

Assessment Strategies in Online Learning

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Abstract

The global rise in popularity of online education coursework and programs has far outpaced research concerning best teaching and assessment practices. Student outcomes such as persistence, retention, connectedness, satisfaction, learning, and academic performance have all been previously linked to both summative and formative assessment strategies. While summative assessment has been traditionally used, formative assessment is necessary to improve these outcomes and better inform teaching. Online educators should share learning intentions and criteria for success, promote effective classroom discussions and student participation, provide effective feedback, and empower students as self-learners and resources for one another.

Keywords: Assessment strategies; Academic performance; Online learning; Effective feedback

1. Introduction

Student outcomes such as connectedness, satisfaction, learning and academic performance are directly affected by the type of assessment methods deployed by online educators (Carrillo-de-la-Pena et al., 2009). Research has demonstrated students report being less connected to course content, educators and their peers when the primary assessment methods used are summative in nature (Drouin & Vartanian 2008). It has also shown that student learning and retention of information presented by educators is considerably diminished when assessment methods used are principally summative. Online educators who deemphasize the use of summative assessments and increase the use of formative assessment will find students more likely to internalize delivered feedback, improving future performance (Weurlander, Soderberg, Scheja, Hult, & Wernerson, 2012).

As the demand for online learning continues to grow, institutions often struggle with the balance of meeting student demands while managing appropriate class sizes and faculty workload. Although research suggests formative assessment may lead to better outcomes, it is not the most commonly used form of assessment and may be minimized by students who do not perceive the value when not directly linked to a heavily-weighted grade (Wu & Jessop, 2018). Several researchers have identified increased time requirements as a barrier to authentic formative assessment, especially for educators who have traditionally only provided feedback to summative grading with an occasional justification upon student request (Hattie & Timperley, 2007; Li & De Luca, 2014; McKeachie & Svinicki, 2013). Assignments summative in nature such as multiple-choice examinations require less time to create and grade (Shute & Kim, 2014). Conversely, formative focused assignments seek to gain a greater depth into the current understanding that students possess, and when done regularly and effectively can assist in clarifying intentions and informing and improving future assessments.

This paper seeks to explain the differences between formative and summative assessment while identifying best online evaluation strategies.

2.Literature Review

The most common approach used to assess student learning in education is through the use of quantitative summative assessment (Black & Wiliam, 2009). This traditional method, however, relies heavily on the reliability and validity of the assessment itself and may impact student performance without giving the feedback needed to make necessary improvements. Formative assessment, alternatively, is a progressive form of evaluation for both students and educators which can be referred to as “assessment *for* learning”, focusing on frequent feedback and empowerment of the student (Stiggins, 2005).

2.1 Summative assessment

Summative assessment is characterized by the cumulative scoring of student progress, traditionally after a section of a course is taught and a culminating examination is given (Dennen, 2008). Summative assessment is frequently viewed as evaluating a student’s ability to understand the presented course materials (Yin et al., 2008). The results of such assessments are therefore rarely used to identify specific knowledge gaps present within individual students or potential improvements that should be made in order to effectively deliver course content (Popham, 2009). The purported benefits of summative assessment are in its ability to rank participants against fellow students and identify learning objective deficits (Shute & Kim, 2014). A major constraint to this type of assessment, however, is its lack of connection to improving teaching practices in the future (Wiliam, 2010).

Educators can further find their teaching efforts undermined by awarding summative measures, as the psychological response of receiving an unanticipated high or low grade can lessen a student's desire to self-reflect upon feedback provided regardless of grade achieved (Li & De Luca, 2014). Summative assessment feedback provided to students, especially on standardized exams such as those used for professional credentialing, is routinely delivered in the form of a sum total score (Havnes, Smith, Dysthe & Ludvigsen, 2012). It then falls upon the student to identify where knowledge deficiencies lie. Low performing students and students with exceedingly high academic expectations can have significant demotivational associations when an unexpectedly low summative grade is earned (Black, Harrison, Lee, Marshall, & Wiliam, 2003). Students develop anxiety in association with poor summative assessment performance, which has the potential to create a chain reaction of subpar performances on subsequent assessments (Hwang & Chang, 2011). Furthermore, summative assessment is primarily teacher-driven, demotivating students and subduing autonomy and independence in learning (Wu & Jessop, 2018). Increased student anxiety, in addition to decreased motivation, creates an environment in which maximal student learning cannot be achieved and poor student outcomes can be anticipated.

