

Literacy Learning and Assessment for the Digital Age

E**April Marie Leach***Northcentral University, USA*

INTRODUCTION

Education is now at the juncture of a massive shift in the philosophy and methodologies used to develop critical thinkers for our era (Capello, Felini, & Hobbs, 2011; Cho, 2010; Edwards-Groves, 2012; Hobbs, 2011; U.S. Department of Education, 2012). As technology makes emerging authentic literacies that meet and morph with traditional concepts of literacy possible, the idea of developing critical thinking through the collaborative study and construction of multimodal media and the dramatic arts is becoming accepted as a valuable pedagogy (Beagle, 2010; Literacy Research Association, 2012). Scholars who have researched and written about this topic from theoretical perspectives of pedagogy, psychology, cognitive science and neuroscience, seem to agree on this focus for the future (Cloonan, 2011; Coiro, 2012; Hobbs, 2011; Rogow, 2011; Rosser, 2011; Sousa & Tomlinson, 2011). The importance of integrating digital media literacy into education curricula to teach and provide opportunities to practice and assess the skills needed for employment in the public and private sectors of a connected global economy, also referred to as evidence or performance based learning, is acknowledged across academic, governmental, and independent scholars concerned with education (Ferdig & Pytash, 2014; Rifkin, 2012; U.S. Department of Education Office of Educational Technology, 2013).

Underlying theoretical constructs that support literacy learning through student produced multimodal media (MMM) will be examined. Answers are sought to the epistemological question of how to integrate existing research with evolving multiple literacies theories that can suggest highly engaging and effective methods to teach, motivate, and connect student learning to the real world (Allington, 2012; Dalton & Proctor, 2007; Gambrell, Del Nero, & Duke, 2011). Theories that contribute to the understanding of multiple

literacies and MMM as a literacy tool form a theoretical network that bridges across several perspectives as shown in Figure 1.

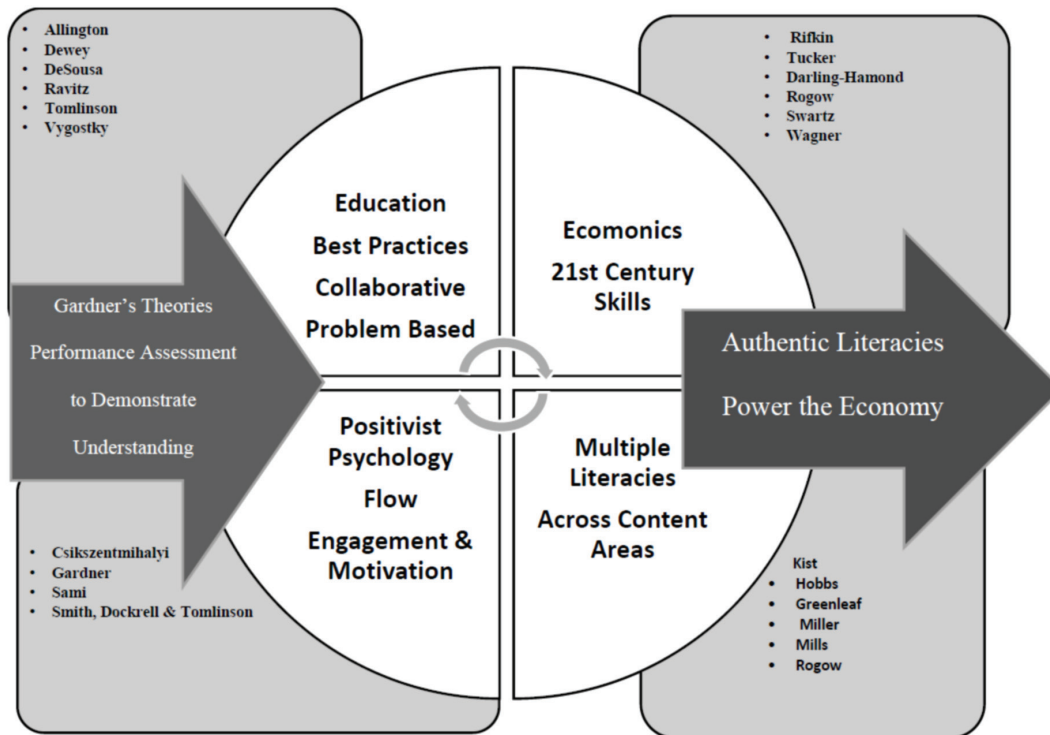
According to a survey of 5,000 adults in the United States, United Kingdom, Germany, and France, creativity emerged as a driving force and indicator of what makes life meaningful for 8 out of 10 people yet only 1 out of 4 feel that they are living up to their creative potential (Adobe, 2012). It is therefore of interest to note the correlation between this survey data and emerging means for teaching and assessing literacy employing multiple modes of media composition which is a highly creative process. The objective of this article is to examine how contributing research across scholarly fields of inquiry contribute to an emerging unified theory of digital era literacy (UTDEL). It will be shown that theoretical disciplines contributing educational research merge ineluctably as technology expands the boundaries of discrete subject areas. Integrating established theories into a unified theory of 21st century learning forms the foundation for an evolving theory that is greater than the sum of its respective parts. Research and theory presented support why a deep level of congruence should exist between teaching and methods of assessment in a digital world, and how teaching and assessing literacy through performance tasks employing multimodal media (MMM) can accomplish this goal.

BACKGROUND

The seminal learning theory of constructivism developed by Dewey, Piaget, and Vygotsky explains the process of learning as one that constructs new information and ideas upon those that already exist in the mind of each individual learner (Dewey, 2012; Pass, 2004; Wadsworth, 2003; Vygotsky, Cole, Scribner, & Scribner, 1978). In this framework, learning is

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Figure 1. Theories contributing to a Unified Theory of Digital Era Literacy (UTDEL)



conceived as a constructive process unique for each individual rather than content that can be inserted into a learner's understanding as if the mind were a blank slate. This theory has served as the theoretical basis for much educational research in the intervening years, serving as the foundation upon which collaborative and problem based learning has been designed (Buck Institute for Education, 2012) and for which educational neuroscience has found supporting evidence (Sousa & Tomlinson, 2011). A contemporary learning theorist whose work builds upon the theoretical models of cognition known as constructivism is Howard Gardner. Gardner's theory of multiple intelligences which he outlined as factors to be taken into consideration when working with the spectrum of human cognitive processes by which learning takes place include non-linear thinking, visual, auditory, kinesthetic (hands on) learning, and emotional intelligence. Questions regarding the assessment of learning arising from his theory of multiple intelligences have led Gardner to posit that authentic assessment can be accomplished by a variety of means and methods (Gardner, 1999, 2006).

One of Gardner's suggestions for comprehensive assessment is through performance tasks as demonstra-

tions of understanding (Gardner, 1999). In an article upon which much of contemporary MMM research rests, Gardner wrote about the place that multimedia and multiple intelligences will have in future classrooms in light of what he termed the "cognitive revolution" (Veenema & Gardner, 1996). Since then Gardner's approaches to "teaching for understanding" have been positively received and developed through research into learning frameworks that have proven to be highly effective (Darling-Hammond, Barron, Pearson, & Schoenfield, 2008; Harvey & Goudvis, 2007). Evolving literacy research weaves Gardner's theories into the fabric of a cohesive theoretical basis in order to develop a model of teaching and assessing evidence-based learning across disciplines employing multimedia production (Belland, French, & Ertmer, 2009). Gardner's theories of learning are a perfect fit for teaching with the aid of multimodal media performance tasks that permit students to demonstrate deep understanding across disciplinary lines. These theories however, do not align with contemporary standardized testing norms that employ a multiple choice answer format. While easy to score and provide data for administrators, multiple choice tests assess only a narrow spectrum of

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