Massive Open Online Courses (MOOCs): A Higher Education Leadership Perspective

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Abstract

Information technology is not new to academia. Numerous educators and research scholars studying the usefulness of digital technologies in the classroom seek to determine whether the underlying pedagogies effectively bridge the gap between quality of instruction, student engagement, and eventual acceptance of the technology tool in use. With the increase and sophistication in the delivery of online courses in colleges across the country, we now see the recent emergence of an online course structure called Massive Open Online Courses, MOOCs (Sandeen, 2014). MOOCs have intensified the interest and desire for students and universities to become engaged in educational opportunities by thinking of new and advanced systems for content delivery. The MVLE scale and model was designed as a research study to provide academic leaders with an instrument to assist them in the design and delivery of a MOOC based on factors specific to the MVLE: general systems, pedagogy, social presence, individual characteristics, and satisfaction. Implications for leadership that can be made from this study include administrator perspectives as they relate to MVLE constructs, a general understanding of the MOOC learner, and, how this understanding can impact instructional delivery and design, and the ongoing support of faculty by academic leaders in the form of professional online learning communities.

The purpose of this study was (1) to explore student perceptions of the MOOC Virtual Learning Environment Scale or MVLE, characteristics including general systems, pedagogy, social presence, individual characteristics and satisfaction, (2) to examine the interrelationships between theorized MOOC virtual learning environment technology constructs, (3) to develop a conceptual model of the MVLE to create and validate a MOOC Virtual Learning scale, and (4) to understand administrator’s perceptions of the characteristics of MOOCs and their futuristic views of MOOCs.

The major findings for this study are: (1) the MVLE model is an appropriate scale to measure MOOC design, implementation and evaluation, (2) the creation of a more “learner focused” approach to MOOCs that includes a definition of the MOOC learner is important to understanding MOOC course designs and their impact within a virtual learning environment, and (3) the characteristics of higher education leaders as it relates to MOOC development must be transformational with a shared vision among university stakeholders, staff, faculty, and the community that must be sustained through ongoing support both academically and financially.

Key Words: Massive Open Online Courses (MOOCs), Online Learning, Higher Education Leadership, Virtual Learning Environments

Introduction

The process of adopting new innovations has been studied for over 30 years. One of the most widely used technology adoption models is described by Rogers in his 1962 book, Diffusion of Innovations (Sherry & Gibson, 2002). For Rogers, “a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome” (Sahin, 2006). A variety of other theories of change with technology and education provide a framework to better understand the critical elements that can
affect acceptance and adoption of innovations. Rogers (2013) previously discovered that friends, mentors, peer support, and students were found to be significant social predictors influencing faculty decisions to adopt electronic technologies in the classroom. Medlin (2001) subsequently used Rogers’ diffusion of innovations theory to examine selected factors that might influence a faculty member’s motivation and decision to adopt new electronic technologies in classroom instruction. Physical resource support and mandates from the university were two additional organizational variables that were found to be significant factors for motivational change (Sahin, 2006). Surendra (2001) also examined acceptance of Web Technology by college professors and administrators using Rogers’ model (1985) Surendra’s study validated Sahin’s (2006) study which suggested that access in general, and training, in particular, were found to be the best predictors in the diffusion process of Web technology-based educational innovation.

Unified Theory of Acceptance and Use of Technology (UTAUT). Venkatesh and Morris (2013) created the Unified Theory of Acceptance and Use of Technology survey and UTAUT model. The UTAUT model is a combination of eight technology theories to create one universally accepted model for technology use. The original models that were used to create the UTAUT model included: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behavior (TPB), a combination of the TBP/TAM, the Model of PC Utilization, Innovation of Diffusion Theory (IDT), and Social Cognitive Theory (SCT) (Williams et al., 2015). Venkatesh et al. (2003) developed and tested the UTAUT model by comparing the UTAUT model with the eight original models. The authors state that the UTAUT is a definitive model which synthesizes previous technology acceptance models and can serve as a foundation to guide future research. The UTAUT has four key constructs: performance expectancy, effort expectancy, social influence and facilitating conditions. Gender, age, experience, and voluntariness of use are four secondary factors that influence or moderately impact the four key constructs. The UTAUT model and survey provide a useful tool for managers to assess the likelihood of success for new technology introductions. The model can also help researchers understand drivers of technology acceptance and then proactively design interventions such as training and marketing.

Social Presence

Social presence is a measure of the feeling of community that a learner experiences within an online learning environment (Tu & McIsaac, 2002). Social presence has been defined as the degree of awareness of another person in an interaction and the consequent appreciation of an interpersonal relationship (Short, Williams, & Christie, 1976; Rice, 1993; Walther, 1992; Walther & Burgoon, 1992). The minimum level of social presence occurs when individuals feel that a form, behavior or sensory experience includes the presence of another intelligence (Biocca, 1997). Factors that contribute to the degree of social presence in face-to-face encounters include facial expressions, direction of gaze, posture, dress, nonverbal cues and vocal cues (Tu & McIsaac, 2002). These cues cannot be experienced in the same manner and to the same degree in online learning encounters. The degree of social presence can be attributed to the environment and the perception of the student or user. Tu (2000) has defined three dimensions of social presence as defined by previous research studies: social context, online communication and interactivity (p. 134).
Social context contributes to the degree of social presence. The processes within social context include: task orientation (Steinfield, 1986), privacy (Campness, 1972; Steinfield, 1986), topics (Argyle & Dean, 1965; Walther, 1992), recipients/social relationships (Walther, 1992; Williams & Rice, 1983) and social process (Walther, 1992).