2.2 Formative assessment

Formative assessment is utilized to not only support student learning but also to provide real-time feedback for instructors to make changes to instruction based upon assessment findings, ensuring teaching strategies are congruent with student needs (Dennen, 2008). According to Black & Wiliam (2009),

Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited. (p.6)

Unlike summative assessments, students play a prominent role in providing insights into how instruction can be adjusted to narrow knowledge deficits (Havnes et al., 2012). The processes by which formative assessment evidence (i.e. clinical observations, homework, testing) is gathered are less relevant in comparison to

ensuring that results be “used as feedback by teachers and students to improve teaching and learning, respectively” (Shute & Kim, 2014, p. 313).

Research has demonstrated that the effective use of formative assessment strategies by educators has the potential to double the speed at which students learn course material while increasing student’s motivation to learn and ability to become a self-regulated learner (Shute & Kim, 2014). It can be used as a learning tool, positively impacting student engagement, intrinsic motivation, peer interaction, and an increased depth of subject knowledge with higher academic performance (Carrillo-de-la-Pena et al., 2009; Elezi & Bamber, 2017; Haugen, Lysebo, & Lauvas, 2017; Petrovic, Pale, & Jeren, 2017; Weurlander et al., 2012). Student satisfaction has been frequently shown to be directly related to instructor feedback, a major component of formative assessment, and such feedback can be a strong predictor of student satisfaction and achievement of course learning outcomes (Eom & Ashill, 2016).

3.Recommendations

The characteristics of effective formative assessment include four main components: the role of assessment, frequency of assessment, format of the assessment, and feedback (Shute, 2008). Wiliam (2010) further advanced the operationalization of formative assessment for educators through the creation of a five-point working definition:

1. Clarifying and sharing learning intentions and criteria for success.
2. Engineering effective classroom discussions, questions, and learning tasks.
3. Providing feedback that moves learners forward.
4. Activating students as the owners of their own learning.
5. Activating students as instructional resources for one another.

3.1 Clarifying intentions

The expected level of performance indicated by instructors should be congruent with goals set forth within the course of study. Performance expectations should neither be over or understated as both of these actions can lead to decreased motivation, increased frustration and lower student performance (Black & Wiliam, 2009). Feedback should be provided specific to the stated intention of an assignment, avoiding extraneous content which is unrelated (Lopez-Pastor & Sicilia-Camacho, 2017; Shute, 2008). An example of this misalignment would be a writing assessment with the stated outcome to “create community” amongst students and the accompanying feedback primarily focusing on grammar/punctuation.

Online educators can further clarify learning intentions through the delivery of student learning objectives (SLOs) that are clearly linked to specific assignments. Assessment thresholds can then be established to help identify whether assignments are successfully introducing, developing or mastering SLOs and if adjustments need to be made. Assignment rubrics should be created and linked to assessments as a way to clarify not only learning intentions but to also provide transparency in the grading process. Additionally, educators can further help students understand assessment intentions by providing example assignments while clearly identifying specific areas that were excellent or needed further refinement.

3.2 Engineering affective assessments

Assessments should be structured in a way that promotes the learning process while providing quality control of learning outcomes (Haugen et al., 2017). The frequency by which assessments are provided should be reasonably commonplace as this helps educators to refocus educational materials delivered throughout the course. Multiple assessment sources should be evaluated to authentically assess student knowledge while clearly

identifying learning gaps (Black et al., 2003). Formative feedback from instructor to students is only effective to the extent it identifies and bridges student knowledge deficiencies.

Student to instructor formative feedback should help educators develop teaching strategies that meet the needs for each individual student. Educators can gain student trust by demonstrating and articulating changes that are being made in real-time to student feedback (Rushton, 2005). Another option, especially early in an academic course of study, is to provide a pathway for students to provide formative feedback anonymously. Anonymity allows students who are less likely to naturally come forward with suggestions to have a greater sense of power to do so, without facing potential repercussions from instructors and/or judgment from fellow students (McKeachie & Svinicki, 2013). Further, as providing formative feedback to instructors could be a foreign concept for many students, providing a structured guide or past examples can help to expand effective dialog (Black & Wiliam, 2009; Havnes et al., 2012).

