Chapter 5
Leveraging Mobile Devices for Qualitative Formative Assessment

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ABSTRACT

This chapter explores an approach for using mobile devices—smartphones, tablets, and laptops—to document learning using qualitative formative assessment. This process emerged from case study research on how mobile devices, specifically iPad, and certain approaches, specifically screencasting, can be used to support ongoing assessment of learning. The cases and the literature included are derived from a dissertation on this topic. The chapter will describe and examine relevant literature, processes involved and possibilities created through this approach.

INTRODUCTION

Assessment of learning is key to the success of any educational program. There are many ways that educators approach assessment —summative, formative, informal, narrative, analytic, and so on — and many ways that teachers and educators define the purposes of assessment (Richards, 2014). Summative approaches have dominated assessment-related conversations, especially in the United States, partially because it is how things have been done for many years but more so because there did not exist any efficient or realistic methods for otherwise measuring the progress of student learning. With the emergence of technology in schools, especially mobile devices, there are new opportunities to bring formative assessment into regular practice and to help understand the progress of student learning in ways that were previously not efficient or realistic.

For the purposes of this chapter, formative assessment is defined as the documentation and ongoing use of contextual information to guide both teacher practice and student reflection. This documenta-

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tion and use of information has been described as the only way to bring about "desirable change" in a classroom (Black & Wiliam, 2009). It is necessary to understand the role and possible roles that mobile devices play in the documentation and use of contextual information from measuring that something was learned (in a better, same, or worse way) to how something was learned.

This chapter begins with a framing of formative assessment followed by declarations of assumptions and theoretical framings. A collection of relevant literature makes connections between mobile devices, formative assessment, and multimedia design. Next, three case studies from previously published dissertation research (Richards, 2014) are examined with an eye towards mobile multimedia design choices in formative assessment contexts. The chapter closes with a proposed toolkit for qualitative formative assessment, with or without mobile devices.

The central goals of designing learning environments and developing theories of learning are intertwined (Custodero, 2006) and the rate at which new technologies emerge and the need to evaluate both their appropriateness and effectiveness make it important to conduct a variety of approaches to research on educational technologies (Haertel & Means, 2003). Understanding how technology fits into the classroom is just as important as understanding the possibilities afforded by the technology (Budin, 1991), but as technology evolves, there is barely enough time to adjust to one kind of usage before the next innovation arrives (Richards, 2014).

This problem is exacerbated by the emergence and circulation of educational technology research. Even with a lack of consistent empirical or longitudinal research on the effectiveness of mobile devices in education, there appears to be a growing adoption and integration cycle worldwide (See Blume & Watanabe, 2013; Hamdan, 2012). One can argue that mobile devices are simply computers that are making previously researched interactions such as multimedia authoring (Liu, 2003), communicating and collaboration (Stahl, Koschman, & Suthers, 2006), and Internet research (Rice & Katz, 2003) more available.

Skinner (1986) suggested that educators should be preparing students to be creators and discoverers. "Discovering" knowledge does not necessarily mean simply coming across information that has been prepared for the purpose of being accessed (Pink, 2006). In most learning settings, students demonstrate their understanding in ways that cannot just be marked as right or wrong, though some sort of human judgment is necessary for assessing the quality of student understanding — being able to apply, transfer, and think flexibly with what one knows (Perkins, 1992; Wiske, 1998) — as demonstrated by their work (Bloom, 1984).

There are two primary dimensions, perhaps amongst many, to consider for reaching such an end goal with formative assessment practices using mobile devices: quantitative formative assessment and qualitative formative assessment. Quantitative formative assessment data is numerical, statistical information typically organized in a spreadsheet or some other database. Qualitative formative assessment data is information that can be anecdotal, observational, conversational, and informal.

To a degree, all assessment approaches are, at least theoretically, "formative" (Richards, 2014) as they are feedback mechanisms intended to help shape and improve the person (or thing or situation) being assessed (Sadler, 1989). Feedback should contribute positively to a learning experience and relieve the load on the learner (Wiener, 1961). However, to a similar degree, all assessment approaches have a summative nature as well. They represent the end (of one iteration, one cycle, one stanza) of a learning experience and the information gained from the assessment are not always used to help inform practice or the learner.