Effect of Detailed Score Reporting on Student Learning

Project Description

Background

The current paradigm of assessment in health professions education is Assessment *of* Learning via summative assessments. When done well, health programs have a detailed assessment framework that ensures assessment of all of the requisite competencies across many different learning environments, such as classroom, simulations, and real-life. Although this approach allows instructors to say, "we are assessing everything", it relegates the learner to being the "object" of the assessment, (i.e., assessment is done to the learner). Without focusing on the learner as a user of this information, such assessments often fail to provide timely and meaningful feedback that would inform the learner about his/her strengths and weaknesses during the learning process. More recently in health professions education, we are recognizing the importance of moving from Assessment *of* Learning to Assessment *for* Learning, in which the learner becomes a more active user of assessment data (Evans, 2013). To utilize Assessment *for* Learning, health programs are transitioning from infrequent summative assessments to frequent formative assessments. The goal of formative assessments is to monitor each learner's growth as a way of providing ongoing feedback that can be used both by instructors to improve their teaching, and by learners to improve their understanding of the content (Bennett, 2011). If feedback derived from formative assessments is timely, detailed, and specific, it can guide future learning, motivate learners to investigate other resources, and identify learners who need additional support (Merry *et al.*, 2013; Tett *et al.*, 2012).

Locally, in the University of Alberta's Faculty of Medicine and Dentistry, student clinical performance is assessed through a method called Objective Structured Clinical Examinations (OSCEs), where learners move from station to station performing defined tasks in controlled simulated environments, and workplace based assessments such as our end of rotation evaluations where a learner receives a report on their performance after 4, 6 or 8 weeks of a specific learning environment (e.g., working in the emergency department, or working in a family medicine clinic). From a previous TLEF project, we were able to move one of our last paper-scored exams, the OSCE, to an electronic platform (eOSCE). We are now able to report scores (e.g., pass/fail decisions) with feedback (comments, if provided) quickly after any given assessment. In the case of the paper-based OSCE, the time between the end of an exam and the generation of scores with feedback used to take up to two weeks (delay was due to transcribing comments). With our eOSCE system, scores and comments are available hours after administration.

Reporting scores quickly from an electronic assessment – such as eOSCE – can be viewed as a boon for instructors who wish to increase the amount and quality of feedback provided to the learners. However, despite providing timely scores, such electronic assessments do not guarantee that the learner will become an active member of the learning process. In fact, reporting scores to learners in an interpretable manner can be quite challenging (Cohen & Wollack, 2006, p. 380; Huhta, 2013). In most cases, the "feedback" given is only a pass or fail decision, sometimes with comments with variable quality, and sometimes with a raw score and its comparison to the classroom average. This typical form of feedback is often of limited use to learners as it does not point the learners to specific areas on which to focus their future learning.

Score reports should support the interpretations and decisions of learners (AERA, APA, NCME, 2014). Furthermore, score reports should allow learners to make correct and appropriate inferences from scores and, in turn, take further actions (Ryan, 2006). While some learners may find written comments easy to understand, others may prefer graphics that can simplify complex information, emphasize key points, and create a picture of the assessment data. Therefore, an effective score reporting system should be able to transform scores and feedback into a meaningful form tailored to the needs of learners. Also, score reports should be easily customizable and automated so that each learner can receive unique feedback regarding his/her performance (Zenisky & Hambleton, 2015).

The purpose of this project is to take the various electronic assessment modalities and create a score reporting system that provides detailed, specific, and focused feedback both for individual assessments, and across multiple assessments that would feed into the learners' assessment portfolios and guide their further learning.

Methods/Scope

To ensure generalization to other health professional programs, this project will involve collaboration between two different disciplines: the MD Program and the Dental Hygiene program in the Faculty of Medicine and Dentistry.

This project will involve three phases:

Phase 1 – Tagging of current assessment methods

Although each program has an assessment blueprint that gives an overview of what each of the various assessment modalities is assessing, each assessment will need to be tagged with the broad competencies being assessed, and individual items in each assessment will need to be tagged with the specific sub-competency. For example, in an MD program OSCE, the overall OSCE might assess medical knowledge and communication across 12 different tasks, but a specific task within the OSCE might assess the communication sub-competency of Breaking Bad News. Detailed tags are a necessary feature of accurate score reporting such that when we choose to run a report on a learner's skill at Breaking Bad News, the system can accurately identify all assessment related to this.