3.3 Providing feedback

The most important component of formative assessment is feedback, from student to student, instructor to student and student to instructor (Hattie & Timperley, 2007; Haugen et al., 2017; Lopez-Pastor & Sicilia-Camacho, 2017). Feedback should be provided as a helpful constructive guide to advance student learning and instructional practices without the pretense of being “judgmental”. Feedback is more effective when in the context of correct answers provided by a student rather than incorrect, as it helps build upon foundational knowledge instead of what is currently unknown (Shute, 2008). Students most value detailed, specific feedback related to what needs to be improved within their work or learning strategies (Dawson et al., 2019).

The timing of when formative feedback is provided contributes to the effectiveness of feedback (Hattie & Timperley, 2007; Mislevy et al., 2017; Rushton, 2005). Promptly delivered formative feedback can be immediately used by students to backfill identified knowledge gaps which serves to scaffold the creation of new knowledge (Hattie & Timperley, 2007). Although this is generally preferred by students, providing delayed feedback allows the student additional time to process information, encouraging the practice of internal dialog and reinforcing self-regulatory development (Hattie & Timperley, 2007; Li & De Luca, 2014). Authors have further postulated that the degree of difficulty associated with an assignment should dictate the timing of feedback (Clariana, Wagner, & Murphy, 2000). Assignments requiring more intellectual effort should be provided with delayed feedback as they require more time for students to fully process, and those requiring less intellectual effort should be provided with immediate feedback as extra processing time is unwarranted (Clariana et al., 2000; Hattie & Timperley, 2007). Regardless, the timeliness of the feedback should ensure availability prior to subsequent work (Dawson et al., 2019).

3.4 Empowering the learner

Feedback provided based upon previous knowledge allows a student to develop the skills needed to self-identify errors in thinking patterns, which directly supports the development of self-regulated learning. Self-regulated feedback is provided in relation to a student’s internal dialog in determining how much effort should be put forth, willingness to seek out instructor feedback, and the overall managing of personal behaviors (Nicol & Macfarlane-Dick, 2006). Students can also serve as the owners of their learning by performing “self-assessments” to identify gaps in knowledge (Lopez-Pastor & Sicilia-Camacho, 2017). Educators can facilitate self-assessments by creating assignments which require students to first grade their own submissions based upon previously generated assignment instructions, rubrics, and examples provided.

Activating students as a resource for one another through the use of assessments which encourage peer-to-peer learning helps to further empower learners (Haugan et al., 2017). Discussion boards facilitate this practice when instructor generated questions direct online discussions, encouraging students to interact with one another while furthering their understanding of assigned course content.

4. Conclusion

Online education provides a platform for continued learning opportunities to reach an expansive portion of the population and best practices in online learning continue to be explored and expanded. Engaging online learners and gathering informative feedback requires interaction beyond cumulative scores and marking of right and wrong answers. Formative assessment opens the avenues of feedback from teacher to student, student to teacher, student to student, and even within an individual. Such interaction leads to faster learning and higher student satisfaction, improving academic performance and student connectedness. Online learning benefits from the clarification of shared learning intentions and criteria, effective discussions and learning tasks, timely and constructive feedback, and activation of students as owners of their learning and resources for each other.

