Assessment in Higher Education and Student Learning

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ABSTRACT

This research addressed ongoing academic concerns about whether assessment practices in higher education support student learning. Authors state that examinations have become the focus of assessment, which adversely affect learning. Effective assessment for learning promotes the active engagement of students. A web-based survey gathered information from a sample of postsecondary educators in Alberta. The questionnaire used the three criteria of learning-oriented assessment, tasks as learning tasks (authentic), self- and peer assessment, and feedback to determine learning potential. Findings illustrated that the implementation of only three of 15 authentic tasks occurred by over 30% of educators. Results also found that teachers have conflicting views relative to student use of feedback and the use of dialogue. These outcomes show that there is limited involvement of learners in assessment strategies, which can impact learning. It is recommended that teachers utilize professional development to understand how to optimize the active participation of students in various authentic assessment methods and feedback. Future research using a qualitative design should be conducted to obtain reasons why assessment problems exist.

Keywords: assessment, learning-oriented assessment, feedback, authentic assessment, self-assessment, peer assessment, active learning

INTRODUCTION

Educators and educational leaders have continually debated student assessment in higher education (Boud & Falchikov, 2007; Carless, 2015; Gilles, Detroz, & Blais, 2011). Academics expressed concern that the methods used to assess students are not linked to student learning (Carless, 2014; Douglas, Wilson & Ennis, 2012; Trevalyan & Wilson, 2012; Webber, 2012). Ongoing discussions center on such topics as whether a student's success in examinations relates to high standards, what assessment tasks are best for learning, whether assessment practices promote lifelong learning, and how feedback could help improve student progress (Carless, 2015). Investigators identified that teachers do not always link assessment with quality teaching (Postareff, Virtanen, Katajavuori, & Lindblom-Ylänne, 2012). Instead, they view assessment as a practice that signifies evaluation and the formation of grades (Sambell, McDowell, & Montgomery, 2013; Torrance, 2012). However, authors suggest that assessment can be an important tool for active learning in the classroom (Bonwell, 2010; McGinnis, 2018).

Despite the many articles written on assessment practices that promote learning, academics appear to rely on traditional pen and paper examinations to determine student knowledge (Carless et al., 2010; Duncan & Buskirk-Cohen, 2011; Gilles et al., 2011; Postareff et al., 2012). Authors state that testing is a passive process, which adversely influences learning (Ertmer & Newby, 2013). A possible cause of this problem is the lack of awareness regarding assessment methods used across the various postsecondary institutions (Gilles et al., 2011; Postareff et al., 2012; Webber, 2012). This research brings awareness to assessment practices in higher education. Only with awareness, will instructors learn the value of assessment, its effect on learning, and be capable of making changes (Postareff et al., 2012).

LITERATURE REVIEW

Assessment refers to a variety of tasks by which teachers collect information regarding the performance and achievement of their students (Gronlund, 2006). Researchers emphasized that assessment has two main purposes. One reason is for student learning and the second is for certification, which involves the evaluation of student achievement (Carless, 2015; Norton, Norton, & Shannon, 2013). Authors affirmed that formative and summative assessment fulfill these purposes (Carless 2015; Saifi, Mahmood, Gujjar, & Ali Sha, 2011; Sambell et al., 2013). When assessment is successful, these two functions need to overlap (Carless, 2007). Formative assessment occurs on a continuous basis throughout the course (Saifi et al., 2011; Sambell et al., 2013). It encourages students to engage in the subject matter, which helps them become familiar with the information they are attempting to learn (Jacoby, Heugh, Bax, & Branford-White, 2014). For effective formative assessment, active participation of the student and teacher occurs (Jacoby et al., 2014). When students are actively engaged in the activities, it "results in deeper thinking and long-term retention of learned concepts" (McCoy, 2013, p. 146). Improvements in learners' performances are achieved through supportive feedback from various assessment tasks (Sambell et al., 2013). Because of its value to learning, formative assessment is considered assessment for learning (Carless, Joughin, & Lui, 2010; Hernández, 2012; McDowell, Wakelin, Montgomery, & King, 2011).

Summative assessment is used for judging student achievement and occurs at the end of a course or phase of instruction (Gronlund, 2006). Gibson and Shaw (2011) say that common methods used for summative assessment include unit tests, exams (midterm,

semester), and final presentations or projects. However, the timing of these practices makes it difficult to modify student learning. Therefore, they are used only to determine grades. Because of this, summative assessment is referred to as assessment of learning (Hernández, 2012; McDowell et al., 2011). Still, Carless et al. (2010) noted that summative assessment could be formative and for learning if there is feedback given that helps students learn. In higher education, most assessment strategies, such as course assignments, serve both a formative (assessment for learning) and a summative (assessment of learning) function (Hernández, 2012; Taras, 2009).

ASSESSMENT FOR LEARNING

Assessment for learning (AfL) follows the principle that all assessment strategies promote student learning (Sambell et al., 2013). Some features of AfL include the presence of authentic assessment (McDowell et al., 2011; Sambell et al., 2013). Also, students must engage in the learning process and not focus on marks (Sambell et al., 2013). There should be an opportunity for learners to practice previously learned skills or knowledge (Sambell et al., 2013). Feedback needs to combine written comments and dialogue between the student, classmates, and teacher (McDowell et al., 2011; Sambell et al., 2013). Lastly, AfL assists in the development of independent learners (McDowell et al., 2011).

These traits of AfL are characteristic of the cognitive theory of constructivism. From a constructivist view, teachers make sure there is active involvement of learners in the learning process (Paily, 2013; Schwetzer & Stephenson, 2008). Activities such as collaboration, real-world examples, and self-reflection characterize constructivism (Paily, 2013). Social constructivism incorporates others into the constructivist approach (Paily, 2013). The use of dialogue focuses on the sharing of ideas through collaboration and cooperation (Paily, 2013).

Through engagement and interaction, knowledge and understanding develop (Torrance, 2012). This interaction occurs between teacher and student, student and student or student and task (Torrance, 2012). This theory also supports the idea that learners' experiences generate knowledge (Schreiber & Valle, 2013).

Learning-oriented Assessment

Learning-oriented assessment (LOA) is a concept that represents assessment for learning (Carless, 2015). Learning-oriented assessment is a multisource method that promotes student learning for the present and the future (Carless, 2015). It consists of three interlocking criteria, tasks as learning tasks, self- and peer assessment, and feedback (Carless, Joughin, & Mok, 2006; Carless, 2015). Each component of LOA encourages students to become involved in the assessment process. Active participation allows students "to focus on creating knowledge with an emphasis on skills such as analytical thinking, problem-solving and meta-cognitive activities that develop students' thinking" (Demirci, 2017, p.129).

