

## Formative Assessment in Health Care Education

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### Abstract

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*This paper is the result of a substantial review of the literature on formative and summative assessment in education. The authors incorporate common challenges in health care educational programs, while presenting opportunities to overcome them. The goal of assessment is to measure learning; however students often view assessment as the assigning of discriminatory summative grades. Health care educators work within a system that rewards “teaching to the test” leaving students with vast knowledge gaps and an inability to become a lifelong learner. Upon graduation, students find themselves unable to adapt to an evolving discipline specific knowledge base which requires self motivation for continuing their education. The literature demonstrates how changing from a summative assessment model to a formative assessment model can improve health care educator’s abilities to create self-regulated learners.*

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**Key Words:** Formative assessment, summative assessment, feedback, self-regulated learner

### Introduction

Health educators have long reported the difficulty in authentically evaluating student learning within an educational culture committed to assigning discriminatory quantitative grades.<sup>1, 2,3</sup> Under ideal conditions assessment results can be used to help guide instructional practices, providing educators as well as learners a vehicle for successfully achieving learning objectives set forth in a course.<sup>4</sup> In health care education, a disconnect exists in the continued assessment of graduates based on score, grade, or rank rather than the assessment of knowledge obtained through adult learning. Current literature concerning assessment focuses on the technical underpinnings of methodologies educators use such as: Summative, Formative, Assessment *for* Learning and Assessment *of* Learning.<sup>5</sup>

Broadfoot et al. defined assessment *for* learning as a more detailed version of formative assessment, addressing evidence of where the student is at and using that evidence to determine the best course of action.<sup>6</sup> Summative assessment and assessment *of* learning are concerned with “validation and accreditation” purposes, providing little guidance for future success for both educators and students.<sup>7</sup>

The utilization of appropriate assessment techniques is paramount to the effective dissemination of knowledge to learners.<sup>8</sup> Health education inherently lends itself to a traditional discriminatory summative approach to student assessment (i.e. A, B, C, D, F), even though the ultimate outcome a practitioner’s credential is frequently viewed as pass-fail in nature. A summative approach, or the assessment *of* learning, has been the foundation of many a health care curricula; the thought being, this approach is easily standardized and provides clear outcome measurement.<sup>9</sup> Summative assessment can be thought of as the ‘destination’ outcome. A student is deemed as ‘having arrived’ at the destination (e.g. successful completion of a task), but may have little knowledge about how they arrived at that destination. Students desiring a degree in a health care related field are commonly described as highly competitive and therefore often successful in achieving summative desired outcomes (e.g. the highest score, grade or rank).<sup>10</sup> However, the problem this competitive nature can create is often competitive health care practitioners in lieu of collaborative health care practitioners.<sup>10</sup> As the landscape of health care in the United States transforms, there is an opportunity to evaluate the effectiveness of assessment practices utilized in the educational system. A paradigm shift is in order, which necessitates an examination of assessment methods, perhaps focused around ones collaborative ability as a student; which ultimately fosters an effective clinician in a multidisciplinary setting.<sup>10</sup>

Regardless of assessment strategy, it is safe to assume the goal of any health care program is to produce competent clinicians. The problem then, lies in the method of evaluating competency. Epstein defines competence in medicine as an inclusive mixture of a student’s ability to effectively communicate knowledge, technical skill, and clinical reasoning as well as reflect on knowledge and application towards the benefit of those being served. The afore mentioned paradigm shift then revolves around the idea that competence cannot be described as a singular, high stakes achievement but rather a habit formed by learning for a lifetime.<sup>11</sup> In order to promote lifelong learning, educators must adapt to curricula more conducive to a student-centered approach.<sup>12</sup> Integrating formative assessment often referred to as the assessment *for* learning, into existing or new curricula is one way this can be achieved.<sup>13</sup> Formative assessment measures are often described as frequent low-stakes assessments with feedback between instructor and learner in a ‘closed loop’ cycle. Assessment measures in a traditional face-to-face (f2f) classroom are important, as an instructor is often able to provide feedback in real time as knowledge gaps become apparent through instructor-student discourse.<sup>14</sup> The ability to identify and remedy knowledge gaps in a f2f setting helps students to stay on course, while further directing educators’ attention to needed changes in order to achieve learning objectives. Formative assessment relies heavily on the identification of these knowledge gaps and uses gaps as the basis for new instruction and learning.<sup>13</sup> Utilizing two constructs, known as ‘convergent’ learning and ‘divergent’ learning (the former being the assessment for specific, retained knowledge and the latter being the exploration of knowledge) formative assessment enables students to learn in two primary ways: First, by utilizing feedback in order to refine a specific skill set and secondly by promoting a professional identity through learned conversations in a social setting.<sup>13</sup>

