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Keith Roscoe

University of Lethbridge, keith.roscoe@uleth.ca

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Enhancing Assessment in Teacher Education Courses

Abstract

Several faculty members including the author were involved in exploring the implementation and effectiveness of research-based assessment strategies in their undergraduate teacher education courses at a Canadian university. The paper describes the process and the results of their ongoing improvement efforts and implications for teacher education and higher education in general. After attending several assessment workshops lead by the author, 12 faculty members implemented new assessment strategies in their own courses to enhance student learning. As the 12 faculty members reflected on their efforts to enhance assessment, a number of themes emerged. These included assessment as authentic performance, establishing clear learning targets, collaboration and community, and integrated assessment and instruction. Our results support the claim that current ideas about K-12 assessment are applicable to post-secondary education and can improve student learning outcomes. Developing balanced and integrated assessment systems is perhaps the most significant innovation we engaged in and we conclude that it has the potential to fundamentally change what occurs in university classrooms.

Plusieurs professeurs, y compris l'auteur, ont exploré la mise en oeuvre et l'efficacité de stratégies d'évaluation basées sur la recherche dans le cadre de leurs cours de formation pour les enseignants. L'article décrit le processus et les résultats de leurs efforts pour améliorer la formation des enseignants et plus généralement l'enseignement, ainsi que les implications de cette approche.

Après avoir participé à plusieurs ateliers sur l'évaluation dirigés par l'auteur, 12 professeurs ont mis en oeuvre de nouvelles stratégies d'évaluation dans leurs propres cours pour améliorer l'apprentissage des étudiants. Quand les 12 professeurs ont réfléchi sur leurs efforts pour améliorer l'évaluation, un certain nombre de thèmes sont apparus, entre autres : l'évaluation en tant que performance authentique, l'établissement d'objectifs d'apprentissage clairs, la collaboration et la communauté, l'intégration de l'évaluation et de l'instruction. Nos résultats étayaient l'affirmation selon laquelle les théories actuelles sur l'évaluation dans les écoles (K-12) sont applicables en enseignement post-secondaire et peuvent améliorer l'apprentissage des étudiants. Le développement de systèmes d'évaluation équilibrés et intégrés est peut-être l'innovation la plus importante dans laquelle nous nous engageons et nous en concluons que cette pratique a le potentiel de changer radicalement ce qui se passe dans les salles de classe des universités.

Keywords

classroom assessment, balanced assessment, improving assessment, teacher education

Cover Page Footnote

Keith Roscoe, Faculty of Education, University of Lethbridge This research was supported by assistance from the Alberta Assessment Consortium and the University of Lethbridge Faculty of Education. Thanks to Marlo Steed, Maurice Hollingsworth, Danny Balderson, Sherry Nichol, Tom Wilson, and Gina Troskot for your valuable insights and assistance. Correspondence concerning this article should be addressed to Keith Roscoe, Faculty of Education, University of Lethbridge, 4401 University Drive, Lethbridge, Alberta, Canada T1K 6G6. Email: keith.roscoe@uleth.ca

Over the last three decades, there has been a major shift in thinking about assessment in North America and around the world. In K-12 education, the overall emphasis in assessment, the gathering of information about student learning, is changing from determining and reporting grades towards tapping the potential of assessment for improving learning (Alberta Assessment Consortium, 2005a, 2005b; Black, Harrison, Lee, Marshal, & Wiliam, 2003; Mentkowski, 2000; Stiggins, Arter, Chappuis, & Chappuis, 2006; Sutton, 1995; Wiggins, 1998; Wiliam, 2011). Several developments have contributed to this changing view of assessment. Cognitive research has provided new insights into learning and learners, changes in the workplace and society have created a demand for updated content, skills, and assessment in the school curriculum (Jacobs, 2010; Trilling & Fadel, 2009), and educational research has illustrated the effectiveness of research-based assessment strategies (Black & Wiliam, 1998a, 1998b; Black et al., 2003; Stiggins et al., 2006, Sutton, 1995). Traditional assessment approaches that focus solely on evaluation and grading are no longer appropriate given the current understanding of learning and assessment and the challenges of educating K-12 students for the new century.