Tasks as Learning Tasks

For tasks to promote learning, an essential feature is their authentic quality (Carless, 2015; Sambell et al., 2013). Authentic assessment is a type of extended performance assessment (Gronlund, 2006). Performance assessment tasks are high in realism and complexity, can integrate ideas and skills, and result in more learning (Gronlund, 2006). Extended assessment requires students to integrate knowledge. However, it is authentic assessment that encourages a greater depth of learning because it requires students to apply

their understanding to real-world tasks or settings (Boud, 2007; Sambell et al., 2013). Authentic activities also promote student learning for the future (Boud, 2007; Carless, 2015; Gronlund, 2006; Hui & Koplin, 2011; Libman, 2010; Sambell et al., 2013; Trevalyn & Wilson, 2012). These methods improve the development of specific skills, and critical thinking of learners (Oladele, 2011; Sambell et al., 2013).

Authors state that there is a need for performance-based authentic methods when assessing students (Gibson & Shaw, 2011; McGinnes, 2018). Learners can relate to authentic approaches, which makes them valuable assessment tools (Gibson & Shaw, 2011). Burton (2011) formulated questions that teachers could ask about a task to determine if it is authentic. Along with the task representing the real world, other questions included whether the final product is polished and if higher order thinking or metacognition takes place. Also, whether the assignment requires students to collaborate with peers and make judgments (Burton, 2011). Some examples of activities that are considered to be authentic are "real-life tasks, exhibitions, interviews, journals, observations, oral presentations, performances, portfolios, patchwork texts, and simulations" (Boud & Falchikov, 2007, p. 184). Other methods include written and oral debriefing, peer- and self-assessment, and small group work (Gibson & Shaw, 2011). Problem-solving exercises, case studies, and role-playing are also authentic activities (Carter & Hogan, 2013). In addition, experiential endeavors demonstrate authenticity (Hui & Koplin, 2011; Pierce, Petersen, & Meadows, 2011).

Peer and self-assessment

These modes of authentic assessment promote learning as they require the active engagement of students (Gibson & Shaw, 2011; Pantiwati & Husamah, 2017). The core function of self- and peer assessment is for students to learn to be judges of their work as well as that of others (Carless, 2015; Sambell et al., 2013; Yucel, Bird, Young & Blanksby, 2014). Through this process, there is a promotion of lifelong learning (Boud & Falchikov, 2007; Carless 2015; Sambell et al., 2013). These abilities allow students to make judgments and decisions during situations they may encounter in the future (Carless, 2015; Boud & Falchikov, 2007; Sambell et al., 2013; Thomas, Martin & Pleasants, 2011). Sambell et al. (2013) state that these methods promote independence, personal responsibility, and critical thinking. Peer assessment also teaches learners how to handle criticism and be responsible when judging others work (Chetcuti & Cutajar, 2014). Another benefit of peer assessment is that the competencies learned, provide a foundation for performing self-assessment (Chetcuti & Cutajar, 2014). A central value of self-assessment is the development of metacognition (Mok, Lung, Cheng, Cheung & Ng, 2006; Nielsen, 2014: Sambell et al., 2013). Metacognition is described as the ability of learners to gain knowledge about their learning and is identified as a significant factor affecting learning (Mok et al., 2006). Additionally, self-assessment can empower students as it encourages self-monitoring (Sambell et al., 2013; Tan, 2009). However, the power given to learners must focus on sustaining self-reflective abilities (Tan, 2009).

Researchers suggested that the focus of self- and peer assessment should be on comments rather than grades (Carless, 2015; Chambers, Whannell, & Whannell, 2014). Some studies gathered views from students and found that assigning grades to their peers was a negative experience (Chambers et al., 2014; Hassan, Fox, & Hannah, 2014). Students said they didn't like showing their work to peers, they lacked confidence in evaluating others work, and doubts occurred as to the fairness and validity of the marks (Chetcuti & Cutajar, 2014). However, Kearney (2013) did not find objections from students when providing grades. Learners felt that by providing marks, there was more commitment to both individual and the group assessment models (Kearney, 2013). Regarding self-assessment, Taras (2008)

stated that self-assessment promotes better learning under two conditions. One is when learners assess their work before seeing feedback from a tutor or peers. The other method allows learners to view tutor feedback (without a grade) prior to self-assessing their work.

Apart from assigning marks, students stated that both self- and peer assessment provided a positive experience (Hassan et al., 2014). They agreed that they were helpful, motivating, gave them some control over their learning and helped prepare them for future careers. Other researchers found that learners thought peer assessment was a positive experience and facilitated learning (Lladó et al., 2014; McGarr & Clifford, 2013). Learners also stated that self-assessment was beneficial (Sendziuk, 2010).

Feedback

Historically, teachers considered feedback as the transmission of information from the teacher to the student (Boud & Molloy, 2013). In this method, the assumption was that students would know what they needed to do to improve. Another assumption was that students understood what the teacher was saying in the comments and act on them (Boud & Molloy, 2013). Determining whether there was learning involved was not a consideration. However, feedback is now considered to be the most powerful way to enhance learning (Parkin, Hepplestone, Holden, Irwin, & Thorpe, 2012).

In previous writings, Carless (2009) described feedback as feedforward. Feedforward means that to support learning; the students use the assessor's comments to feedforward to work they will do in the future. In recent writings, Carless (2015) expanded the definition of feedback to include feedback as a process, and the use of dialogue with the teacher, peers, other contacts or self. As a process, feedback is not just a one-way transmission from teacher to student, which identifies feedback as a product, not a process (Carless, 2015; Sambell et al., 2013). Instead, students should actively engage in feedback from various sources, and through dialogue, enhance learning (Carless, 2015; Sambell et al., 2013). The process that flows from feedback to dialogue, to learner action completes a feedback loop (Boud & Molloy, 2013; Carless, 2015). Scholars stressed that effective feedback could only occur when both teacher and student are committed to the process (Barker & Pinard, 2014).

The most important value of feedback is that it develops self-regulated learners (Bose & Rengel, 2009; Carless, Salter, Yang, & Lam, 2011; Carless, 2015; Chetwynd & Dobbyn, 2011; Nicol, 2009). Self-regulation refers to the ability of students to regulate or manage their learning behaviors and to process and act on task feedback to improve their learning (Nicol & Macfarlane-Dick, 2006). The development of self-regulation is an indispensable quality of feedback and central to sustainable feedback (Boud & Molloy, 2013; Carless et al., 2011). Sustainable feedback refers to equipping students to maintain the ability to monitor their learning beyond school (Hounsell, 2007).

For feedback to promote self-regulated learning, it should meet seven major conditions (Nicol & Macfarlane-Dick, 2006). Good feedback practices help students see the differences between their performances and what instructors desire. Here, there must be a clear understanding between the teacher and the student of the goals and criteria. Secondly, it facilitates self-reflection as learners are allowed to compare their work to criteria and make judgments about their work. Good feedback supports learning with information that is of quality and has relevance. The main feature is that it involves dialogue between the teacher and the learner to ensure a better understanding of any issues. Quality feedback is written to build self-esteem and help motivate students to make changes. Another quality is that it is designed to "close the gap between current and desired performance" (Nicol & Macfarlane-Dick, 2006, p. 205). Finally, feedback informs teachers of any changes they should make in their teaching methods (Nicol & Macfarlane-Dick, 2006).