The utilization of feedback in a learning environment is not new. Summative feedback allows a student to assume a professional identity as well as an assumption of specific clinical competency to practitioner roles.<sup>13</sup> However, by capitalizing on the feedback construct of formative education an educator can assess the quality of a students’ performance in the desired clinical role.<sup>13</sup> Rudolph et al contend this perspective as the ‘divergent’ portion of formative feedback, or the exploration of what is known; suggesting this type of feedback positively fosters the provisional or aspirational identity of a clinician and therefore encourages a collaborative mindset. This focus on frequent low-stake feedback may be thought of as benchmark progress towards the overall outcome and aide in reinforcing intrinsic motivation for success.<sup>9</sup> Feedback delivered to students by educators, should be used to bridge the knowledge gap between what is currently known and the desired learning objective. Several researchers view formative assessment as a way to improve overall performance, in comparison to providing summative grades with the hope students will understand how to bridge the knowledge gaps themselves.<sup>7, 8, 15</sup>

Currently, there is a void in theories of how best to assess student performance in a health care setting and provide effective feedback to further develop lifelong learners.<sup>5, 7, 16</sup>

Increased performance outcomes have been acknowledged by many theoreticians in the importance of developing “self-regulated learners”, identifying where the knowledge gap exists is how educators help develop this type of learner through assessment practices.<sup>8</sup> Learner assessment performed by educators is a key performance indicator in the effectiveness of instruction provided.<sup>8</sup> Health educators need to not only be aware of the pros/cons of the types of assessment they utilize, but also what the results are specifically indicating. According to Wiliam, assessment is a key component in successful instruction; whereby the process of assessment is the primary source in deciphering if instructional goals have resulted in anticipated learning outcomes.<sup>7</sup>

Assessment tasks assigned, whether in the form of exams, quizzes, papers or clinical practicum have value only to the degree they provide feedback and remediation to both the educator and learner.<sup>17</sup> The knowledge gained from assessment results is only useful if instructors are willing to adapt course curriculum to help direct future performance of their students.<sup>16</sup>

### **The Role of Assessment in Student Motivation**

Formative assessment is most effective when a learning environment is created which emphasizes process over performance.<sup>2</sup> By focusing on the process of learning rather than the grade of a student, educators will increase intrinsic motivation while decreasing extrinsic motivation.<sup>1</sup> Intrinsic motivation develops a student’s desire to learn for the sake of the learning process, where the concept of learning becomes the goal at hand. When students have intrinsic motivation about their learning they become explorers of information, gaining a deeper perception of information presented and an enhancement in the self-reflection processes that can increase educational enjoyment. Extrinsic motivation is outcome focused placing the emphasis of success or failure on obtainment of an external product. Thus, when students are externally focused on an outcome such as grades, they are much more likely to engage in “surface learning” committing only enough time/effort which will grant them some arbitrary external reward.<sup>18</sup>

Educators who place performance ahead of the process by awarding grades as a point of emphasis will find their students are more competitive, less collaborative and have overall lower motivation.<sup>18</sup> An example of this phenomenon can be seen when educators evaluate a student’s writing assignment. Formative feedback can reinforce a student’s focus on the process of learning, while helping them to be a better writer. The positive effects of feedback received are decreased when a score/grade is presented at the top of an assignment.<sup>19</sup> The simple act of placing a score onto an assignment focuses the assignments objective on attainment of a high performance in contrast to the process of becoming a better writer. Summative scoring then further decreases motivation in students who are the most at risk. In a cyclical pattern a poor scoring performance will decrease the likelihood feedback provided will be fully internalized, which has the potential to cause similar poor performances on future assignments.<sup>20</sup> Increased anxiety levels and poor collaboration skills are also associated with the summative grading of assignments which further decreases a student’s motivation to learn and is linked with decreased performance on subsequent assignments.<sup>1, 2</sup>