A changing view of assessment in the schools along with the multiple challenges faced by universities such as growing student diversity, the knowledge explosion, and demand for improved teaching and learning (McKinney, 2007) has impacted views on assessment in higher education. In Europe, the forty-seven countries involved in the Bologna Process for streamlining and improving higher education have pledged their commitment to student-centred learning. This includes the development of learning outcomes for all programs as well as the implementation of new approaches to teaching and learning, including improved assessment (European Area for Higher Education, 2009). In the U.K., there is growing recognition of the need for more diversified forms of assessment that enhance student learning in higher education, particularly formative assessment (Hatzipanagos & Rochon, 2010; Irons, 2008; Nicol & MacFarlane-Dick, 2006). In the United States, the focus appears to be on standardizing summative assessment of postsecondary student achievement (Association of American Colleges and Universities, 2002; U.S. Department of Education, 2006). As yet, relatively little attention appears to have been paid in the literature to improving formative or summative assessment in Canadian universities. This paper addresses this gap by documenting an initiative to improve assessment in a Canadian university program.

Context of the Project

The *Enhancing Assessment in Teacher Education* project at the University of Lethbridge Faculty of Education was conducted in partnership with The Alberta Assessment Consortium (AAC). The AAC, a non-profit organization with close to a hundred K-12 and post-secondary member jurisdictions, offers leadership and support for effective research-based assessment in schools and higher education. In early 2008, the Alberta Assessment Consortium proposed a two-year collaborative project with the University of Lethbridge to enhance assessment and evaluation practices in the Faculty of Education. The initiative was in keeping with the AAC Vision that “universities prepare teachers to provide classroom assessment practices that support student learning” and “assessment practices at elementary, secondary and postsecondary institutions are closely aligned” (Alberta Assessment Consortium, 2008, p. 1). At the same time, the project would address the need for improved teacher preparation in classroom assessment identified in various Alberta Education documents (Alberta Education, 2002, 2006).

The project addressed both professional development and research purposes, namely (a) to provide quality professional development in research-based assessment practices to instructors, (b) to enlarge the base of assessment expertise and build assessment capacity within the faculty in support of improved student teacher performance, and (c) to gather data and publish the results as a contribution to the advancement of assessment and evaluation practices in colleges and universities (Alberta Assessment Consortium, 2008). In order to accomplish these aims, the consortium would contribute assessment materials, consulting services from two assessment specialists, and professional development seminars to participating faculty members. Faculty participants committed to attend professional development seminars, implement new assessment tools and techniques in their classes, and gather data on the implementation of the assessments and their impact on student learning. The project leader at the Faculty of Education was the author, the AAC Jurisdiction Representative for the university at that time. Faculty administration agreed to lend support to the project in early 2008 and human research ethics approval for the research component was obtained in late May 2008.

Participation in the *Enhancing Assessment* project was open to all interested faculty members, including tenured faculty, contract instructors, and seconded teachers. In the first year of the project, 2008-2009, twelve out of forty University of Lethbridge Faculty of Education members participated. In that initial year, the group decided that the emphasis should mainly be on professional development and creating a community of professional practice. During 2009-2010, there were again twelve faculty involved, including three new participants. The focus for this group was on setting goals and implementing changes to classroom assessment.

The questions that guided the professional development aspects of the project were: (a) What are my current assessment practices? (b) Which formative assessment strategies should I implement in my courses, and why? (c) How can I improve my summative assessment tools and strategies? With regards to the research component of the project, data collection was focused around these four questions: (a) What formative assessment strategies did participants implement in their courses? (b) What impact did these strategies have on student teachers' learning and participants' teaching practice? (c) What changes did participants make to their summative assessment practices and what was the impact on learning? and (d) What factors promoted or inhibited the implementation of research-based assessment strategies in participants' courses?

A variety of qualitative and quantitative methods were used to document the changes in assessment practice and their impact on teaching and learning. Faculty participants engaged in self-reflection, were interviewed individually, completed a 29-item survey with open-ended and selected response items, and contributed relevant documents such as course outlines and assignment handouts for analysis.

The Process of Enhancing Assessment

Professional Development: Tapping into the Knowledge Base

One of the purposes of the Enhancing Assessment project was to make current "best practice" assessment materials and ideas available to education faculty as well as to university teaching staff in other faculties. Accordingly, between April and December 2008, a series of professional development seminars was collaboratively planned and delivered by two AAC staff and the University of Lethbridge AAC jurisdiction representative (the author). The Enhancing

Assessment seminars, a series of AAC K-12 assessment workshops, modified to address the teacher education context, dealt with the following topics:

1. Re-examining assessment practices in teacher education.
2. Orientation to enhancing assessment in teacher education.
3. Assessment 101: Exploring the links among curriculum, instruction, & assessment.
4. Grading: Give them what they deserve.
5. Classroom assessment that works in teacher education.