Examinations

Examinations do not reflect assessment for learning. Testing represents a behaviorist model, which is teacher-centered and not learner-centered (Miranda, 2009; Ornstein & Hunkins, 2009). Here learners play a passive role as they react to the environmental conditions presented to them (Ertmer & Newby, 2013). Consequently, authors question whether examinations promote student learning. Carless (2015) noted that examinations hinder thoughtful planning of information that requires ongoing drafting and re-drafting. Scholars pointed out that testing promotes memorization rather than "understanding and applying knowledge" (Halinen, Ruohoniemi, Katajavuori, & Virtanen, 2014, p. 21). As well, tests are unable to measure higher-order outcomes (Carless, 2015; Halinen et al., 2014). These drawbacks of examinations may cause the neglect of skills such as problem-solving and critical thinking needed in today's world (Carless et al., 2010).

Researchers stated that higher education instructors primarily assess student learning through testing (Carless, 2015; Duncan & Buskirk-Cohen, 2011; Gilles et al., 2011; Halinen et al., 2014; Postareff et al., 2012). For example, in a study that specifically addressed science instructor's views of assessment, the majority of teachers used summative, written exams every year. Also, it was common for them to use many of the same questions year after year (Halinen et al., 2014). The reasons for this view were that teachers felt it treated students equally, students were familiar with this method, and teachers believed that students only concern was to pass the course (Halinen et al., 2014). Postareff et al. (2012) also found that testing was the primary method of assessment. They interviewed 28 teachers and found that 20 of them used traditional methods consisting primarily of summative assessment. Only eight of these teachers implemented alternative assessment strategies that "ranged from essays to peer assessment, portfolios, diary logs, and group projects" (Postareff et al., 2011, p. 89).

Although there are educators' concerns regarding examinations, they can positively influence learning if teachers incorporate supportive feedback (Black & Wiliam, 1998; Einig, 2013; Jacoby et al., 2014). The use of frequent tests as formative assessment along with immediate feedback keeps students engaged in the course material (Einig, 2013; Jacoby et al., 2014).

RESEARCH METHOD

Purpose

The purpose of this descriptive quantitative research was to examine the occurrence and diversity of assessment practices in higher education and their relationship to student learning. To establish whether assessment methods had learning potential, survey questions centered on the three criteria of learning-oriented assessment (LOA), tasks as learning tasks, self- and peer assessment, and feedback. The study also determined if class size, program, and teacher's years of experience influenced the use of authentic techniques.

Sample

A web-based questionnaire collected information from 1195 academics from 12 postsecondary institutions across Alberta. Most participants were randomly selected by the researcher from various disciplines within these institutions using faculty directories. In four small institutions, an administrator distributed the information to all faculty in the specified

disciplines. Smith's (2013) formula determined that the number of respondents needed for a reliable representation of the population. The formula for an unknown population was 'Necessary sample size = (Z-score)² x StdDev x (1-StdDev) / (margin of error)²'. The Z-score was 1.96, which corresponds to a confidence level of 95%. A standard deviation of .5 and a margin of error (confidence interval) of +/- 6% completed the data required for the calculation. The calculations indicated that the research required 267 respondents. 301 faculty responded to the survey.

Design

The questionnaire used multiple-choice and a Likert format "as indicated in Appendix A". To determine the list of authentic assessment tasks, the researcher gathered examples from the research literature, the Alberta Assessment Consortium (2006) manual, and consulted with an assessment expert. Previously used surveys were utilized for the sections on self- and peer assessment (Hernández, 2009) and feedback (Tang, Harrison & Fisher, 2008). Tang approved the addition of the statement on providing oral along with written feedback to the survey.

FluidSurveys (2014) (SurveyMonkey) gathered frequency and percentage distributions of the instructor qualities and assessment methods. The reporting of results used percentages to display demographic and background information. As well, percentages reported the use of assessment formats and feedback. The nonparametric Kruskal-Wallis H analysed the results to determine whether significant differences occurred between the independent and dependent variables. The independent variables for this study were program, class size, and teachers' years of experience and the dependent variables were authentic assessment formats and examination formats. The reason for this choice was because the parametric tests of MANOVA and a univariate analysis of variance displayed violations of normality. The Kruskal-Wallis H test is a rank-based test (Laerd Statistics, 2013). It compares medians between multiple independent variables with the dependent variables. Median comparisons mean that the distributions have the same shape. Through this comparison, statistically significant differences are determined. Any significant differences show the researcher that at least two groups are different (Laerd Statistics, 2013). Pairwise comparisons are then performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons (Laerd Statistics, 2013). The post hoc test identifies which groups differ (Laerd Statistics, 2013).

When distributions have different shapes, mean ranks are used to analyze the data. However, significant differences in mean ranks can only imply that there are differences between variables, which causes a loss of some of the descriptive power (Laerd Statistics, 2013).

RESULTS

Demographic and Background information

Regarding traits of the respondents, 57.1% taught in a university, 37.5% in a college, and 5.3% in a university college. More specifically, faculty responses showed that 27.6% were from Arts, 24.6% from Science, 12.3% from Nursing, 11.6% from Kinesiology, 9.0% from Education, 6.3% from Business, and 4.0% from Creative Arts.

Additional questions provided data on teachers' years of experience "as indicated in Table C1 (Appendix)", the number of students in educators' classes "as indicated in Table C2

(Appendix)", and where academics learned about assessment "as indicated in Table C3 (Appendix)".

Assessment Formats

The combination of the categories *often* and *always* illustrated that the three authentic strategies most frequently applied to determine a course grade were written papers (65.1%), individual projects (56.9%), and group projects (48.2%). For the remainder of the assessment strategies, less than 30% (*often* and *always*) of educators applied these methods "as indicated in Table B1 (Appendix)".

Self- and peer assessment as learning tools lacked strong implementation. 50.5% *never* or *rarely* used self-assessment and 26.1% used it *often* or *always*. For peer assessment, 51.9% *never* or *rarely* used it and 16% of academics used it *often* or *always* "as indicated in Table B1 (Appendix)". For this section of the survey, respondents recorded only how often they used these strategies and not whether they contributed to a course grade. Participants also responded about the methods used for self-assessment. When the percentages were added together for *sometimes* and *always*, the primary methods used for self-assessment were students assessing their work following a guide provided by the instructor and students assessing their work in class. The practice used the least was asking students to grade their work "as indicated in Table B2 (Appendix)". For peer assessment, combining the percentages for *sometimes* and *always* revealed that the most common practices of peer assessment involved comments and not grades "as indicated in Table B3 (Appendix)".

The combination of the *often* and *always* categories for examinations revealed that 55.8% of academics employed written response exams, 49.3% of teachers used multiple-choice exams, 47.5% employed quizzes, 33.7% used essay exams, and 27.4% used selection response formats such as true-false and matching "as indicated in Table B4 (Appendix)".

