RESEARCH SERIES ON SCHOOL EFFECTIVENESS AND SCHOOL IMPROVEMENT: CREATING ACHIEVEMENT GOALS WITH AN UNDERSTANDING OF DEEP LEARNING AND TECHNOLOGY

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Creating Achievement Goals with an Understanding of Deep Learning and Technology

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Introduction

The Toronto District School Board (TDSB) has recently introduced the Learning Center Strategy "to improve the effectiveness of our schools, make us more responsive to the needs of our communities, and increase student achievement and well-being" (TDSB, 2016a, para. 1). One of the expectations of the Learning Center Strategy is that "[all] students will experience deep learning opportunities supported by technology leading to improved achievement" (TDSB, 2016b, p.7). In this research series on School Effectiveness and School Improvement we are focusing on informing school improvement practices by creating an understanding of deep learning dependent upon technology that can impact achievement goals.

Achievement Goal

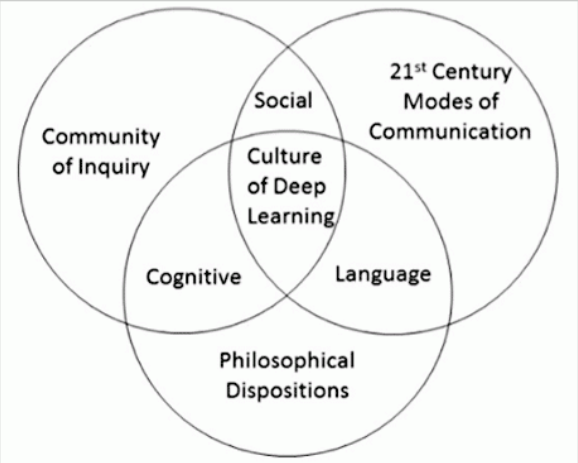
An achievement goal is linked to purposeful behaviour that surfaces in an achievement situation (Dweck & Leggett, 1988). An achievement goal is a construct within educational settings and the student behaviour utilized to realize this goal is a consequence of planned educational programs.

> *The focus in educational technology has appropriately turned from artificial intelligence to amplifying the intelligence of teachers and students (Dede, 2014, p. 3).*

Deep and Surface Learning

Learning within an opportunity to achieve can be branded *deep* or *surface* learning (Dunleavy & Milton, 2008). Ramsden (2003) suggests *deep learning* occurs when students integrate new material with personal experiences, knowledge and interests, however *surface learning* is learning ". . . in which alien material is impressed on the memory or manipulated unthinkingly with the intention of satisfying assessment demands" (p. 48). *Deep learning* is subjective and constructivist in nature whereas *surface learning* is objective; the learner focuses only on what is required to complete tasks according to criteria (Rillero & Padgett, 2012).

Figure 1: Preparing a Classroom Culture for Deeper Learning



Source: (Garcia, 2015, p.1)

Deep learning is integrative and constructivist, fitting into the learner's existing knowledge and understanding while generating new connections and understandings (Rillero, 2016) as depicted in Figure 1. *Deep learning* is internal (subjective) and not objective (superficial) (Ramsden, 2003). *Deep learning* includes greater levels of engagement and fits into existing conceptual knowledge (Rillero, 2016; Goldspink & Foster, 2013). *Surface learning* involves limited engagement while learning vast amounts of information, which is placed at shallow depths cognitively. *Deep learning* is complex, intricate, and multifaceted whereas surface learning lacks these features (Rillero, 2016). Students who learn deeply attain quality and wide-ranging learning expectations yet surface learners may not. Surface education is quite busy with many tasks therefore students avoid going deep into any one task and instead try to complete all tasks in a specific amount of time. Surface learning evaluations aim to measure "reproduction rather than understanding" (Prosser, et al., 2003, p. 37) and this surface learning is linked to traditional educational approaches wherein technology is utilized, however, in low level superficial ways, while constructivist-thinking educators often have *high level* student-centered deep multilayered teaching praxes (Ertmer & Ottenbreit-Leftwich, 2010; Rillero, 2016; Ryan & Bagley, 2015).