An average of 12 participants attended each workshop, and the faculty involved told us that the seminars were a unique and powerful opportunity to discuss assessment ideas and issues they had rarely talked about at the post-secondary level before. Key topics included learning by design, balanced multi-dimensional assessment, the use of a variety of formative assessment strategies, active involvement of students in assessment, and new approaches to marking and grading.

Self-Assessment and Collaborative Planning

A key feature of the professional development component of the Enhancing Assessment project was encouraging participants to self-assess their current assessment practices. During seminar 1 (Re-examining assessment practices) and seminar 5 (Classroom assessment that works), participants used self-assessment tools developed by the author to reflect upon the way students are assessed in our classes. The Self-reflection tool for examining classroom assessment as a system (Figure 1), developed by the author, was used to help participants examine and question various components and aspects of our assessment practice as a whole. This self-assessment tool was adapted for a teacher educator audience from the Alberta Assessment Consortium's Key Visual entitled, "Assessing Student Learning in the Classroom" (Alberta Assessment Consortium, n.d.). The figure presents the essential parts of an assessment program, seen as a system of interacting components. The items in the boxes represent the essential elements: (a) the Desired Outcomes and Standards for the program (that the other components are built around); (b) effective Assessment Design for both formative and summative assessment, techniques and tools for gathering evidence for formative and summative purposes; and (c) key elements of formative assessment such as communicating clear learning targets, providing effective formative feedback, and encouraging student self-reflection.