Assessment Formats and Programs

A limitation involved comparing the programs of Arts, Science, and Creative Arts, that contain more than one discipline, to single disciplines. Also, the breakdown of the 301 respondents into small subgroups may have increased the sampling error and compromised some results.

The list of medians used for statistical analysis indicate that Education and Nursing faculty had the highest median (49.00) for using authentic assessment formats and Business teachers the lowest median (34.00) "as indicated in Table C8 (Appendix)". For examinations, Science instructors scored the highest median (16.50) and Education the lowest (11.00) "as indicated in Table C8 (Appendix)".

Authentic assessment formats

Calculations for this result included self- and peer assessment because they are considered authentic. Thus, data from a total of 15 authentic formats entered the analysis. Distributions of scores for authentic assessment formats were similar for all program groups. Median program scores were statistically significantly different between groups, $\chi 2(6) = 81.590$, $p < .001$. The post hoc analysis revealed statistically significant differences in authentic format implementation "as indicated in Table C4 (Appendix)". This analysis showed that Kinesiology, Education, Nursing, and Creative Arts faculty implement authentic activities more than teachers in Arts. Creative Arts, Kinesiology, Education, and Nursing

instructors use authentic methods more than Science professors. Instructors in Nursing and Education use authentic strategies more than Business staff.

Results displayed significant differences in mean ranks for the three common practices "as indicated in Table C5 (Appendix)".

Examination formats

Distributions of scores for examination formats were similar for all program groups. Median examination scores were statistically significantly different between groups, χ^2 (6) = 12.974, p = .022. The post hoc analysis revealed one statistically significant difference in examination formats between Education (*Mdn* = 11.00) and Science (*Mdn* = 16.50) (p = .015). Therefore, Science faculty utilize examinations more than Education teachers.

Quiz scores were statistically significantly different between some of the different levels of programs, χ2(6) = 21.589, p = .001. This post hoc analysis revealed statistically significant differences in quiz scores between Education (*Mdn* = 2.00) and Science (*Mdn* = 4.00) (p = .032), and between Education (*Mdn* = 2.00) and Business (*Mdn* = 4.00) (p = .028). This indicates that Education instructors implement quizzes less than teachers in Science and Business. The remainder of the exam formats showed some significant differences in mean ranks "as indicated in Table C6 (Appendix)".

Assessment Formats and Academics Years of Experience

The academics' years of experience did not impact the use of the different authentic strategies, χ^2 (3) = .585, p = .900 or examination formats, χ^2 (3) = 6.178, p = .103.

Assessment Formats and Class Size

Distributions of scores for authentic assessment methods were similar for all groups of class size. Median scores of authentic assessment formats were statistically significantly different between levels of class size, χ^2 (3) = 36.668, p < .001. The post hoc analysis revealed statistically significant differences in authentic assessment scores between class sizes "as indicated in Table C7 (Appendix)". This data indicates that authentic strategies are used more when class sizes are smaller. A class size with fewer than 26 students demonstrates the use of authentic methods more than all other categories. Even when the class size is greater than 26 learners but less than 60, these techniques are implemented more than when classes have more than 60 students.

Distributions of the scores for examination formats were similar for all groups. Median scores of examination formats were not significantly different between the different class sizes χ^2 (3) = 2.483, p = .478. However, the medians of multiple-choice questions showed significance between class sizes *less than 26* (*Mdn* = 3.00) and *between 61 and 250* (*Mdn* = 4.00) (p = .042). Thus, teachers utilized multiple-choice questions more with an increase in class size.

Feedback

The responses of academics to the questions on feedback show that respondents' perceptions of feedback were similar "as indicated in Table D1 (Appendix)". However, respondents' dispositions toward feedback indicated divided views on four questions "as indicated in Table D2 (Appendix)". 54.2% of educators disagreed and 45.8% agreed with the statement that they don't know if students use the feedback. Regarding marking, 50.7% of

faculty disagreed with the statement about underlining all errors and providing brief explanations of the error, while 49.3% of respondents thought the explanations important. 55.4% of respondents stated that they do not use abbreviations while 44.6% implement them. Lastly, 52.8% of faculty members did not think oral feedback was necessary while 47.2% thought it necessary.

DISCUSSION

Assessment Tasks as Learning Tasks

Scholars suggest that authentic activities are meaningful, relevant, and have value for lifelong learning (Sambell et al., 2013). Activities designed as being authentic actively engage the student and enhance learning. The Education faculty implement authentic methods frequently. This fact is evident because these teachers had the lowest median (11.00) for examination formats and the highest median (49.00) for authentic tasks "as indicated in Table C8 (Appendix)".

Research by Goubeaud & Yan (2004) and Webber (2012) also documented that teacher educators use a more learner-centered approach to assessment. Webber (2012) reported that disciplines found in the physical and life sciences used few learner-centered methods. These disciplines would include Nursing and Kinesiology. This study does not support Webber's (2012) comment as Nursing educators practice authentic methods comparable to teachers in Education. Also, Kinesiology instructors employ authentic tasks more than those in Arts and Science.

The three authentic assessment methods that teacher use most frequently to generate a course grade are written papers, individual projects/presentations, and group projects/presentations. Goubeaud & Yan (2004) and Iqbal, Azam, & Abiodullah, (2009) also found that teachers used written papers frequently. Lepp (2010) reported a widespread implementation of group and individual projects/presentations. The methods of self- and peer assessment were used sparingly as only 26.1% of academics surveyed used self-assessment, and 16.0% used peer assessment (*often* and *always*). Hernández (2009) used the same calculations and disclosed that 51.2% of teachers used self-assessment, which is much different than the current results. However, Hernández (2009) documented the same lack of use of peer assessment as only 17.1% of faculty used this method. Using a ranking format of assessment techniques, BoarerPitchford (2014) reported that self-assessment ranked ninth and peer assessment 14th. Similar findings by Rieg and Wilson (2009) placed self-assessment 13th and peer assessment 17th. In another study, Lei (2008) documented that peer and self-assessment were unpopular.

The limited use of authentic tasks may be because these methods create more work for teachers, which in turn increases staff workload (Oladele, 2011). Other problems include the presence of biases, unreliable assessment criteria, and difficulty in preparing criteria (Oladele, 2011). One possible reason for the minimal use of self- and peer assessment is that for students to become assessors, prior training is necessary (Lladó et al., 2014; Sambell et al., 2013). Through training, students learn to use criteria and become assessment literate to judge quality (Carless, 2015; Nulty, 2011). The training takes time, which may affect their application. Although there are problems, researchers emphasized the need for authentic assessment techniques to promote student learning (Carless, 2015; Sambell et al., 2013; Trevalyn & Wilson 2012).