Health care educators can increase a student’s intrinsic motivation by providing only qualitative feedback on assignments which encourage an emphasis on process over performance.<sup>4</sup> Instructors are encouraged to provide opportunities for students to cooperatively design assignments and overarching assessments, which will encourage self-reflection and give the students a sense of ownership.<sup>19</sup> Student autonomy is directly correlated with engagement and increasing levels of motivation to learn, educators should actively seek out opportunities to increase student control over educational practices.<sup>1</sup> Intrinsic motivation is further developed when teachers are engaged and supportive of students, helping to promote effective dialogue in a safe learning environment. Educators who focus on developing activities to support high level authentic interactions between themselves and students will create a safe learning environment with students exhibiting greater motivation, curiosity and deeper learning.<sup>18</sup>

### **Assessment Feedback**

As discussed, feedback is the primary vehicle through which educators and learners alike bridge the knowledge gap between desired and actual performance.<sup>21</sup> Effective external feedback, delivered to students by teachers, should resemble a ‘dialog’ in which both parties actively participate in identifying solutions and clarifying assessment objectives.<sup>21</sup> Feedback should be delivered in a timely manner, which allows the student to take corrective steps before an assignment is due.

Student peers are also capable of providing feedback from a different perspective, allowing students to gain insights into an assessment task that might not otherwise have been known to the student. Further, peer feedback is commonly viewed as less critical, encourages a sense of togetherness and can help identify “alternative tactics and strategies” to be used in a course.<sup>21</sup>

Effective educators will use feedback gained from dialoging with students as well as student achievement of learning objectives, to adjust content presented throughout a course.<sup>21</sup> According to Clark, the theory of formative assessment is predicated upon the successful adaptation of instruction to help bridge the knowledge gaps present in learners.<sup>8</sup> The cyclical nature of formative feedback from educator-learner, learner-learner and learner-educator helps ensure optimal student learning as well as course delivery.<sup>21</sup> Educators are encouraged to inform students that the feedback they will receive on future assignments will be proximate in nature. Students who anticipate immediate feedback after completion of an assignment have been shown to have increased performance.<sup>22</sup> Lastly, an overarching goal of quality formative feedback is focused on generating student self reflection, which encourages students to actively participate in the self-regulation process.<sup>17</sup>

### **The Self-Regulated Learner**

Self-regulated learning provides a degree of autonomy to the learner which requires less educator support during the completion of assigned tasks.<sup>15</sup> A hallmark of formative assessment is the effective feedback it can provide when performed correctly, which is most beneficial when students are proactive in identifying their own strengths and weaknesses.<sup>17</sup> The process of self reflection helps transform a student into a “self-regulated learner” by encouraging one to take ownership over their education. Self-regulation causes students to take responsibility for the effort they put forth on assignments, interpretation of feedback given and ownership of the end products they create, an important aspect of health care education.<sup>21</sup> Self-regulated learning further increases the drive to become a lifelong learner by increasing motivation, encouraging intellectual risks and increasing overall student performance.<sup>8</sup>

### **Simulations as Formative Assessment**

Certain educational settings in health care are more conducive to providing formative feedback than others. Implementation of simulation in health care programs creates a unique opportunity to capitalize on the quality of feedback between the learner and the instructor. An integral part of student-centered education is the self-evaluative or critical reflection in linking assessment information into context.<sup>12</sup> Rudolph et al explore the concept of ‘debriefing’ as a formative assessment tool. Simulation and the consequent immediate debriefing periods allow students to work backward through the feedback loop.<sup>13</sup> Simulation debriefing as formative assessment tool analyses the specific ‘framing’ of a clinical scenario, allowing the student to identify an observed performance gap between actual actions and desired actions.<sup>13</sup> Effective debriefing includes a facilitated discussion of the interactions, allowing the student to discuss their thought process as to why they chose a specific action or not. The instructor in this setting is there to guide the discussion towards the objectives, while the student is responsible for explaining the process. The concept of situational framing has the potential to highlight otherwise unapparent deficits in the clinical, social and interpersonal decision making skills required of health care professionals.<sup>13</sup> The crucial impact of medical decision-making is a unique facet of health care that is very difficult to effectively assess. Providing a safe and secure environment allows the learner to comfortably identify and scrutinize their actions.<sup>13</sup> In deconstructing a given clinical scenario with clearly defined objectives, students are often able to identify knowledge gaps. This process also allows an instructor to effectively assess whether a learner was able to achieve the predetermined objectives and provide constructive feedback regarding the clinical scenario. This environment of ‘closed loop’ feedback also allows the instructor to develop and clarify new and more effective objectives for future simulations.<sup>13</sup>