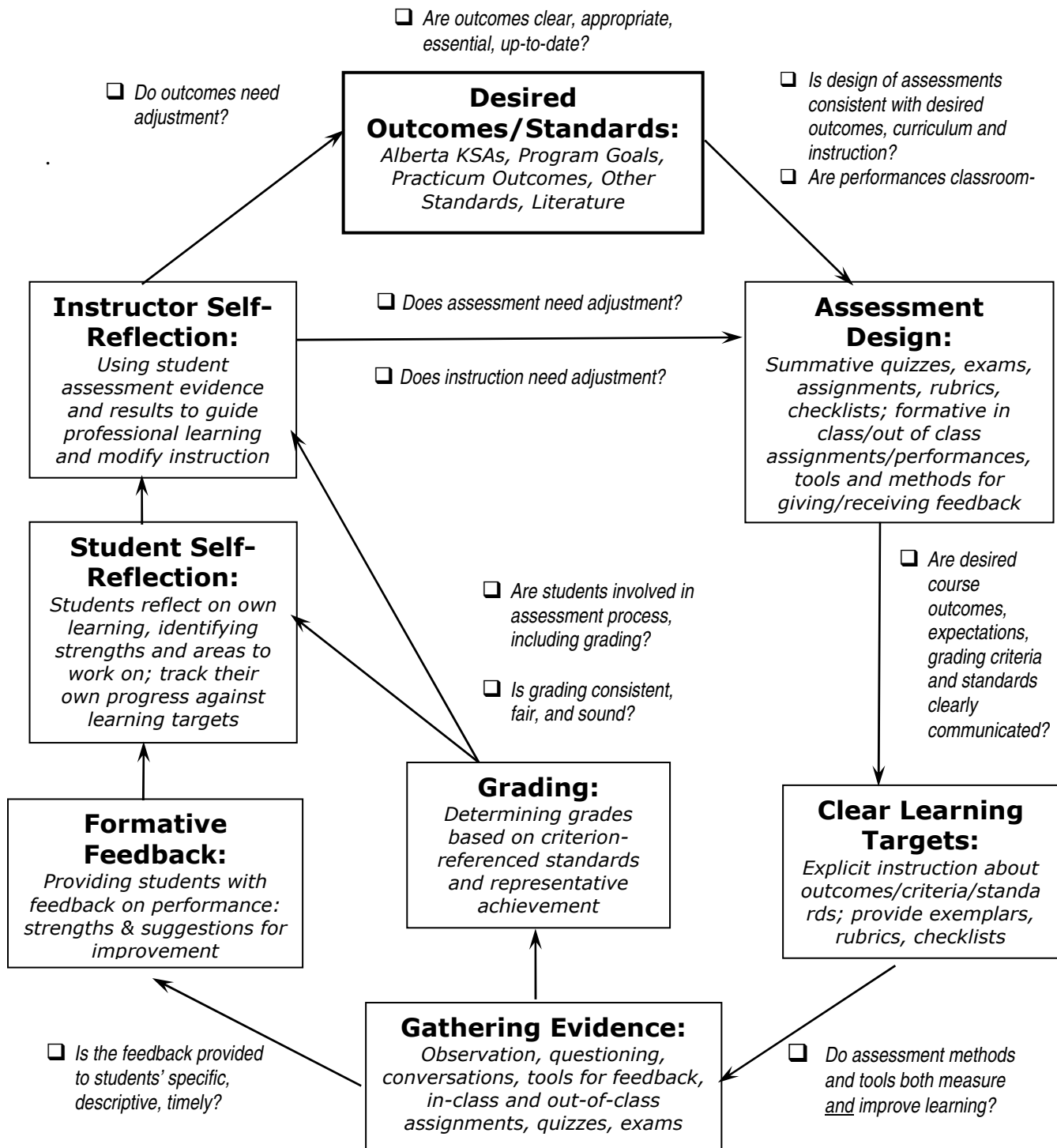


Figure 1. Self-reflection tool for examining classroom assessment as a system (2012). Adapted from the “AAC Key Visual,” by Alberta Assessment Consortium, retrieved from <http://www.aac.ab.ca/resources/Visuals/KeyVisualrev2012.pdf>

Also included in Figure 1 are the critical components of summative assessment, Grading practices and the component that drives the whole system, Instructor Self-Reflection. The arrows in the figure illustrate the flow of interactions, for instance from applicable professional standards and literature (Desired Outcomes) to Assessment Design, or from specific descriptive Formative Feedback to Student-Self-Reflection on their strengths, weaknesses and learning goals. Finally, there are check-boxed questions to guide participant self-assessment, such as, “Are outcomes clear appropriate, essential, up-to-date?” and “Do assessment methods and tools measure and improve learning?”

In conjunction with this Figure 1, the Self-inventory for assessment practice (Figure 2), also created by the author, was used by project participants to facilitate individual self-reflection and to develop a profile of our current assessment practices as individuals, and collectively. In small groups, we shared rationales for strategies we were already using, discussed strategies we would consider implementing, and identified strategies that seemed inappropriate or undesirable. This was followed by animated discussion regarding the implications for teacher education, guided by the following questions:

- Are assessment ideas and practices designed for schools relevant to teacher education and higher education in general?
- Are these assessment practices currently being used by teacher educators?
- Should teacher educators be modeling effective assessment practices in their classrooms?

In general, the consensus among the participants was that some K-12 assessment practices were definitely relevant to and effective in higher education. Participants thought that this was especially the case for teacher education where instructors, whether seconded teachers, sessionals, or full-time faculty, should be modeling effective research-based assessment in their classes.

| Assessment Practice | Always | Sometimes | Not Yet |
|--|--------|-----------|---------|
| <i>Learning Targets</i> | | | |
| 1. I ensure that students clearly understand my course goals/objectives. | | | |
| 2. I ensure that students understand my criteria and standards for tests and assignments. | | | |
| 3. I share exemplars of previous student work with students. | | | |
| 4. I use rubrics that clearly describe criteria and standards for assignments. | | | |
| <i>Assessment Design</i> | | | |
| 5. My assignments and tests accurately represent what is taught in my classes. | | | |
| 6. My assessment instruments (assignments and tests) are clearly connected to program outcomes and the Alberta Teacher KSAs. | | | |
| 7. I use classroom-relevant performance assessments in my courses. | | | |
| 8. I use diagnostic/pre-assessments before instruction to check students' prior knowledge and skills. | | | |
| 9. I provide student with assessment options/choices for demonstrating their knowledge and skills. | | | |
| <i>Grading</i> | | | |
| 10. I ensure that students understand how their grades will be determined at the beginning of the course and throughout the course. | | | |
| 11. I use sound practices to determine grades (criterion-referenced standards, no zeros, based on individual achievement, most recent evidence, etc.). | | | |
| 12. I use a variety of assessment strategies and instruments in my courses. | | | |
| <i>Communicating Results</i> | | | |
| 13. I provide students with specific descriptive feedback on graded tests and assignments. | | | |
| 14. My feedback clearly informs students what they have mastered and what they still need to work on. | | | |
| 15. I provide students with formative feedback on non-graded performances and assignments. | | | |
| 16. I use assessment information to revise instruction and student activities during my courses. | | | |
| 17. I use assessment information to revise instruction and student activities the next time a course is taught. | | | |
| <i>Student Involvement</i> | | | |
| 18. I encourage students to self-assess their work against specific criteria. | | | |
| 19. I encourage students to monitor their progress in my courses. | | | |
| 20. I encourage students to identify learning strengths, areas of need, and goals for further learning. | | | |

Figure 2. Self-inventory for assessment practice.