Results indicate that educators still rely on testing as a main form of assessment. Researchers acknowledged that the preferred exam format used by teachers is multiple-choice questions (Duncan & Buskirk-Cohen, 2011; Gilles et al., 2011; Tractenberg, Gushta,

Mulroney, & Weissinger, 2013). Findings of this study indicate that the most popular examination format is written examinations. There is a link between this result and class size as data shows that multiple-choice tests occur less when class sizes are fewer than 60 students. Respondents in this study indicated that most classes had less than 60 students "as indicated in Table C2 (Appendix)". Gilles et al. (2011) also found written examinations to be a common method with smaller classes and that multiple-choice tests were used more with an increase in class size. Various authors noted that multiple-choice questions become the assessment methods when class sizes increase (Douglas, Wilson, & Ennis, 2012; Einig, 2013; Gilles et al., 2011; Mostert & Snowball, 2013; Stanger-Hall, 2012).

Additional reasons for using multiple-choice tests are that they are easy to mark and are impartial (Douglas et al. 2012; Kuechler & Simkin 2010; Sheaffer & Addo, 2013). They are also able to cover a wider range of topics and students can receive grades in a shorter period (Kuechler & Simkin, 2010). Although there are advantages to the use of multiple-choice questions, scholars discussed issues with this testing design. Multiple-choice questions are considered a selection response format, which favors the recognition of answers rather than the recall of information (Gronlund, 2006). McConnell, St-Onge, & Young (2015) commented that there was better retention of knowledge when the retrieval of information occurred from memory. Various authors stated that higher levels of cognition could not be achieved using multiple-choice questions (Douglas et al., 2012; Hickson, Reed, & Sander, 2012; Stanger-Hall, 2012). Authors noted issues such as differences in question interpretation, guessing, and the fact that it is an all or none response (Duncan & Buskirk-Cohen, 2011).

Constructed (written) response questions also have advantages and disadvantages. Authors pointed out that questions such as short answer or essay responses require higher levels of cognition and assist in critical thinking (Hickson et al., 2012; Stanger-Hall, 2012). Supporters of constructed response questions stated that they promote integrative skills, can examine the depth of student knowledge, and require learners to organize their knowledge (Kuechler & Simkin, 2010). However, investigators maintain that constructed response questions also have their drawbacks. These weaknesses include difficulties in grading, subjectivity, and more time required for marking (Kuechler & Simkin, 2010). Additionally, written questions need more pre-requisite knowledge to complete, feedback takes longer, and they may favor those students with better writing skills (Carless, 2015; Kuechler & Simkin, 2010).

Feedback

Parkin et al. (2012) highlighted the significant link between feedback and student learning. Although academics' perceptions regarding feedback were similar in this study, there were areas of concern when discussing faculty dispositions towards assignment marking. One issue is that teachers are unsure of whether students make use of the feedback. Maggs (2014) and Tang et al. (2008) reported a similar view. There is agreement among authors that feedback is only helpful when students attend to and act upon it (Carless, 2015; Sambell et al., 2013; Taras, 2013). Carless (2009) stated that to support learning, the students should use the assessor's comments to feed forward to work they will do in the future. Thus, if faculty are doubtful of whether the students incorporate the feedback, then steps need to be taken to make sure learners read and understand the comments. Sambell et al. (2013) suggested the use of exemplars, oral presentations, group discussions, and providing checklists of general progress to assist in this process.

The second problem area relates to the use of dialogue in conjunction with the written comments. Researchers support the use of dialogic feedback (Barker & Pinard, 2014;

Bloxham & Campbell, 2010; Carless, 2015; Nicol, 2010; Sambell et al., 2013; Yang & Carless, 2013). Students also prefer verbal feedback because the student-instructor interaction allows them to get a clear understanding of what the feedback means and how they can improve (Bols & Wicklow, 2013). The inclusion of dialogue between the student and teacher or even student and student help engage learners in the feedback, helps them understand and question the comments, and supports learning (Bols & Wicklow, 2013). To involve students, teachers could use exemplars, oral presentations, group discussions or self- and peer assessment (Sambell et al., 2013). Other possible dialogue solutions include teacher-led interaction in the classroom (Carless, 2015; Sambell et al., 2013). Interactive cover sheets (Bloxham & Campbell, 2010), and various electronic resources could assist in the feedback process (Hennessy & Forrester, 2014; Parkin et al., 2013).

Two other questions, where instructors had differences of opinion, support the idea that teachers do not understand the value of dialogue. 50.7% of faculty did not think it was necessary to provide explanations of errors. Also, 44.6% of teachers implemented abbreviations. Therefore, without explanations of mistakes and what an abbreviation means, learners cannot gain knowledge to help with future work.

The concerns related to feedback may be because teachers appear uncertain of its purpose, and that feedback is more focused on justifying grades than promoting learning (Rae & Cochrane, 2008). In a study by Maggs (2014), the researcher questioned educators for their perspectives on feedback. The answers were general with the majority relating it to responding to student's work. Also, teachers viewed individual feedback as repetitive and very time-consuming (Bose & Rengel, 2009). Factors of limited awareness on the use of feedback, the time involved, and the lack of willpower to learn about its processes compounds feedback issues for teachers (Yang & Carless, 2013). From a student's perspective, study results showed that students were critical of instructor feedback. Bols and Wicklow (2013), stated that students did not find feedback timely, accessible, and legible. Other students disclosed that that comments did not help them improve their work (Hernández 2012). Findings by Maggs (2014) showed dissatisfaction of students with the quantity, quality, and timing of feedback. Additional learner comments were that feedback was negative, not motivating, insufficient, not timely, not corrective and too generalized (Sego, 2013). The many concerns from students indicate that instructors may not fully understand how to use feedback so that it supports student learning.

CONCLUSIONS

This analysis and evaluation of assessment illustrate that higher education teachers use both authentic activities and examinations as assessment practices. However, study results show a limited application of the various types of authentic tasks. From fifteen authentic assessment methods identified, the implementation (*often* and *always*) of only three approaches occurred by over 30% of faculty. These strategies included written papers, group and individual projects/presentations. Written papers encourage students to research and become engaged with the information they should learn. Group and individual projects/presentations promote dialogue with others or self. The minimal use of the many types of authentic assessment techniques brings into question whether teachers fully understand how the various strategies can enhance learning. Although there are problems associated with using authentic methods, there are also issues related to testing. Therefore, there needs to be a balance between the two methods of assessment to ensure assessment for learning. Results indicate that academics provide feedback on assignments and believe in its value. However, they are not sure that students use or understand the feedback. Also, they are unsure of the importance of dialogic feedback. Learners must know where they went

wrong and what the teachers' comments mean to help with future work. Authors pointed out that learning occurs only when there is student engagement in the feedback process. This statement applies to all assessment formats. Unfortunately, this research did not determine if interactive feedback occurred with examinations.

Most respondents had class sizes of *less than 60* students, which allows academics more opportunity to promote assessment for learning. Although researchers mention that large class sizes present a problem for assessment, Carless (2015) says that they should not be a barrier to implementing a variety of assessment methods. Teachers need to have the determination to enhance the experiences of students. He goes on to state that large class sizes require teachers to rethink dialogic feedback using resources such as peers and technology. With larger classes, Sambell et al. (2013) suggest that it is necessary to help learners become more assessment literate. Carloye (2017) presents an example of how the implementation of mini-case studies in large postsecondary lecture classes (+500 students) increases student engagement. Although she does not state if grading occurred, she highlights the fact that even when the class has many students, it is possible to integrate authentic methods for learning.

RECOMMENDATIONS AND FUTURE STUDY

The possible reason for the insufficient understanding of assessment is that most faculty learned about assessment methods from personal experience or colleagues "as indicated in Table C3 (Appendix)". Although these sources may prove beneficial, they may be limited in their breadth and depth of application. Previous authors stressed that more professional development was needed for teachers to become comfortable and knowledgeable about assessment (Iqbal et al., 2009; Offerdahl & Tomanek, 2011; Webber, 2012). There is evidence from this research that supports this statement. Professional development seminars should explore assessment for learning. The essential topics would include how to optimize the active participation of students in various authentic assessment methods and feedback. Study results showed that instructors in the Education program implemented authentic activities more than other disciplines. Therefore, the inclusion of teacher educators would be a valuable resource to assist in this process.

It is also important for administrators to recognize that smaller class sizes allow educators to implement authentic activities for assessment and provide feedback. As class sizes increase, there is a tendency to utilize more examinations, particularly tests using multiple-choice questions. However, even with larger classes, academics must be encouraged to become more innovative in assessment for learning.

Future researchers should focus on the qualitative nature of assessment. Such a study could expose problem areas that may hinder the active participation of students in the assessment process. Only by identifying and addressing issues can educators use assessment for learning and not just for grades.

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Appendix A

Survey Instrument

The purpose of this survey is to better understand how students are being assessed in University degree courses in postsecondary institutions in Alberta. Answer the questions in the survey based on a typical first or second year course that you teach in a program that culminates in a degree.

Section I: Factual and Demographic Information
Please provide some basic information about yourself.

1. What type of postsecondary institution do you teach?
   - ☐ College
   - ☐ University College
   - ☐ University

2. In what university program do you teach?
   - ☐ Science (Agriculture, Biology, Biochemistry, Geography, Engineering, Physiology, Psychology, Zoology, Chemistry, Physics, Mathematics, Botany, Ecology)
   - ☐ Kinesiology (Physical Education)
   - ☐ Education
   - ☐ Nursing
   - ☐ Arts (Anthropology, Communications, Economics, English, French, Spanish, History, Philosophy, Political Science, Psychology, Sociology)
   - ☐ Business
   - ☐ Creative Arts (Visual Arts, Performing Arts, Fine Arts)
   - ☐ Other

3. How many years have you been teaching at a post-secondary level of education?
   - ☐ Less than 3 year
   - ☐ Between 3 and 7 years
   - ☐ Between 8 and 15 years
   - ☐ More than 15 years

4. What was the average number of students in your classes during this past semester?
   - ☐ Less than 26 (very small class)
   - ☐ Between 26 and 60 (small class)
   - ☐ Between 61 and 250 (large class)
   - ☐ More than 250 (very large class)

5. What was the primary source from which you learned the most about assessment techniques?
   - ☐ Through a teaching and learning center on campus
   - ☐ Through personal experiences
   - ☐ Through a formal educational course or program
   - ☐ Through seminars or workshops
   - ☐ From colleagues

Section II: Assessment Tasks

Answer the following about a typical first or second year course that you teach which culminates in a degree.

Question 6: Which of the following assessment tasks do you use that contributes to a course grade?

Indicate the frequency that you use each strategy.

Scale: 1 – never 2 – rarely 3 – sometimes 4 – often 5 – always

Assessment	**1**	**2**	**3**	**4**	**5**
Practicum experiences/Field work					
Debates					
Interviews/conferences					
Individual projects/presentations					
Group projects/presentations					
Teaching a lesson					
Workbooks/worksheets					
Written papers (research, essays, term, position, reflection etc.)					
Journals/blogs					
Observation/checklists					
Lab reports					
Portfolio					
Performance assessment (demonstrations, simulations, lab activities, video productions)					
Quizzes					
Essay exams					
Multiple-choice exams					
Written response exams (fill in the blanks, short paragraph)					
Selection exam formats (true-false, matching)					
Other					

Section III: Self- and Peer Assessment

Answer the following about a typical first or second year course that you teach which culminates in a degree.

Question 7: Indicate the frequency that you use each of these strategies.

Scale: 1 – never 2 – rarely 3 – sometimes 4 – often 5 – always

	1	2	3	4	5
How often do you use self-assessment in your classes?					
How often do you use peer assessment in your classes?					

Source: Hernández. R. 2009.

Question 8: If you use <u>self-assessment</u> as an assessment tool, indicate how often you use each of the following methods.

Please mark the boxes that indicate the frequency that you use each of the following.

Scale: 1 – never 2 – rarely 3 – sometimes 4 – always

	1	2	3	4
Students assess their own exercises in class				
Students write a learner's diary (journal)				
Students give a mark (grade) to their own work				
Students assess their own work following a guide you provide				
Other(s) (please indicate)_____				

Source: Hernández. R. 2009.

Question 9: If you use <u>peer assessment</u> as an assessment tool, indicate how often you use each of the following methods.
Please mark the boxes that indicate the frequency that you use each of the following.
Scale: 1 – never 2 – rarely 3 – sometimes 4 – always

	1	2	3	4
One student comments (orally) on the work of a classmate.				
A student comments (in writing) on the work of a classmate.				
A student provides a grade to the work of another.				
In small groups, students comment (orally) on the work of a classmate.				
In small groups, students comment (in writing) on the work of a classmate.				
In small groups, students give a grade to the work of a classmate.				
Other(s) (please indicate)_____				

Source: Hernández. R. 2009.

Section III: Feedback

These last two questions require you to give your perceptions (views or beliefs) regarding the feedback given to students and your dispositions (behavioural tendencies or practices) towards assignment marking.

Question 10: This section comprises a list of statements regarding your perceptions about feedback. For each statement indicate the extent to which you agree or disagree.

Scale: 1 – strongly disagree 2 – disagree 3 – slightly disagree 4 – slightly agree 5 – agree 6 – strongly agree

Your perceptions about feedback in general	**1**	**2**	**3**	**4**	**5**	**6**
1. I believe that the most important feedback is the score (grade).						
2. Students believe that the most important feedback is the score (grade).						
3. There is little relationship between teacher feedback and students subsequent achievements.						
4. I believe detailed comments on assignments are potentially useful to students.						
5. It is a waste of time to provide feedback because most students only care about the scores (grades).						
6. If students did a proper job in the first place, feedback would be unnecessary.						
7. The most able students do not require much teacher feedback						
8. Teacher feedback does little to help students.						
9. Students need feedback in order to understand why they have made the mistakes.						

