Chapter 5
Fostering Engagement in Educational Technologies Through Developmental Theory and Program Data

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ABSTRACT

This chapter provides theoretical and practical insights for integrating and improving motivation in the design of educational technologies and enhancement of student engagement. While the number of new products available to support differentiated learning is great news for students, the rapid development of products may mean quantity over quality. Schools may end up purchasing educational technology tools that may not necessarily be user-friendly, developmentally appropriate, or built with the student end-user in mind, especially for elementary school students. Ideas from popular and well research motivational theories—self-determination theory, attribution theory, and goal orientation theory/mindsets—are discussed in terms of their integration in the design of educational technologies. The blended learning literacy program, Lexia Reading Core5® (Core5), is used as an example of how to iteratively redesign educational technologies taking motivational theories into account. The specific theories and examples presented are then summarized as for practical application.

INTRODUCTION

This chapter highlights well-researched ways to support students' intrinsic motivation in achievement settings and provides examples of the practical application of the theories in developing educational technologies. After an overview of the motivational theories, *Lexia Reading Core5®* (*Core5*), a blended learning literacy program for students in preschool through fifth grade, is introduced as an illustrative

DOI: 10.4018/978-1-5225-2639-1.ch005

example of applying motivational theories to the initial and continued development of an educational technology program. The illustrative examples from *Core5* are then discussed in a broader context for their practical applications.

BACKGROUND

Educational technologies are near ubiquitous in US schools. According to the National Center for Educational Statistics, almost all public schools have the infrastructure necessary for implementing digital technology programs and many are prioritizing funding of educational technology programs with more than $3 billion per year allocated to digital content nationwide (Herold, 2016). Newer educational initiatives, like the National Education Technology Plan, are focused on leveraging digital tools to support the needs of a diverse set of education stakeholders, from teachers to policymakers, by prioritizing platforms that are accessible and appropriately engaging for students across ability levels (Office of Educational Technology, 2016).

The prioritization of educational technologies in schools is also prevalent in countries across the world. A recent report surveyed 21 countries' national educational ministries and departments on use of educational technology. Like the US, many of the countries prioritized internet infrastructure and computer access in primary and secondary schools (Bakia, Murphy, Anderson, & Trinidad, 2011). Nearly all of the surveyed governing bodies agreed that providing digital technologies was a priority, since they provide students access to both receive and share educational content. Most of the surveyed countries were actively funding initiatives to expand access in schools (Bakia et al., 2011).

Accompanying a greater allocation of resources is the proliferation of digital tools, and the number of educational technology programs increases each year. In fact, when surveyed about their use of digital tools, school administrators report a wide-variety of program and platform options; however, they do not have reliable information about how various educational technologies might benefit their unique learning environment (Digital Promise, 2016). Currently, when administrators select educational technologies, they report relying more heavily on pilot results and personal recommendations than research-based, rigorous evidence (Digital Promise, 2016). Furthermore, there is often a misconception among educators that the sheer presence or novelty of digital platforms will act as motivational tools for students, or that programs are sufficient when the physical interface appears developmentally appropriate. Yet, in order to leverage students' achievement it is essential to go beyond these basic considerations of user experience, and evaluate how digital tools can capture the best instructional practices from the fields of education and psychology.

As classrooms rely more heavily on instructional models that blend a standard curriculum with digital platforms, a critical and thoughtful examination of the application of educational technologies and the ways in which they are universally accessible becomes rapidly more important. This chapter offers an overview of essential characteristics for engaging students in learning activities. These characteristics are drawn from popular theories of motivation in achievement settings, and particular attention is paid to the pedagogical approaches that can either support or hinder productive engagement and learning. For example, educators often use external motivators, such as rewards and punishments to coerce their students' behavior (Niemiec & Ryan, 2009). Although these solutions are effective in the short-term, they often undermine students' long-term intrinsic motivation for learning (Deci, 1971; Kohn, 1993).