After completing the series of professional development seminars, we engaged in further reflection on our assessment practices using the assessment self-inventories, assessment system graphic, and the Planning tool for Next Steps phase of the Enhancing Assessment Project (Figure 3). We shared our ideas with colleagues teaching similar courses or having similar assessment interests, explored possibilities for collaboration, and set goals and made plans for the Spring (January-April) semester. Participants joined one of three groups: Curriculum and Instruction (methods) instructors, Instructional Technology/Online Course instructors, and instructors teaching the Orientation to Teaching pre-admission course.

| Assessment Practice | Comments |
|---|----------|
| <i>Formative Assessment</i> | |
| F1. Improve students' understanding of course goals and objectives and criteria and standards for written and other assessment tasks. | |
| F2. Share specific learning targets for each class and activity. | |
| F3. Use pre-assessments before instruction to check students' prior knowledge and skills. | |
| F4. Share exemplars of previous student work. | |
| F5. Use scoring guides and checklists to communicate performance criteria and standards. | |
| F6. Create a supportive classroom assessment environment that involves thoughtful questioning, careful listening, and ongoing feedback. | |
| F7. Enable students to reflect on their work , identifying learning strengths, areas of need, and goals for further learning. | |
| F8. Engage students in peer coaching to improve their understanding of what is expected of them, recognize the standard of work required, and foster collaborative learning. | |
| F9. Use a range of in-class formative assessment approaches to monitor students' progress and provide feedback on learning. | |
| <i>Summative Assessment</i> | |
| S1. Ensure alignment of summative assessments with KSAs, Practicum Outcomes and Course Outcomes. | |
| S2. Ensure that students understand how their grades will be determined at the beginning of the course and throughout the course. | |
| S3. Use a range of summative assessments to evaluate students' performance and achievement. | |
| S4. Use performance assessments to provide students with an opportunity to demonstrate knowledge and skills through meaningful real-life professional tasks. | |
| S5. Ensure that grading practices avoid distortion of achievement, inappropriate organization of information, and inappropriate calculation of grades. | |
| S6. Provide student with appropriate options for demonstrating their knowledge and skills. | |
| S7. Use scoring guides that clearly reflect and describe criteria and standards for evaluation of performance. | |
| S8. Provide students with specific descriptive feedback on graded tests and assignments. | |
| S9. Use summative assessment information to revise instruction and student activities during courses and before the next time a course is taught. | |

Figure 3. Planning tool for Next Steps phase of the Enhancing Assessment Project.

In late May 2009, the faculty involved gathered for a Spring Semester De-Brief. During this session we shared our accomplishments in enhancing assessment, identified what worked and what didn't, discussed the factors that helped or hindered improvement, completed a survey on the project, and discussed next steps for the following academic year. Professional development for 2009-2010 consisted of a start-up seminar in early October and a Wrap-Up Seminar in May 2010. The 2009-2010 seminars and our more informal Fall 2010 professional discussions followed the general pattern illustrated in Figure 4, Professional development cycle for Enhancing Assessment project. In between seminars and meetings, participants implemented planned changes to their courses, informally monitored the impact on student learning and behavior, and made a note of any issues or concerns that arose. Participants had frequent informal discussions with each about efforts to enhance assessment during the academic year in offices, hallways, the cafeteria and the faculty lounge.

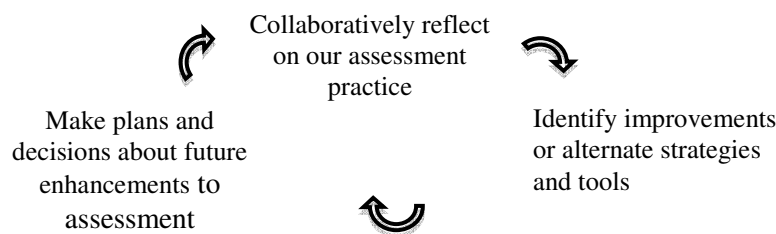


Figure 4. Professional development cycle for Enhancing Assessment project.