Source: Tang, Harrison, and Fisher. 2008.

Question 11: This section comprises a list of statements regarding your general disposition toward assignment marking. For each statement indicate the extent to which you agree or disagree.
Scale: 1 – strongly disagree 2 – disagree 3 – slightly disagree 4 – slightly agree 5 – agree 6 – strongly agree

Your general dispositions toward assignment marking	**1**	**2**	**3**	**4**	**5**	**6**
10. When I mark I tend to provide a score (grade) only.						
11. It is important to correct every mistake students have made in their assignments						
12. Students will not read our feedback carefully even if we have marked very carefully.						
13. When I mark I tend to use abbreviations such as gr. (grammar errors), sp (spelling error)						
14. When I mark I generally put a question mark at the places where the meaning is unclear.						
15. Sometimes if a student produces a really weak piece of work, I tend to give up and write the comment such as it is too poor to mark.						
16. When I mark, I only focus on global areas and provide a summary comment.						
17. I tend to encourage students and provide constructive suggestions for improvement.						
18. I have no idea whether students make use of the feedback I have provided.						
19. Students are working hard, so we should provide them with a detailed feedback.						
20. When I mark, I generally underline all the errors.						
21. It is an important part of a teacher's job to give students encouragement.						
22. When I mark I underline all the errors and provide brief explanations of the errors.						
23. It is important that I provide oral feedback along with the written comments.						

Source: data adapted from Tang, Harrison, and Fisher. 2008.

Appendix B
Assessment Formats

Table B1
Authentic Assessment Methods

Method	Never	Rarely	Sometimes	Often	Always
Practicum experiences/Field work	146 (49.2%)	26 (8.8%)	47 (15.8%)	39 (13.1%)	39 (13.1%)
Debates	192 (64.4%)	42 (14.1%)	49 (16.4%)	14 (4.7%)	1 (0.3%)
Interviews/conferences	192 (64.4%)	58 (19.5%)	35 (11.7%)	9 (3.0%)	4 (1.3%)
Individual projects/presentations	36 (12.0%)	29 (9.7%)	64 (21.4%)	98 (32.8%)	72 (24.1%)
Group projects/presentations	58 (19.5%)	31 (10.4%)	65 (21.9%)	100 (33.7%)	43 (14.5%)
Teaching a lesson	149 (50.3%)	40 (13.5%)	54 (18.2%)	30 (10.1%)	23 (7.8%)
Workbooks/worksheets	139 (46.5%)	51 (17.1%)	52 (17.4%)	37 (12.4%)	20 (6.7%)
Written papers	36 (12.1%)	20 (6.7%)	48 (16.1%)	85 (28.5%)	109 (36.6%)
Journals/blogs	136 (45.6%)	45 (15.1%)	64 (21.5%)	39 (13.1%)	14 (4.7%)
Observation/checklists	193 (65.2%)	30 (10.1%)	41 (13.9%)	21 (7.1%)	11 (3.7%)
Lab reports	182 (61.5%)	22 (7.4%)	30 (10.1%)	35 (11.8%)	27 (9.1%)
Portfolios	202 (67.8%)	32 (10.7%)	39 (13.1%)	20 (6.7%)	5 (1.7%)
Performance assessment	144 (48.3%)	41 (13.8%)	49 (16.4%)	34 (11.4%)	30 (10.1%)
Self- and peer assessment					
Self-assessment	107 (35.8%)	44 (14.7%)	70 (23.4%)	50 (16.7%)	28 (9.4%)
Peer assessment	106 (35.5%)	49 (16.4%)	96 (32.1%)	35 (11.7%)	13 (4.3%)

Table B2

Self-assessment Methods

Methods	Never	Rarely	Sometimes	Always
Students assess their own exercises in class	65 (31.4%)	47 (22.7%)	81 (39.1%)	14 (6.8%)
Students write a learner's diary (journal)	104 (50.5%)	30 (14.6%)	59 (28.6%)	13 (6.3%)
Students give a mark (grade) to their own work	93 (44.7%)	47 (22.6%)	51 (24.5%)	17 (8.2%)

Students assess their own work following a guide you give them	67 (31.8%)	46 (21.8%)	74 (35.1%)	24 (11.4%)

Table B3
Peer Assessment Methods

Methods	Never	Rarely	Sometimes	Always
One student comments (orally) on the work of a classmate	110 (55.3%)	29 (14.6%)	49 (24.6%)	11 (5.5%)
A student comments (in writing) on the work of a classmate	52 (25.7%)	36 (17.8%)	91 (45.0%)	23 (11.4%)
A student provides a grade to the work of another	111 (56.1%)	33 (16.7%)	46 (23.2%)	8 (4.0%)
In small groups, students comment (orally) on the work of a classmate	105 (52.5%)	22 (11.0%)	58 (29.0%)	15 (7.5%)
In small groups, students comment (in writing) on the work of a classmate	93 (46.3%)	44 (21.9%)	55 (27.4%)	9 (4.5%)
In small groups, students give a grade to the work of a classmate	137 (68.8%)	25 (12.6%)	30 (15.1%)	7 (3.5%)

Table B4
Examination Formats

Method	Never	Rarely	Sometimes	Often	Always
Quizzes	46 (15.4%)	37 (12.4%)	74 (24.7%)	73 (24.4%)	69 (23.1%)
Essay exams	110 (37.4%)	43 (14.6%)	42 (14.3%)	47 (16.0%)	52 (17.7%)
Multiple-choice exams	81 (27.2%)	30 (10.1%)	40 (13.4%)	77 (25.8%)	70 (23.5%)
Written response exams	54 (18.1%)	30 (10.0%)	48 (16.1%)	68 (22.7%)	99 (33.1%)
Selection Exam formats	100 (33.4%)	57 (19.1%)	60 (20.1%)	46 (15.4%)	36 (12.0%)

Appendix C
Tables

Table C1
Academics' Years of Teaching Experience

Years of Experience	Percentage	Count
3 years or less	12.6%	38
Between 3 and 7 years	17.9%	54
Between 8 and 15 years	31.9%	96
More than 15 years	37.5%	113

Table C2
Average Class Size

Response	Percentage	Count
Less than 26	36.5%	110
Between 26 and 60	51.8%	156
Between 61 and 250	11.0%	33
More than 250	0.7%	2

Table C3

How Academics Learned About Assessment Practices

Response	Percentage	Count
Through a teaching and learning centre on campus	9.3%	28
Through personal experiences	39.2%	118
Through a formal educational course or program	14.6%	44
Through seminars or workshops	10.6%	32
From colleagues	19.9%	60
Other	6.3%	19

Table C4
Significance Levels of Median Comparisons Between Programs

Median Comparison	Significance Level
Arts (*Mdn* = 35.00) and Kinesiology (*Mdn* = 43.00)	$p = .013$
Arts (*Mdn* = 35.00) and Education (*Mdn* = 49.00)	$p < .001$
Arts (*Mdn* = 35.00) and Nursing (*Mdn* = 49.00)	$p < .001$
Arts (*Mdn* = 35.00) and Creative Arts (*Mdn* = 44.00)	$p = .029$
Science (*Mdn* = 36.00) and Creative Arts (*Mdn* = 44.00)	$p = .031$
Science (*Mdn* = 36.00) and Kinesiology (*Mdn* = 43.00)	$p = .016$
Science (*Mdn* = 36.00) and Education (*Mdn* = 49.00)	$p < .001$
Science (*Mdn* = 36.00) and Nursing (Mdn = 49.00)	$p < .001$
Business (*Mdn* = 34.00) and Education (*Mdn* = 49.00)	$p = .005$
Business (*Mdn* = 34.00) and Nursing (*Mdn* = 49.00)	$p = .002$

Table C5
Mean Rank Comparisons Between Programs and Three Authentic Methods

Type of Method	Mean Ranks Comparisons	Significance levels
Written papers	Science (85.93) and Education (150.60)	$p = .007$
	Science (85.93) and Nursing (166.59)	$p < .001$
	Science (85.93) and Arts (192.08)	$p < .001$
	Kinesiology (125.20) and Arts (192.08)	$p = .001$
	Business (125.33) and Arts (192.08)	$p = .025$
Individual projects	Science (114.80) and Kinesiology (168.34)	$p = .024$
	Science (114.80) and Nursing (177.11)	$p = .002$
	Science (114.80) and Education (194.48)	$p < .001$
	Arts (124.75) and Nursing (177.11)	$p = .020$
	Arts (124.75) and Education (194.48)	$p = .002$
Group projects	Arts (110.28) and Nursing (167.14)	$p = .006$
	Arts (110.28) and Education (183.17)	$p = .001$
	Arts (110.28) and Kinesiology (186.44)	$p = .001$
	Science (126.77) and Education (183.17)	$p = .040$
	Science (126.77) and Kinesiology (186.44)	$p = .006$

Table C6

Mean Rank Comparisons Between Programs and Examination Formats

Type of Exam	Mean Ranks Comparisons	Significance levels
Selection response	Arts (116.76) and Science (170.63)	$p = .001$
	Arts (116.76) and Kinesiology (166.86)	$p = .041$
Essay Exams	Science (105.47) and Arts (192.39)	$p < .001$
	Science (105.47) and Business (175.76)	$p = .010$
	Education (116.90) and Arts (192.39)	$p = .001$
	Kinesiology (135.93) and Arts (192.93)	$p < .001$
	Nursing (100.83) and Business (175.76)	$p = .016$
	Nursing (100.83) and Arts (192.39)	$p < .001$
Written Response	Education (99.81) and Science (182.14)	$p < .001$
	Business (105.76) and Science (182.14)	$p = .004$
	Nursing (113.88) and Science (182.14)	$p < .001$
	Arts (140.66) and Science (182.14)	$p = .026$
Multiple-choice	Education (101.46) and Nursing (187.46)	$p = .001$
	Education (101.46) and Kinesiology (166.63)	$p = .038$
	Creative Arts (69.83) and Kinesiology (166.63)	$p = .006$
	Creative Arts (69.83) and Nursing (187.46)	$p < .001$
	Creative Arts (69.83) and Business (175.44)	$p = .008$
	Arts (130.43) and Nursing (187.46)	$p = .006$

Table C7

Significance Levels of Median Comparisons Between Class Sizes

Class size	Significance Level
less than 26 (*Mdn* = 43.00) and between 26 and 60 (*Mdn* = 40.00)	$p = .021$
less than 26 (*Mdn* = 43.00) and between 61 and 250 (*Mdn* = 30.00)	$p < .001$
between 26 and 60 (*Mdn* = 40.00) and between 61 and 250 (*Mdn* = 30.00)	$p = .001$

Table C8
Median Comparisons Between Programs and Assessment Formats

program		Exam Formats	Authentic Formats
Science	N	74	74
	Median	16.50	36.00
Kinesiology	N	35	35
	Median	16.00	43.00
Education	N	26	26
	Median	11.00	49.00
Nursing	N	37	37
	Median	15.00	49.00
Arts	N	83	83
	Median	15.00	35.00
Business	N	19	19
	Median	15.00	34.00
Creative Arts	N	12	12
	Median	13.50	44.00
Total	N	286	286
	Median	15.00	40.00

Appendix D
Feedback

Table D1
Academics' Perceptions Towards Feedback

No.		Disagree	Agree
1	I believe that the most important feedback is the score (grade)	190 (65.5%)	100 (34.5%)
2	Students believe that the most important feedback is the score (grade)	25 (8.6%)	266 (91.4%)
3	There is little relationship between teacher feedback and students' subsequent achievements	223 (76.9%)	67 (23.1%)
4	I believe detailed comments on assignments are potentially useful to students	15 (5.2%)	276 (94.8%)
5	It is a waste of time to provide feedback because most students only care about the scores (grades)	208 (71.5%)	83 (28.5%)
6	If students did a proper job in the first place, feedback would be unnecessary	271 (93.4%)	19 (6.6%)
7	The most able students do not require much teacher feedback	240 (83.0%)	49 (17%)
8	Teacher feedback does little to help students	271 (94.1%)	17 (5.9%)
9	Students need feedback in order to understand why they have made the mistakes	22 (7.6%)	267 (92.4%)

Table D2
Academics Dispositions Towards Feedback

No.	Question	Disagree	Agree
10	When I mark, I tend to provide a score (grade) only.	251 (86.3%)	40 (13.7%)
11	It is important to correct every mistake students have made in their assignments.	220 (75.9%)	70 (24.1%)
12	Students will not read our feedback carefully even if we have marked very carefully.	178 (61.2%)	113 (38.8%)
13	When I mark I tend to use abbreviations such as gr. (grammar errors), sp (spelling error).	160 (55.4%)	129 (44.6%)
14	When I mark I generally put a question mark at the places where the meaning is unclear.	65 (22.4%)	225 (77.6%)
15	Sometimes if a student produces a really weak piece of work, I tend to give up and write the comment such as it is too poor to mark.	243 (83.5%)	48 (16.5%)
16	When I mark, I only focus on global areas and provide a summary comment.	241 (82.8%)	50 (17.2%)
17	I tend to encourage students and provide constructive suggestions for improvement.	16 (5.5%)	274 (94.5%)
18	I have no idea whether students make use of the feedback I have provided.	156 (54.2%)	132 (45.8%)
19	Students are working hard, so we should provide them with detailed feedback.	34 (11.8%)	255 (88.2%)
20	When I mark, I generally underline all the errors.	175 (60.3%)	115 (39.7%)
21	It is an important part of a teacher's job to give students encouragement.	12 (4.2%)	275 (95.8%)
22	When I mark I underline all the errors and provide brief explanations of the errors.	147 (50.7%)	143 (49.3%)
23	It is important that I provide oral feedback along with the written comments.	153 (52.8%)	137 (47.2%)