### **The Quantification of Learning**

The ideal process of formative assessment is undermined by a cultural, societal and organizational fundamental desire to quantify student progress.<sup>3</sup> Educators are faced with a duality of pressures to provide summative grades for each student while being aware the assignment of grades can decrease a student’s performance.<sup>19</sup> Most instructors work within a system where only surface formative assessment occurs, summative grades are reported and student performance levels continue to decline.<sup>2</sup> Authentic implementation of formative assessment is not without its own limitations and issues; educators report increased time requirements, uncertainty due to the flexible construct of implementation and a concern students will not perform well on standardized tests.<sup>20</sup>

Only surface assessment is then performed by instructors where the simple act of providing feedback to a student is considered formative assessment, the culmination of which is the reporting of a summative grade. Formative assessment used for summative grading undermines student learning and engagement. Ideally, assessment and feedback should be delivered without a corresponding grade, if optimal student performance is desired.<sup>19</sup>

In health care education, a cultural change is required before the full benefits of formative assessment can be realized, one in which the awarding of discriminatory grades is eliminated and the adoption of a pass-fail system is implemented.<sup>3</sup> Grade distribution is a primary driving force behind student development of extrinsic motivation, an emphasis on performance over process and a decrease in student well being.<sup>18</sup> Educational institutions which have abandoned a traditional grading system for pass-fail have reported increased authentic student collaboration, less competition, increased satisfaction, deeper learning and increased self-regulated learning processes.<sup>18</sup>

In a pass-fail grading system educators will find they have more time to focus on the process of learning, distribution and reception of feedback, and the revision of course activities to best serve the needs of the students.<sup>3, 19</sup> The cyclical nature of assessment, instruction, embedded formative assessment and revision of instruction helps keep educators engaged and students motivated to learn. Thus, students are more apt to set “mastery goals” in which errors are seen as part of the process, in contrast to “performance goals” that encourage surface learning and procrastination.<sup>4</sup> Through the successful transition to a pass-fail system, increased authentic formative assessment and increased educator commitment to process over performance, students will have the best opportunities to develop into lifelong learners.<sup>3</sup> A shift in assessment emphasis to a formative approach in the realm of health care education and delivery is key to developing a new generation of intrinsically motivated health care providers. The benefits of implementing a pass-fail grading system in health care education may possibly extend beyond the learners themselves. Rohe et al determined that the implementation of a pass-fail grading system reduced the level of stress experienced by a cohort of medical students when compared to a similar cohort of students subjected to the traditional interval grading system. There is a possibility integrating a pass-fail system, assessment measures that reflect respect, concern and accountability of students, will affect the attitude of students towards future colleagues and patients.<sup>10</sup> Altering the traditional educational paradigm which emphasizes the dependence of students in a passive and competitive role to a newer model, which places students in an independent and active role can have positive implications in the success of health care education programming and reform.<sup>10</sup>

## Conclusion

Educators looking to improve performance outcomes in the health care educational environment should employ formative assessment techniques. The process of formative assessment and the ensuing feedback will help to encourage students to become proactive in their learning, transforming students into self-regulated learners.<sup>17</sup> Self-regulated learners have increased levels of engagement, motivation, and performance results based upon their proactive nature.<sup>8</sup> Through the process of formative assessment, the use of closed loop feedback and encouraging self-regulated learning an educator can provide an environment which is conducive to the creation of lifelong learners. A barrier to the implementation of authentic formative assessment is an educational culture of grading which encourages the awarding of discriminatory grades. A proposed solution would be to adjust the current grading methodology, replacing it with a summative pass-fail system that would help focus health care educational objectives on a learner’s process of achievement, in lieu of their performance.<sup>3, 18</sup>

This literature review has focused on the value of utilizing formative assessment strategies in health care environment, as well as the transition to a pass-fail grading scheme. Further research needs to be conducted exploring a variety of issues surrounding the application of formative assessment and the impact of a new grading philosophy. An exploration into techniques health care educators can utilize to give feedback to students in didactic, clinical and simulated environments and vice versa needs to be investigated. Methods for educators to adapt course content in real time or simulation that respond to students’ needs should be developed. Strategies need to be developed and implemented to help educators facilitate formative feedback to students in a time-crunched and content heavy environment.

Lastly, a prospective analysis on the effects of a pass-fail grading system and the development of lifelong learning practices among students in health care programs should be further investigated.

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