Avatar Personalization: Towards the Enhancement of Competence Beliefs

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ABSTRACT

The authors explored the influence of avatar personalization on students’ competence beliefs in a virtual world-based assessment environment. The avatar personalization options allowed seventh and eighth grade students (n = 110) to customize the appearance of their avatar and provided them with the option to personalize their in-world conversations by choosing a name for their avatar. Based on self-determination theory the authors hypothesized that the personalization in a virtual-world environment would influence students’ motivation to engage by stimulating their situational interest and enable positive competence beliefs and deeper engagement. The results indicated that personalization stimulated situational interest and situational interest significantly predicted competence beliefs. This research contributes to the body of literature on the personalization principle by extending this work to a virtual environment. The findings highlight the importance of addressing students’ affective needs and illustrate the value of interest; which can potentially influence students’ attitudes towards testing and towards science.

Keywords: Assessment, Competence Beliefs, Motivation, Personalization, Self-Determination, Self-Perception, Situational Interest, Virtual Environment

BACKGROUND

Over the past decade, burgeoning concerns with promoting students’ interest in the disciplines of science, technology, engineering, and mathematics (STEM) have prompted many studies and initiatives aimed at understanding and measuring STEM learning (Lam, Srivatsan, Doverspike, Vesalo, & Mawasha, 2005; Machi, 2008; Yang, 2010). In parallel, the growth in the popularity of gaming in education spawned its own share of research (Klabbers, 2003; Wilson, et al., 2008). While these themes pose compelling aims for research, a deeper issue is the science underperformance of high school graduates in the U.S. (AECT, 2010). Despite all innovative approaches, an alarmingly large percentage of middle and high school students continue to forgo science classes (Sanders, 2009).

A shared objective among educators is to inspire in students the desire to learn. Yet it is commonplace to hear students readily express their displeasure with or apprehension about
science. If students lack the interest or motivation to learn science; then, the expectation to demonstrate knowledge of complex concepts through assessments that rely on memorization can have a diminishing effect (Yang, 2010). The use of situated assessments using virtual environments brings task relevance, attempts to address the issue of memorization, and aims to engage students in true scientific inquiry (Nelson & Ketellhut, 2007). Situated assessment environments evaluate students’ actual performance while affording them opportunities to strengthen the confidence in their beliefs and abilities.

Some researchers have found that students’ lack of interest in science is not something that can be dichotomized as like or dislike, but rather should be thought of as a range of levels of interest that can vary according to context and topic (Ainley, Hidi, Berndorff, 2002; Kang, Scharmann, Kang, Noh, 2010). These varying levels of interest may be attributed to factors beyond science itself or to a lack of understanding—primarily situational and affective factors. Situational factors include things like students’ workload, priorities, and locus of control. The affective factors include perceived lack of relevance, boredom, and inability to see a practical application (Yang, 2010). Some also believe that it is better to focus on learner competence rather than on motivation, as academic experiences have a significant impact on self-beliefs (Becker & Luthar, 2002). This indicates that initiatives to promote STEM education may need to go beyond the subject matter or the delivery method. Learning environments should include features that support situational and affective factors such as motivation, interest, and beliefs about competence.

Increasing interest is a notion that aligns with the self-determination theory of motivation which refers to an individual’s sense of choice and initiative over their actions (Deci, Vallerand, Pelletier & Ryan, 1991). Wigfield and Eccles (2002) found that a sense of competence influences students’ level of interest. They also posit that expectancy of success (i.e., confidence in one’s competence or likelihood of success) is a strong predictor of performance. Lawanto, Santoso and Liu (2012) also found that interest influences competence beliefs. Competence beliefs refer to students’ perceptions about their academic ability and attitudes towards success.

Given the potential benefits of stimulating interest and nurturing competence beliefs, we explored how avatar (an avatar is a computer-based character used in video games as a representation of the player) personalization would affect students’ competence beliefs in a virtual world-based assessment environment. Specifically, we sought to understand the role of situational interest on students’ self-determined behavior. Self-determination theory of motivation explains how social factors and the need for personal relevance define one’s behavior. In the following sections we present the theoretical framework, interrelated constructs, and supporting literature. We discuss self-determination and situational interest as they relate to motivation and we present self-perception as it relates to personalization.

SELF-DETERMINATION THEORY OF MOTIVATION

Motivation is typically viewed as an isolated construct, yet there is no one predominant theory of motivation; it primarily plays a supporting role to many other theories. Self-determination theory facilitates motivation. Ryan and Deci (2000) propose that there are three innate needs for human functioning: competence, autonomy, and relatedness, which are key aspects of motivation and interest. Motivation is fundamental to the cognitive and social regulatory process that results in action. While humans are naturally self-motivated and autonomous, these propensities require supportive conditions. Ryan and Deci explain that motivation is best conceptualized as a variable on a continuum that shifts based on internal and external influences (social and environmental). Internalized actions (self-determined) fall at the intrinsic end of the motivation continuum and externally regulated actions fall at the opposite end of the continuum.
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