Results of Enhancing Assessment

The outcomes described below address the work of the three participant groups involved in the project: (a) the Methods Group (sciences, social studies, career and technology studies, and physical education); (b) the IT/Online Group; and (c) the Introductory Courses Group. During January-April, 2009, instructors within these groups collaborated in planning a number of changes in assessment approaches, tools and techniques aimed at improving student teacher professional learning. Analysis of the data gathered from individual interviews, participant surveys, and participant documents revealed a number of patterns or themes. Four of the themes will be considered here: (a) assignments as authentic performances, (b) clear learning targets for assessment, (c) importance of community and collaboration, and (d) integrating assessment and instruction.

Theme 1: Assignments as Authentic Performances

The Enhancing Assessment seminars involved much reflection and discussion around learning design and appropriate learning goals and assessments for a professional education program. Participants in all three groups (Methods, IT, and Introductory Courses) reaffirmed their commitment to summative assessments that would: (a) emphasize authentic teacher performances over standard academic performances (exams, essays, reports), and (b) provide students with knowledge and skills they would need in the classroom. Participants suggested that key criteria for an assessment performance in teacher education were: (a) is the performance strongly related to the relevant professional standards? (i.e., the Alberta Education Teaching Standards for certification and the Faculty of Education Practicum Outcomes); (b) Is the

performance closely related to real work that teachers perform in schools?; and (c) Is this a significant performance for today's beginning teachers? As a result of discussion around the need for assessments involving authentic performances for teacher education, participants developed new, more authentic assignments, adjusted instruction to support the more authentic assessments, and developed better formative assessment tools and strategies to promote student teachers' success with the new assignments.

In the Science Methods group, instructors' reflections prompted the modification of several assignments (a unit plan, a science mini-lesson, and a teacher professional growth plan), and the introduction of a new assignment (an introductory or culminating performance assessment for a particular science unit) and set of outcomes. In collaboration with AAC assessment consultant Sherry Bennett, the author created a three-hour workshop to help pre-service teachers to develop this relatively complex assessment tool. In the workshop, student teachers acquired new information, looked at exemplars, and worked and received feedback on sub-tasks such as identifying suitable and relevant sets of outcomes from the Alberta Program of Studies, translating outcomes into criteria, and writing student-friendly learning task statements. Further instruction and practice was provided in developing assessment tools such as rubrics, rating scales and self-assessment tools.

Undergraduate science education majors found that developing a unit performance assessment at a professional standard was satisfying and worthwhile, though cognitively challenging and demanding in terms of the time and effort required. All student teachers produced performance assessments that met the standard and a number were suitable as exemplars for future classes with little modification. Some student teachers told us that they were able to incorporate their performance assessments into their unit plans and use them successfully during the practicum—with positive outcomes for their students (better motivated students, fewer discipline problems, and better understanding of concepts involved).

However, a few students reported in the survey that they found the assignment too open-ended, difficult, and time-consuming. Despite the complexity of teachers' work and the increasing demands placed on teachers in Alberta to implement authentic performance assessments in their classrooms, several student teachers reported that they would prefer a more straightforward traditional assignment, such as an essay.

Theme 2: Clear Learning Targets for Assessment

In the assessment literature (e.g., Chappuis, 2009; Stiggins et al., 2006), “clear learning targets” refers to the intended learning for a particular course or assignment, such as: What are students to learn? What are the learning goals? What is the nature of the intended performance? What are the relevant standards and criteria? Teachers communicate learning goals to students in the form of external curriculum standards, course outcomes, and the learning intended for a particular class or assessment performance. Research shows that when students have an accurate understanding of learning goals, the criteria and standards for assessment, and the expected performance, both motivation and performance improve (Black & Wiliam, 1998b; Black et al., 2003; Chappuis, 2009; Stiggins et al., 2006, Wiliam, 2011).

After reflecting on this information, we examined our assessment practices using the Self-reflection tool for examining classroom assessment as a system (Figure 1) and Self-inventory for assessment practice (Figure 2). As a result, the Methods group placed a priority on achieving more clarity and consistency in our communication of learning targets for assessment.

This initiative involved three components: (a) more explicit presentation and explanation of the practicum and course outcomes related to each assessment, (b) provision of detailed task descriptions, rubrics and checklists that clearly communicated performance criteria and standards, and (c) appropriate exemplars that illustrated an “excellent” level of performance for each assessment. Student teachers majoring in science and physical education indicated that the combination of assessment tools that detailed criteria with exemplars for that performance was very effective in clarifying instructor expectations, promoting self-assessment, and increasing confidence. For faculty, the experience reinforced the importance of gathering assignment exemplars from student work that match the given criteria and standards; especially for improving the performance of students who need more help, scaffolding and support.

Theme 3: Creating a Community of Learners

Another theme that emerged from the data was the necessity for and positive impact of student collaboration in their own assessment (i.e., when students become active partners in the assessment process). One level of collaboration occurs between the instructor and students. For instance, providing students with choices in instruction and assessment invites collaboration. Students collaborate when they choose to either proceed directly to an application task or receive more explanation and discussion of concepts and skills first, or when they choose amongst learning tasks at different levels of complexity. For example, an instructor would allow the students to decide as a class between completing a more basic learning task first or proceeding directly to a more challenging learning task. For effective assessment, participants stressed that students must “buy into” authentic learning tasks and collaborate fully with the instructor in completing tasks and otherwise becoming active partners.

A different level of collaboration encountered in the data lies amongst the students themselves. In order to complete learning-assessment tasks, students needed to work together in learning groups or teams, support each other’s learning, and provide peers with feedback, both orally and through peer editing. Instructors used a variety of strategies to build and maintain a supportive learning community in their classes which was a prerequisite for the type of collaboration involved. Peer collaboration in Methods courses continued outside class and into the practicum, as instructors introduced online instructor-led or student-led discussion forums, using Moodle software. Discussion forums held when students were off-campus in the field proved to be popular and self-sustaining. As they engaged in their second six-week teaching practicum, student teachers used the forums to maintain a sense of community, exchange ideas, support each other, share triumphs, and ask advice about failures. This was seen as an example of student teachers becoming active assessment partners in supporting learning and providing timely formative feedback to each other.

Theme 4: Integrated Assessment and Instruction

The assessment literature repeatedly emphasizes the need for integration of assessment into everyday instruction, so that assessment becomes intertwined with and indivisible from instruction (Black & Wiliam, 1998a, 1998b; Chappuis, 2009; Stiggins et al., 2006; Wiliam, 2011). Methods and IT/Online instructor groups began to envision classes (or the online equivalent) as opportunities to engage students in learning tasks that would require them to apply and demonstrate new learning while receiving focused feedback on their learning from instructor

and peers. This was in contrast with a more traditional approach that many of us had previously used, which saw classes as occasions for the efficient dispensing of information, with assessment separated from instruction (see Figure 5, Comparison of sequence of traditional instruction with sequence of integrated assessment and instruction).

| <u>Traditional University Instruction</u> | <u>Integrated Instruction and Assessment</u> |
|--|--|
| Lecture₁ Present new information | Class₁ Present Summative Performance Task, assessment tools, exemplars, learning resources; Assess student prior learning; Present/facilitate new learning as needed/ Make learning resources available; Students carry out Performance Sub-Task(s) ₁ ; Students get feedback |
| ↓ | ↓ |
| Lecture₂ Present new information | Class₂ Assess student prior learning; Present/facilitate new learning as needed/Make learning resources available; Students carry out Performance Sub-Task(s) ₂ ; Students get feedback |
| ↓ | ↓ |
| Lecture₃ Present new information | Class₃ Assess student prior learning; Present/facilitate new learning as needed/Make learning resources available; Students carry out Performance Sub-Task(s) ₃ ; Students get feedback |
| ↓ | ↓ |
| Lecture₄ Present new information | Class₄ Assess student prior learning; Present/facilitate new learning as needed/Make learning resources available; Students carry out Performance Sub-Task(s) ₄ ; Students get feedback |
| ↓ | ↓ |
| Summative Assessment Assignment Submission | Summative Performance Task Assignment Submission |

Figure 5. Comparing the sequence of traditional instruction with the sequence of integrated assessment and instruction.

In Methods classes, the capstone assignment is commonly the unit plan. Student teachers are required to plan a 5-6 week unit in their subject major that they then implement in a 6-week practicum directly following the on-campus methods class. Science, physical education, and social studies methods instructors described how they broke down the complex task of preparing a unit plan into manageable sub-tasks, or “stepping stones” to the final product. The sub-tasks included identifying and translating relevant outcomes from the program of studies, preparing an

assessment plan, locating relevant unit resources, and identifying appropriate instructional strategies.

