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Learning outcomes of a MOOC designed for attitudinal change: A case study of an Animal Behavior and Welfare MOOC

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ABSTRACT

This study examines the case of an Animal Behavior and Welfare MOOC that specifically targeted attitudinal change in its learners. Attitudinal learning outcomes were evaluated using an author-developed survey with questions on perceptions in the four areas of attitudinal learning: General Learning, Cognitive Learning, Affective Learning, and Behavioral Learning. The survey also examined learner goals for enrolling in the course and their perceptions of the instructional methods implemented in the course. Results showed that learners perceived positive learning outcomes across all four areas. Statistically significant differences were found in relation to perceptions of attitudinal learning based on their reason for enrolling in the MOOC and its relation to attitude formation. There were also significant differences in learners' reasons for enrollment based on whether they intended to change animal welfare related behaviors due to their MOOC experience. Learners overwhelming indicated that the instructor videos were the most impactful instructional strategy regardless of whether they had a higher perception of learning, or a lower perception. Finally, learners with higher perceptions primarily enrolled in the MOOC in order to form a viewpoint on animal welfare, while lower perception learners enrolled to earn a formal certificate of completion. Implications are discussed for instructional design for attitude change as well as for the use of MOOCs for learning regarding social topics.

1. Introduction

Massive Open Online Courses (MOOCs) have gained significant attention in higher education as an innovative approach to leveraging technology, with a goal of making access to higher education available to a global and massive audience (Liyanagunawardena, Adams, & Williams, 2013). The democratization of the higher education experience that MOOCs offer (Carver & Harrison, 2013) provides unique educational outreach opportunities, including educational opportunities focused on attitudinal and social change in regards to social topics. While MOOC offerings have traditionally been primarily in the hard sciences and computer technology (Rodriguez, 2012), offerings related to the social sciences are increasingly available, including in regards to such social issues as ethics, global warming and sustainability, nutritional and psychological wellness,

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and religion, and diversity. This study seeks to measure and analyze attitudinal learning gains in a MOOC about Animal Behavior and Welfare that was designed for attitudinal learning outcomes. The results demonstrate that MOOCs can promote attitude change and learning across different attitudinal components. Implications contribute to an understanding of why learners enroll in MOOCs related to social issues and inform instructional design for attitude change in online learning generally and MOOCs specifically.

While traditionally, most instructional design processes and models are more explicit in their focus on cognitive elements of learning, examination of and focus on learner attitudes is a core aspect of any instruction. Learners' attitudes towards instruction and the area of study influence their willingness to learn (Gagne, Briggs, & Wagner, 1992), and their pre-existing beliefs, knowledge, and conceptual understanding significantly impacts what they ultimately learn (Murphy, 2001). Therefore, attitude change outcomes are often considered as critical goals within both school (Gagne et al., 1992) and business contexts (Bizjak, Knezevic, & Cvtrenzik, 2010). Positive attitude change benefits learners, industry (Bizjak et al., 2010), and society at large, for example through healthier citizens (Wilson, 2007).

Attitude comprises an individual's psychological evaluations about an object, person, or event (Gagne et al., 1992; Thomas & Znaniecki, 1919; Zimbardo & Leippe, 1991), and is constructed of affective, cognitive, and behavioral components (Kamradt & Kamradt, 1999; Simonson, 1979; Zimbardo & Ebbesen, 1970). Coleman (2010) notes that attitudes are learned, often used to explain behavior, and are comprised of affect, behavior and beliefs. He defines beliefs as "'subjective facts,' that is, things that individuals construe as facts but may be based on erroneous information" (Coleman, 2010, p. 74). Learners being committed to their beliefs and resistant to attitudinal change can be problematic with learning regarding socio-scientific topics (Dole & Sinatra, 1998; Sinatra, Kardash, Taasoobshirazi, & Lombardi, 2012). Given this, researchers argue for *persuasion* as a metaphor for teaching as current educational wisdom is accepting of teachers seeking to change learner attitudes or convince them of the value of knowledge or understanding (Murphy, 2001). Also persuasive pedagogy for changing learner attitudes is important for education, particularly regarding socio-scientific topics (Sinatra et al., 2012).

Despite the arguments for the importance of attitude change, research on attitudinal change instruction is limited, and there is much that remains unknown (Enger & Lajimodiere, 2011). A variety of instructional strategies have been suggested for effective attitudinal change, including the need to align the cognitive, affective, and behavioral components of learners' attitudes (Kamradt & Kamradt, 1999). The core instructional strategy for attitudinal change is the creation of cognitive dissonance (a receptive mind) through the presentation of new information (Bodenhausen & Gawronski, 2013), but there are limited specific cognitive strategies in the literature (Daruwalla & Darcy, 2005; Simonson, 1979; Simonson & Maushak, 1996). Instruction focusing on the affective component of attitude typically seeks to emotionally provoke learners (Kamradt & Kamradt, 1999; Simonson, 1979), and provoking emotion through media has been found to be effective (Simonson & Maushak, 1996), as has having learners interact with both media and their peers, such as by sharing how they feel (Bednar & Levie, 1993; Kamradt & Kamradt, 1999; Kort, Reilly, & Picard, 2001; Simonson, 1979).

One socio-scientific area that has had a significant focus on attitudinal change to shift public attitude is the field of animal welfare. Animal welfare examines a variety of issues related to attitude, including consumer concerns and their impact on buying habits (McKendree, Croney, & Widmar, 2014), the relation between consumer attitudes and buying habits and sustainable agriculture (Annunziata & Scarpato, 2014), how animal welfare stakeholders' attitudes, including those of animal welfare educators, impact the attitude of those participating in animal-involved fields (Heleski, Mertig, & Zanella, 2006), and how community values regarding appropriate animal use impact public policy (Coleman, 2010). While discussing the imperative to disseminate knowledge or points of view regarding animal welfare to the public and therefore shape public attitude, Coleman (2010) notes the distinction between education (imparting knowledge) and persuasion (convincing others by imparting a point of view rather than just facts) in his examination of how to educate the public regarding animal welfare. He argues that for those who lack existing knowledge regarding a topic, education is sufficient, but when a learner has existing beliefs, persuasion is necessary as it is when individuals' value judgments must be changed (Coleman, 2010). He describes the important role of expert credibility when it comes to persuasion for attitude change, highlighting how the public typically has limited knowledge, and largely acquires its beliefs through mass media (Coleman, 2010).

MOOCs offer a unique opportunity for educational outreach in regards to attitude change instruction for socio-scientific topics due to their open and massive nature. By typically offering free instruction (although formal certification of completion often requires payment) from recognized higher education institutions, MOOCs attract learners from across the globe who bring with them diverse backgrounds and attitudes. McKendree et al. (2014) noted the majority of consumers they surveyed regarding animal welfare attitudes and buying habits lacked a primary source of information regarding animal welfare. MOOCs provide a means for experts in socio-scientific areas to offer a platform open to the public in order to educate and potentially shift attitudes. The opportunity to provide instruction with attitudinal outcome components to a massive audience is what made the MOOC an attractive format to instructors who designed the MOOC described in this study, a MOOC on Animal Welfare and Behavior.

2. Material and methods

2.1. Research purpose

This study builds on a previous study that compared attitudinal learning between three MOOCs addressing social topics, which reported high perceptions of attitudinal learning across general learning and all three components of attitude: