Motivation in online learning: Testing a model of self-determination theory

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ABSTRACT

As high attrition rates becomes a pressing issue of online learning and a major concern of online educators, it is important to investigate online learner motivation, including its antecedents and outcomes. Drawing on Deci and Ryan's self-determination theory, this study proposed and tested a model for online learner motivation in two online certificate programs ($N = 262$). Results from structural equation modeling provided evidence for the mediating effect of need satisfaction between contextual support and motivation/self-determination; however, motivation/self-determination failed to predict learning outcomes. Additionally, this study supported SDT's main theorizing that intrinsic motivation, extrinsic motivation, and amotivation are distinctive constructs, and found that the direct effect and indirect effects of contextual support exerted opposite impacts on learning outcomes. Implications for online learner support were discussed.

1. Introduction

In the field of education, motivation has been identified as a critical factor affecting learning (Lim, 2004). Past studies have shown that learner motivation associates with a variety of important learning consequences such as persistence (Vallerand & Bissonnette, 1992), retention (Lepper & Cordova, 1992), achievement (Eccles et al., 1993), and course satisfaction (Fujita-Starck & Thompson, 1994). Research evidence suggests that motivation should be taken seriously in the online learning environment. An online learning environment refers to any setting that "uses the Internet to deliver some form of instruction to learners separated by time, distance, or both" (Dempsey & Van Eck, 2002, p. 283). The Sloan Consortium (Allen & Seaman, 2006) further classified web-based learning environments by the proportion of content and activities delivered online: (1) *web facilitated* courses (1–29%); (2) *blended/hybrid* courses (30–79%), and (3) *online* courses (80+%). This study focuses on higher education courses with more than 80% of content and activities delivered online.

Despite its significance on learning consequences, motivation has not received commensurate attention in online learning (Jones & Issroff, 2005; Miltiadou & Savenye, 2003). One possible reason is that educators used to focus on the student cognition while ignoring affective, socio-emotional processes (Kreijns, Kirschner, & Jochems, 2003). As high attrition rates – a negative indicator of motivation – becomes a pressing issue of online learning and a major concern of online educators (Carr, 2000; Clark, 2003), it is

important to investigate online learner motivation, including its antecedents and outcomes. Miltiadou and Savenye, in a literature review article, examined six motivation constructs and discussed their implications for online learning. Miltiadou and Savenye concluded that, in order to reduce attrition rates and ensure student success, more empirical studies are needed to test motivation theories and constructs in the online learning environment.

In line with Miltiadou and Savenye's (2003) statement, Gabrielle (2003) applied Keller's (1983) ARCS (*attention*, *relevance*, *confidence*, and *satisfaction*) model to design technology-based instructional strategies for online students. Results showed that the ARCS-based learning support was effective in promoting students' motivation, achievement, and self-directed learning. Lee (2002) investigated constructs of *self-efficacy* (Bandura, 1982) and *task value* (Eccles, 1983) and found that the two constructs were significant predictors of online students' satisfaction and performance. Gabrielle's and Lee's theory-based studies have provided valuable insights for instructional design and facilitation. Therefore, evidence has emerged that warrants investigation into the ways a student determines the role of motivation for himself or herself in the online learning environment.

A motivation theory that deserves thorough investigation in online learning contexts is Deci and Ryan's (1985, 2002) *self-determination theory* (SDT), which was described by Pintrich and Schunk (2002) as "one of the most comprehensive and empirically supported theories of motivation available today" (p. 257). Self-determination theory has been successfully applied to a variety of settings, including physical education (Standage, Duda, & Ntoumanis, 2005), politics (Losier, Perreault, Koestner, & Vallerand, 2001), health care (Williams et al., 2006), religion (Neyrinck, Lens, & Vansteenkiste, 2005), and general education (Niemiec et al.,

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2006). However, the tenability of self-determination theory has not been sufficiently established in online learning (Chen, 2007). With a few exceptions, such as Xie, Debacker, and Ferguson (2006) who applied SDT to examine online discussion, and Roca and Gagné (2008) who examined e-learning continuance intention in the workplace, studies that apply SDT in the online learning environment are barely found.

Mullen and Tallent-Runnels (2006), in their study of student perception, found that students in online classes and in face-to-face settings perceived classroom environments and instructors' support and demands differently. The differences in perception were related to students' motivation, course satisfaction, and learning. Mullen and Tallent-Runnels concluded that "instructors should be careful not to assume that teaching the same in both environments will create similar results" (p. 264). In the same vein, researchers may not assert that motivation theories established in traditional face-to-face classrooms and other settings can be directly transplanted to the online learning environment without substantiation, because the characteristics (e.g., flexibility, accessibility, and computer-mediated communications) of the learning environment and the dynamics of student motivation are different in online settings. Therefore, a thorough investigation of online learners' motivation, including testing self-determination theory in the online learning environment is necessary. The following section describes the central tenets of SDT, followed by a discussion of why SDT may serve as an appropriate framework for addressing learner motivation in online learning.