As the Methods classes unfolded, the various sub-tasks of unit planning were addressed (see Figure 5). Student teachers acquired or consolidated new information, applied the new knowledge and skills to each sub-task, received formative feedback from instructor and peers on their performance, and revised their ideas and practices if necessary. Some methods instructors reported that they used a blended learning environment by supplementing face-to-face classes with an online component on Moodle. Placing some class components online (e.g., presenting new information and resources and assessing prior knowledge) freed up class time for applying new learning and feedback. A similar design concept shaped IT/Online courses. All new online learning was independent learning based on text, video, podcast, web learning resources, and learning activities were built around discussion forums, blogs and personal web pages.

Methods instructors related how they became more aware of the need to assess student teachers' learning readiness relative to each sub-task of an assignment, and adjust instruction accordingly. In some classes, students were ready to carry out the performance sub-task and apply their knowledge without further instruction. In others, extra explanations, examples, and guided practice were necessary to "scaffold" student learning towards successful completion of the day's sub-task. When it came time to prepare the unit plan or other assignment and submit it for summative assessment, students had already experienced guided practice and received feedback on the various components of the assignment. Student teacher response to this approach, as reported in interviews by their instructors, was generally positive, with the vast majority appreciating the opportunity to apply information and gain feedback by completing authentic learning tasks. Interestingly, 10% of student teachers told their instructors that they were more comfortable with a more traditional approach in which they played a passive role in class, listening, note-taking, and taking pen-and-paper tests.

Enhancing Assessment: Conclusions and Implications

The Enhancing Assessment project brought together a number of education faculty with an opportunity to reflect upon and improve their assessment practices. The data show that the project provided participants with a chance to develop assignments that were more closely related to the work teachers perform in schools, be clearer about what they wanted students to learn, involve students in the assessment process, and achieve a closer integration of assessment into everyday instruction. Furthermore, participants reported that the enhancements to their assessment practice had a beneficial impact on student teachers' learning and attitudes.

The results give some support to the claim that current research-based ideas about K-12 assessment are applicable to higher education and to teacher education in particular. Student teachers, for the most part, responded well to the same assessment approaches being used today in Alberta schools. Furthermore, teachers with strong assessment backgrounds seconded to the faculty from local schools reported that assessment ideas and strategies from the elementary and middle school levels are directly transferable to the university classroom.

The research of Black, Wiliam and others (Black & Wiliam, 1998a, 1998; Black et al., 2003; Wiliam, 2011) shows that a balanced assessment system, in which formative assessment (aimed at improving learning) supports summative assessment (aimed at measuring learning), significantly boosts student achievement, especially for lower achievers. This goes beyond merely using formative assessment strategies within a traditional instructional framework (e.g.,

Angelo & Cross, 1993; Irons, 2008; Nicol & MacFarlane-Dick, 2006). Participants found that the development and use of a greater variety of assessment tools and techniques, and emphasizing formative assessment (e.g., clear learning goals, effective feedback) seemed to improve overall performance on summative assessments (assignments) for pre-service teachers. The faculty involved also concluded that using a variety of formative and summative assessments is essential for modeling current best practice for student teachers.

The building of a collaborative community in teacher education classrooms seems to be a co-requisite for involving students in their own assessment and supporting the assessment of their peers. If K-12 students can be involved as active assessment partners, then student teachers and other post-secondary students certainly can, and should be fully involved. Of course there are challenges involved in realizing the potential of student involvement and collaboration in assessment. For instance, students' previous experience with, and predispositions towards assessment may form a barrier to implementation, or at least limit the effectiveness of collaboration. University students may be accustomed to a passive role in the classroom and motivated by grades, rather than being focused on learning and eager to take a more active role in their own assessment. Faculty may also be uncomfortable with giving students a more active role in the classroom, or may lack the skills needed to establish and maintain a collaborative classroom environment. Re-orienting instruction and assessment towards integrated instruction and assessment, developing authentic assessments and clearly articulating learning targets also has workload implications for faculty, and access to the professional learning involved may not be readily available in higher education settings.

Our rapidly changing global society will undoubtedly place increasing pressure on higher education to focus more strongly on student learning outcomes, particularly 21st century skills such as information technology skills, communication skills, teamwork skills, and critical thinking skills (Trilling & Fadel, 2009). Traditional approaches to assessment and instruction just cannot deliver this kind of learning, and change is inevitable. Based on participants' experience in this project, the processes and strategies for learning design and enhancing assessment work as a catalyst for ongoing classroom changes. Those involved in the project cannot conceive of designing a course any other way, regardless of mode of delivery, and perceive a clear trajectory for incremental improvement in teaching and learning. We are confident that the same ideas and strategies can be adapted to any post-secondary course or program, with the potential to fundamentally change what occurs in university classrooms.

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