References

- [1]Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5-31.
- [2]Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2003). *Assessment for learning: Putting it into practice*. New York, NY: Open University Press.
- [3]Carrillo-de-la-Peña, M. T., Bailles, E., Caseras, X., Martínez, À., Ortet, G., & Pérez, J. (2009). Formative assessment and academic achievement in pre-graduate students of health sciences. *Advances in Health Sciences Education*, 14(1), 61-67.
- [4]Clariana, R. B., Wagner, D., & Murphy, L. C. R. (2000). Applying a connectionist description of feedback timing. *Educational Technology Research and Development*, 48(3), 5-22.
- [5]Dawson, P., Henderson, M., Mahoney, P., Phillips, M., Ryan, T., Boud, D., & Molloy, E. (2019). What makes for effective feedback: Staff and student perspectives. *Assessment & Evaluation in Higher Education*, 44(1), 25-36.
- [6] Dennen, V. (2008). Looking for evidence of learning: Assessment and analysis methods for online discourse. *Computers in Human Behavior*, 24(2), 205-219.
- [7] Drouin, M., & Vartanian, L. (2008). Do students need sense of community in online learning environments? Sense of community and student satisfaction, achievement, and retention in an online course. *Quarterly Review of Distance Education*, 11(3).
- [8] Elezi, E., & Bamber, C. (2017). Enhancing students learning experience via in-class formative assessments: A business studies UK higher education example. *British Journal of Education*, 5(9), 69-88.
- [9]Eom, S. B., & Ashill, N. (2016). The determinants of students' perceived learning outcomes and satisfaction in University online education: An update. *Decision Sciences Journal of Innovative Education*, 14(2), 185-215.
- [10]Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- [11]Haugan, J., Lysebo, M., & Lauvas, P. (2017). Mandatory coursework assignments can be, and should be, eliminated! *European Journal of Engineering Education*, 42(6), 1408-1421.

- [13]Havnes, A., Smith, K., Dysthe, O., & Ludvigsen, K. (2012). Formative assessment and feedback: Making learning visible. *Studies in Educational Evaluation*, 38(1), 21-27.
- [14]Hwang, G. J., & Chang, H. F. (2011). A formative assessment-based mobile learning approach to improving the learning attitudes and achievements of students. *Computers & Education*, 56(4), 1023-1031.
- [15]Li, J., & De Luca, R. (2014). Review of assessment feedback. *Studies in Higher Education*, 39(2), 378-393.
- [16]López-Pastor, V., & Sicilia-Camacho, A. (2017). Formative and shared assessment in higher education. Lessons learned and challenges for the future. *Assessment & Evaluation in Higher Education*, 42(1), 77-97.
- [17]McKeachie, W., & Svinicki, M. (2013). *McKeachie's teaching tips*. Cengage Learning.
- [18]Mislevy, R. J., Haertel, G., Riconscente, M., Rutstein, D. W., & Ziker, C. (2017). Evidence-centered assessment design. In *Assessing Model-Based Reasoning using Evidence-Centered Design* (pp. 19-24). Springer, Cham.
- [19]Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education*, 31(2), 199-218.
- [20]Petrović, J., Pale, P., & Jeren, B. (2017). Online formative assessments in a digital signal processing course: Effects of feedback type and content difficulty on students learning achievements. *Education and Information Technologies*, 22(6), 3047-3061.
- [21]Popham, W. J. (2009). Assessment literacy for teachers: Faddish or fundamental? *Theory into Practice*, 48(1), 4-11.
- [22]Rushton, A. (2005). Formative assessment: A key to deep learning?. *Medical Teacher*, 27(6), 509-513.
- [23]Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, 78(1), 153-189.
- [24]Shute, V. J., & Kim, Y. J. (2014). Formative and stealth assessment. In *Handbook of research on educational communications and technology* (pp. 311-321). Springer, New York, NY.
- [25]Stiggins, R. (2005). From formative assessment to assessment for learning: A path to success in standards-based schools. *Phi Delta Kappan*, 87(4), 324-328.
- [26]Weurlander, M., Söderberg, M., Scheja, M., Hult, H., & Wernerson, A. (2012). Exploring formative assessment as a tool for learning: Students' experiences of different methods of formative assessment. *Assessment & Evaluation in Higher Education*, 37(6), 747-760.
- [27]Wiliam, D. (2010). An integrative summary of the research literature and implications for a new theory of formative assessment. In H. L. Andrade & G. J. Cizek (Eds.), *Handbook of formative assessment* (pp. 18-40). New York, NY: Taylor & Francis.
- [28]Wu, Q., & Jessop, T. (2018). Formative assessment: Missing in action in both research-intensive and teaching focused universities? *Assessment & Evaluation in Higher Education*, 43(7), 1019-1031.
- [29]Yin, Y., Shavelson, R. J., Ayala, C. C., Ruiz-Primo, M. A., Brandon, P. R., Furtak, E. M., & Young, D. B. (2008). On the impact of formative assessment on student motivation, achievement, and conceptual change. *Applied Measurement in Education*, 21(4), 335-359.

Biography

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