The most dangerous experiment we can perform is to keep our current systems of schooling in place. Over time, the disconnect between what our society needs and what industrial-age educational models can provide is widening. (Dede, 2014, p. 22)

Deeper Learning

The U.S. National Research Council (NRC) (2012) suggests deeper learning is "the process through which a person becomes capable of taking what was learned in one situation and applying it to new situations—in other words, learning for 'transfer'" (p. 1). Being able to transfer what is learned in schools to the workplace is, and always has been, an expectation in Ontario education (Ryan & Bagley, 2015). "Deeper learning is the key to making our schools more effective, because it prepares students to succeed in the world they will find after school, whatever that might look like" (Hewlett Foundation, 2016, p. 1).

The NRC (2012) claims six strategies enable deeper learning:

- Use multiple and varied representations of concepts and tasks
- Encourage elaboration, questioning and explanation
- Engage learners in challenging tasks
- Teach with examples and cases
- Prime student motivation
- Use formative assessments. (p. 7)

Deep learning "develops the learning, creating and 'doing' dispositions that young people need to thrive now and in their futures" (Fullan & Langworthy, 2014, p. 10). "Digital learning enables new strategies and formats, such as online and blended learning and competency-based learning, which have the potential to contribute to deeper learning. Deep learning goals lead to student competencies and temperaments enabling creativity, connectedness, and collaborative" (Barber, Rizvi, & Donnelly, 2012, p. 76). Deep learning tasks are usually complex problems that are authentic "and impact in the world (well beyond content mastery goals). Deep learning tasks often connect students with . . . purpose" (Fullan & Langworthy, 2014, p. 24).

In order to work with the 'complex' in the 21st century we need to be reminded: "Technology is still primarily used in basic ways that layer technology on top of traditional teaching and learning, rather than for collaboration and knowledge creation" (Fullan & Langworthy, 2014, p. 32). Therefore, most teachers need to reassess how they are using technology to understand just how much of a digital immigrant they are (Ryan & Bagley, 2015). Fullan & Langworthy (2014) claim,

> the entire education model has been or is being restructured to support the system-wide spread of new pedagogies. In cases such as High Tech High, the Fontan schools and Peel School District, the system-level framework, policies and programs are all aligned to integrate new learning partnerships, deep learning tasks and the use of technology to enable and accelerate deep learning. (p. 74)

The educational transformation has arguably been in motion since technology became a force in society which led Dede (2014) to conclude: "The effectiveness of any technology-enhanced resource will depend on the capacities of the educators involved . . . technology is just a tool, one that can empower people to change the ways in which education is structured and delivered" (p. 21). Any attempt to create an achievement goal in education today requires the admission of several realities noted herein; indeed "at this point in history, the primary barriers in transforming to a deeper learning educational system are not conceptual, technical, or economic, but instead psychological, political, and cultural" (Dede, 2014, p. 22). Educators can be the experts if they choose to instill an "institution-wide culture of digital confidence" (Bulfin, Johnson, Nemorin, & Selwyn, 2016, p. 250).

Next Steps

In summary, all must admit that there are external and internal barriers impeding technological integration and achievement in general. Externally educators are overcome with the fast-paced evolving nature of technology (Buabeng-Andoh, 2012; Funkhouser & Mouza, 2013; Rillero, 2016), problematic quantities and quality of hardware and software in schools (Levin & Wadmany, 2008), and inadequate professional development and support (Funkhouser & Mouza, 2013). Internal obstacles include personal beliefs about their evolving roles, igniting fear, apprehension, and instilling a lack of confidence (Ertmer & Ottenbreit-Leftwich, 2010) that can emerge via restrictive technology policy in the classrooms and schools (Bulfin, et al., 2016). To move past these barriers we must confess and determine the extent to which these barriers exist, and work to erase barriers to create an *achievement goal* that includes an understanding of *deep learning* and *technology.*

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