1.1. Self-determination theory

Self-determination theory (Deci & Ryan, 1985, 2002) is a general theory of motivation that purports to systematically explicate the dynamics of human needs, motivation, and well-being within the immediate social context. The term *self-determination*, as defined by Deci and Ryan (1985), is "a quality of human functioning that involves the experience of choice. [It is] the capacity to choose and have those choices … be the determinants of one's actions" (p. 38). Self-determination theory proffers that humans' have three universal and basic needs: *autonomy* (a sense of control and agency), *competency* (feeling competent with tasks and activities), and *relatedness* (feeling included or affiliated with others). Individuals experience an elaborated sense of self and achieve a better psychological well-being through the satisfaction of the three basic needs. Conversely, the deprivation of the three basic needs produces highly fragmented, reactive, or alienated selves.

Another central tenet of SDT is that as opposed to other motivational theories (e.g., Bandura's social cognitive theory) that treat human motivation as a monolithic construct, SDT theorizes human motivation into three main categories: *intrinsic motivation* (doing something because it is enjoyable, optimally challenging, or aesthetically pleasing), *extrinsic motivation* (doing something because it leads to a separable outcome) and *amotivation* (the state of lacking intention to act). Extrinsic motivation is further categorized into four stages/types: (1) *external regulation*, (2) *introjected regulation*, (3) *identified regulation*, and (4) *integrated regulation*. The above-mentioned types of motivation, as shown in Fig. 1 (adopted from Ryan & Deci, 2000, p. 72), are loaded on a continuum of self-determination. Amotivation represents the least self-determined type of motivation while intrinsic motivation signifies the most self-determined type of motivation. According to SDT, self-determined types of motivation (intrinsic motivation and identified regulation) may lead to positive outcomes while nonself-determined types of motivation (amotivation, external and introjected regulations) may result in negative outcomes (Deci & Ryan, 1991). Based on the self-determination continuum, Connell and Ryan (1985) developed a technique to calculate "the relative autonomy index, RAI," a single score weighed by different types of motivation to represent individuals' degree of self-determination.

Contextual support serves as a key concept in self-determination theory. Individuals absorb "nutrients" from social interactions that provide support for autonomy, competence, and relatedness, the three basic needs. With basic needs satisfied, individuals become more assured and self-determined, and in turn achieve enhanced psychological well-being.

1.2. Self-determination theory and motivation in online learning

A number of factors suggest that SDT is an appropriate framework for addressing motivation in the online learning environment. First, SDT may serve as a theoretical framework that integrates issues in online learning. Self-determination theory addresses autonomy, relatedness, and competency as determinants of motivation. The three constructs correspond to features of online learning such as flexible learning (Moore, 1993), computer-mediated communication and social interaction (Gunawardena, 1995), and challenges for learning technical skills (Howland & Moore, 2002). The notion of contextual support is especially valuable, as online learners need a variety of support from instructors, peers, administrators, and technical support personnel (Mills, 2003; Tait, 2000, 2003). Past experimental research indicates that self-determination theory predicts a variety of learning outcomes, including performance, persistence, and course satisfaction (Deci & Ryan, 1985, for a review). Self-determination theory has the potential to address learning problems such as student attrition in the online learning environment.
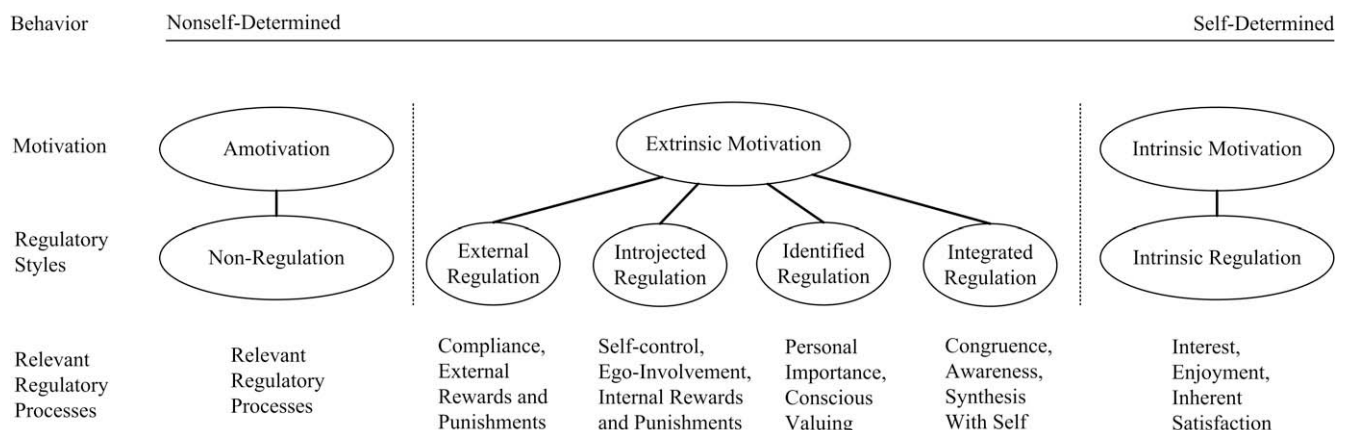

Fig. 1. The self-determination continuum.