L. (2008a). *Conceptions of assessment: Understanding what assessment means to teachers and students*. New York: Nova Science Publishers.
- Brown, G. T. L. (2008b). Assessment literacy training and teachers' conceptions of assessment. In C. Rubie-Davies & C. Rawlinson (Eds.). *Challenging Thinking about Teaching and Learning* (pp. 285-302). New York: Nova Science.
- Brown, G. T. L. (2009). Teachers' self-reported assessment practices and conceptions: Using structural equation modelling to examine measurement and structural models. In T. Teo & M. S. Khine (Eds.), *Structural equation modeling in educational research: Concepts and applications* (pp. 243-266). Rotterdam, NL: Sense Publishers.
- Choi, C. (1999). Public examinations in Hong Kong. *Assessment in Education: Principles, Policies, & Practice*, 6(3), 405-417.
- Cizek, G. J., Fitzgerald, S. M., & Rachor, R. E. (1995-96). Teachers' assessment practices: Preparation, isolation, and the kitchen sink. *Educational Assessment*, 3(2) 159-179.
- Carless, D. (2007). Conceptualizing pre-emptive formative assessment. *Assessment in Education*, 14(2), 171-184.

- Gigerenzer, G. (2005). Is the mind irrational or ecologically rational? In F. Parisi and V. L. Smith (Eds.), *The law and economics of irrational behavior*, (pp. 37–67). Stanford, CA: Stanford University Press.
- Harris, L. R., & Brown, G. T. L. (2009). The complexity of teachers' conceptions of assessment: Tensions between the needs of schools and students. *Assessment in Education: Principles, Policy & Practice*, 16(3), 365-381. doi: 10.1080/09695940903319745
- Hill, M. (1999). Assessment in self-managing schools: Primary teachers balancing learning and accountability demands in the 1990s. *New Zealand Journal of Educational Studies*, 34(1), 176-185.
- Marton F. (1986). Phenomenography: A research approach to investigating different understanding of reality. *Journal of Thought*. 21(3), 28-49.
- Messick, S. (1989). Validity. In R. L. Linn (Ed.), *Educational Measurement* (3rd ed., pp. 13-103). Old Tappan, NJ: MacMillan.
- New Zealand Ministry of Education. (2007). *The New Zealand Curriculum for English-medium teaching and learning in years 1-13*. Wellington, NZ: Learning Media.
- Popham, W. J. (2000). *Modern educational measurement: Practical guidelines for educational leaders* (6th ed.). Boston: Allyn & Bacon.
- Popham, W. J. (2008). *Classroom assessment: What teachers need to know*. (5<sup>th</sup> ed.). Boston: Pearson.
- Quilter, S. M. (1998). *Inservice teachers' assessment literacy and attitudes toward assessment*. doctoral dissertation, University of South Carolina, Columbia, SC.
- Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), *Handbook of Research on Teaching* (4th ed., pp. 905-947). Washington, DC: AERA.
- Rust, C., Price, M., & O'Donovan, B. (2003). Improving students' learning by developing their understanding of assessment criteria and processes. *Assessment and Evaluation in Higher Education*, 28(2), 147-164.
- Spradley, J. P. (1979). *The ethnographic interview*. New York: Holt, Rinehart & Winston.
- Stiggins, R. J. (1995). Assessment literacy for the 21st century. *Phi Delta Kappan*, 77(3), 238-245.
- Stiggins, R. J. (1998). Confronting the barriers to effective assessment. *School Administrator*, 55(11), 6-9.
- Stiggins, R. J. (1999). Assessment, student confidence and school success. *Phi Delta Kappan*, 81(3), 191-198.
- Stiggins, R. J., & Chappuis, J. (2005). Using student-involved classroom assessment to close achievement gaps. *Theory into Practice*, 44(1), 11-18.
- Timperley, H. (2003). Evidence-based leadership: The use of running records. *New Zealand Journal of Educational Leadership*, 18, 65-76.