Phase 2 – Development of Score Reporting System

Towards the end of phase 1, we will begin building our score reporting system. We already have the programming expertise within our team. Fictitious assessment data will be used to develop initial draft score reports, which will then be refined through an iterative process of adjustment based on student and faculty feedback. We will then pilot test the new score reporting system with a Dental Hygiene OSCE in December, 2017 and the MD Program's Year 4 OSCE in January of 2018. We will survey the students after using the system to get more feedback prior to large scale implementation.

Phase 3 – Implementation and Evaluation

The new score reporting system will be implemented at the start of the 2018-2019 academic year with all assessments in the Medicine and Dental Hygiene programs. Evaluation of the success of

the program will be based on three primary outcomes (more information provided in the evaluation section below):

1) surveys and follow-up focus groups of learners to assess their satisfaction with the score reporting system and how it impacted their learning.

2) a thematic analysis of the reflection portfolio entries in the MD program prior to and after implementation (as of the 2017-2018 year, the MD program will be having learners write narrative reflections in their portfolios after each course, approximately 6 times per year) to evaluate if there is a change in the depth and characteristics of the reflections.

3) any improvement in assessment scores throughout the 2018-2019 year that would not have been expected based on 2017-2018 data.

Justification for TLEF Mandates

Innovation

Recent advances in technology have led to an increased amount of data and knowledge available to our learners. This project is innovative in that instead of just generating more assessment data, it will take our copious amounts of assessment data and distill it into usable information to guide further learning. Not only will this innovation apply to individual assessments, but also across assessments within a course, across courses within a year, and across years of a professional program that will provide the learners a much more accurate picture of the needs for their learning.

Collaboration

This project is aimed at health professions programs and through this project, we will have immediate application to Medicine and Dental Hygiene. The success of this project could then be easily shared with the Faculty of Pharmacy and Pharmaceutical Sciences, Faculty of Nursing, and the Faculty of Rehabilitation Medicine. Also, this project involves collaboration between faculty and students in the design of the new score reporting system, as the driving purpose of this project is to have our students participate in an assessment environment that is more learner-centric.

Evaluation

The three primary outcomes are outlined under Phase 3 above. The three research questions that drive this project are: 1) What are learners' views on the new score reporting system? 2) Is there a significant change in how learners reflect on their learning if provided more detailed feedback? and 3) Can a more detailed score report change the trajectory of a student's progress through the program?

Research question 1 will be evaluated with surveys examining whether the learners are satisfied with the score reports and if and how the score reports affected their future learning. Learners will also be invited to participate in a focus group that will delve further into how the score reports impacted the learner, and a thematic analysis will be used to analyze the focus groups. For the second research question regarding change in learner reflection, we will examine the narrative reflections the learners do throughout the year, and will again use a thematic analysis to

look for themes from the reflections done prior to the new score reports and for those after implementation, with the expectation there will be more specific plans to pursue future learning in the reflections after implementation.

For the last research question, we will be using statistical modeling of assessment data prior to the implementation of this project to predict the scores we would expect in the various assessments, and then compare these predicted scores to the actual scores for learners after the implementation of our score reporting system. We believe that score reports with more detailed and customized feedback will have a positive impact on students' scores.

Sustainability / Impact on Students
After the several iterations of feedback from faculty and students to yield an optimally useful score report, no ongoing funding will be needed to maintain the system and very little resources would be required to port the system over to another faculty that would be interested in using our score reporting system. We will use programming resources already available to us in our faculty to design the system so no outside software will be necessary. After successful implementation, this process will have an immediate beneficial effect on hundreds of students in the two programs involved and will have further impact over the years in these programs and potentially in other interested faculties across the University of Alberta.

Dissemination
Dissemination of our project will focus on the outcomes from Phase 3. Project findings will be presented at the university-wide Festival of Teaching. We believe health professions education conferences and journals will be greatly interested in the findings of this project, and thus will submit our results to conferences such as the Canadian Conference on Medical Education, and to journals such as Teaching and Learning in Medicine.

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