



Achieving meaningful online learning through effective formative assessment

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An online course was studied to investigate how integration of formative assessment enhanced the course design to facilitate learner engagement with meaningful learning experiences within the context of ICT-related professional development for teachers. The study employed case study methodology. Participants included postgraduate students enrolled in an ICT-related online course and the course teacher within a New Zealand university. Based on the findings, integrating ongoing authentic assessment activities within teaching and learning processes engaged the students actively, and provided opportunities for ongoing monitoring and assessment. These in turn, elicited appropriate formative feedback to support and scaffold learning. These formative processes also fostered development of an effective online learning community. The interplay between formative processes and an interactive learning community sustainably fostered learners' engagement with critical learning experiences including active, interactive, contextual, collaborative, reflective, multidimensional perspectives, and self-regulated aspects of meaningful learning, which ultimately supported development of robust and transferable knowledge.

Keywords: Online learning, formative assessment, effective pedagogical strategy, meaningful engagement

Introduction

The concept of formative assessment is underpinned by three defining processes: “establishing where the learners are in their learning [in relation to the expected learning outcomes]; establishing where they are going; and establishing what needs to be done to get them there” (Black & Wiliam, 2009, p. 7). Convergence of formative assessment with the affordances of web-based technologies leads to the concept of online formative assessment. Effective integration of online formative assessment has the potential to facilitate and sustain meaningful interactions among learners and the teacher, and in turn foster development of effective learning communities to support meaningful learning and its assessment (Sorensen & Takle, 2005). Moreover, this can provide a systematic structure for effective support and learning scaffold through ongoing monitoring of learning and provision of adequate formative feedback. Ongoing learner support has been identified as a critical requirement for effective online learning, and can be essentially facilitated through sustained interactive collaboration among the teacher, peers and the individual learner (Ludwig-Hardman & Dunclap, 2003). In effect, this supports learners to engage productively, and stimulates self-regulation, which in turn supports learners to assume primary responsibility for their learning, an important requirement for success in online learning.

However, a recent review of literature in this field barely revealed any study that has holistically exemplified integration of online formative assessment, especially from the perspectives of supporting meaningful learning within the context of ICT-related professional development for teachers. This study aimed to fill that gap with a

focus on how formative assessment supported online learners in developing transferable learning in an ICT in education course for teachers (among other educational professionals). The study also aimed to elucidate the critical factors that influenced its successful implementation.

Methodology

The study employed case study method to facilitate an in-depth investigation into the design and implementation of online formative assessment to establish its effectiveness in relation to enhancing learners' engagement. The study context was the online learning setting of a New Zealand University within a postgraduate program in education. The participants included the students enrolled in an ICT in education online course and the teacher who was also the course designer. The study was framed within authentic learning theoretical perspectives (Barab, Squire, & Dueber, 2000). The data collection techniques included online observations, analysis of the archived course discourse, and semi-structured interviews. The data from multiple sources was analyzed using inductive and deductive analytical techniques, which were subsequently triangulated to corroborate the evidence.

The study findings and their implications

Online formative assessment was exemplified through various elements in this online course. These included a variety of ongoing and authentic assessment activities, adequately defined learning goals and expected outcomes, and opportunities for ongoing monitoring, assessment and formative feedback. These enhanced learners' engagement with critical learning processes including active, interactive, contextual, collaborative, reflective, multiple perspectives, and self regulated aspects of learning. These aspects are critical to supporting meaningful learning as identified in a recent review of literature by Gikandi, Morrow and Davis (2011).

The current findings showed that integrating open-ended and flexible assessment activities that were relevant to real-world applications created a contextualized learning environment that facilitated learner autonomy and active cognitive engagement. This engaged students in meaningful ways, which confirms the findings by Gikandi et al. (2011). The teacher role as an expert facilitator was evident in the course through fostering shared purpose and understanding, scaffolding learning, detecting misconceptions and providing formative feedback. However, one particular student who was a unique case experienced extreme challenges within this authentic learning environment. This was particularly due to his learning style that did not fit well in online settings and was not flexible enough to adapt it fittingly despite the teacher's support and encouragement, and he voluntarily withdraw from the course towards the end. This confirms the findings of Gikandi et al. (2011) that identified learner's commitment as an important ingredient in achieving effective formative assessment in online learning.

The course design revealed a collaborative learning pedagogical approach that was facilitated through asynchronous threaded discussions. This fostered dynamic interactivity, co-construction of knowledge through multiple viewpoints, peer formative feedback, and promoted shared understanding of expected outcomes as the individual students engaged with the assessment activities. This is consistent with findings of Vonderwell et al. (2007), and Sorensen and Takle (2005) that online formative assessment can foster opportunities for collaborative learning and assessment. Through these formative processes within the asynchronous discussion forums, the students were also able to share their ongoing work and/or ideas with peers and receive critical feedback that supported them to improve their work and close their performance gaps.

Another key finding is how opportunities for ongoing monitoring and assessment were enhanced through ongoing documentation (archiving) and sharing (by being public to all participants) of learning and assessment processes and products. This also served an important purpose in informing formative feedback processes and serving as exemplars. The ongoing sharing of processes and products including publicity of learning needs and the received feedback also enhanced effectiveness and efficiency of feedback because the students benefited from their peers' feedback both cognitively and affectively. Effective formative feedback was critical to the effectiveness of formative assessment in this asynchronous setting particularly in relation to its immediacy, adequacy and interactivity. Feedback was timely and characterized by clues and probes as opposed to direct solutions. As a result, feedback was not an end in itself but an iterative and dialogic process that promoted reflective thinking and self regulatory strategies among the students, which in turn fostered deep inquiry. More importantly, the adequacy and interactivity of feedback was enhanced by the uniqueness of the online setting (as compared to face-to-face settings) in relation to offering the participants opportunities for revisiting previous postings (contributions by self and/or others within the online discourse). This greatly enriched formative feedback processes in two important ways: firstly, it facilitated internal feedback (self reflection or interaction with self) as the students had sufficient opportunities to review the feedback they received (the responses from

others) and revisit other related previous postings. Secondly, the students had ample time to review and rethink upon previous contributions before they composed their responses as feedback to peers.

The findings also reveal that effective integration of online formative assessment promoted students' engagement in self-monitoring and assessment, reflectivity and self-regulatory processes. The students progressively developed mutual responsibility and recognized themselves as source of learning support for their peers. This led to development of a supportive learning community within this online course which reciprocally nurtured the formative processes. Through these aspects, it is evident that the teacher and students' roles were reconstructed because teacher and students alike assumed new roles as facilitators and co-participants. Notably, the role that the teacher played in fostering shared understanding of purpose and responsibility cannot be underestimated; in effect, it required the teacher to be vigilant and open-minded in order to effectively facilitate the online discourse and ensure the efficacy of the shared role within formative processes and responsively manage the emerging issues.

To this end, it is clearly evident that framing online formative assessment within authentic learning perspectives offered an effective learning environment by creating an authentic environment that fostered learner engagement with meaningful learning experiences. This implies that online educators can exploit the potential of online formative assessment to develop learner and assessment-centered environments that focus on enhancing learning experiences as opposed to teacher-centered environments where the teacher is the expert and learners assume a passive role. Online formative assessment can offer a means to create effective environments where learners are actively engaged with valuable experiences and take primary responsibility for their learning, which is critical for successful online learning. These experiences inevitably supported development of robust knowledge, and enhanced learners' ability to effectively transfer ICT knowledge and skills in their own professional practice.

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