Online communication involves the attributes of language used online and in applications of online language (Tu, 2002). Computer communication literacy such as typing, reading and writing are important attributes to online communication. Training students to use the medium comfortably is crucial to the success of collaborative learning (Tu, 2002).

Interactivity is defined as the immediacy of a response by the instructor or the student. Norton (1986) has identified eleven communication styles that can impact social presence: impression-leaving, contentious, open, dramatic, dominant, precise, relaxed, friendly, attentive, animated and communicator image (p. 135). Increases in the level of online interaction fostered by learner characteristics can improve the level of social presence. Selecting the appropriate computer-mediated communication medium and the application of appropriate instructional design elements can foster positive social presence.

**Individual Characteristics**

Students are the primary participants in a learning environment. Learning effectiveness in virtual learning environments is based on two dimensions: human and design (Piccoli, Ahamad, & Ives, 2001). For this study, motivation and self-efficacy have been defined by the researcher as personal qualities intrinsically important to an individual’s learning within a virtual learning environment. These qualities are being included as important factors that describe individual characteristics.

Motivation can be described as the driving force that directs a person to choose a particular behavior or task (Wlodkowski, 2001). Legris et al., 2003 and Wu & Wu, 2005 identified importance in including other characteristics or factors to online learning. Csikszentmihalyi, 1993 identified human and social factors as important to individual motivation (p. 497). Davis et al. (1992) adapted the motivational perspectives to individual characteristics. Deci and Ryan (1985) and Venkatesh et al. (2002) redefined the TAM model to include intrinsic and extrinsic factors as predictors to their motivational model.

Self-Efficacy is the belief that people have in their own ability to accomplish a particular task (Bandura, 1977). Self-efficacy is a precursor to motivation and specific behaviors towards completing an activity (Trahan, Adams, & Dupre’, 2011). According to Bandura, (1977, 1982) and Ford (1992), a student has a higher degree of self-competence if he/she is more likely to have an enjoyable feeling towards it (p. 498). Bandura (1982) states that experimental research strongly suggests that self-efficacy is the most powerful predictor of behavior than outcome expectancies or past performance. The positive and negative experiences within situations create generalized expectations that an individual carries into new situations. The generalized expectations can influence the individual’s expectation of mastery in the new situation (Sherer et. al., 1982). Trahan, Adams and Dupre’ (2011) state that self-efficacy can be conceptualized as a future oriented belief of performance in a context-specific assessment of success.
Satisfaction

Satisfaction can be operationally defined as a psychological or affect best related to and resulting from a cognitive appraisal of and expectation or performance. It can be captured as a positive or satisfied affect or an indifferent or negative affect that normally leads to a feeling of dissatisfaction (Bhattacherjee, 2001). Satisfaction has been a widely-used parameter to evaluate the effectiveness of learning environments both in academic (Alavi, 1994; Alavi et al., 1995) and business setting (Wolfram, 1994). Related studies that have referenced satisfaction as a critical factor are numerous. Arbaugh (2000) addressed perceived usefulness, perceived ease of use, flexibility of e-learning and interaction with class participants; Piccoli et al. (2001) identified maturity, motivation, technology comfort, technology attitudes; Stokes (2001) referenced student temperaments; Hong (2002) identified gender, age, scholastic aptitude, learning style and student-instructor interaction; Thurmond et al. (2002) referenced computer skills, courses taken, initial knowledge about e-learning technology, timely receipt of initial comments, scheduled discussion and team work; Kanuka and Nocente (2003) referenced motivating aims, cognitive modes and interpersonal behaviors (p. 1185). The number of critical factors that affect satisfaction makes it difficult to define the term conceptually due to its complexity in meaningful terminology.

Pedagogy

Pedagogy can be conceptually defined as enabling personalized learning through digital technologies that ensures that learners are capable of making informed education decisions, diversify and recognize different forms of skills and knowledge, create diverse learning environments that include learner focused forms of feedback and assessment (Green, Facer, Rudd, Dilon, & Humphreys, 2005). Wang (2007) defines pedagogy as a component that reflects the educational purposes of a learning environment. Piccoli, Ahmad and Ives (2001) describe learning environments in terms of time, place, space technology, interaction and control. Girvan and Savage (2010) suggest that pedagogy for use in online learning will include tools that provide flexibility to building learning objects and activities in a persistent environment. Anderson and Dron (2011) posits pedagogical theory defines learner constructs as a means by which new knowledge is both created and integrated with existing knowledge (p. 85). This process includes social context and relationships with other individuals as important to the process of new skill development (Anders, 2015). A conceptual model supported by Kirschner, Strijbos, Kreijjs and Beers (2004) suggest that an education system is a unique combination of pedagogical, social and technological components. Wang (2007) supports three elements to pedagogical design; the pedagogical design must support and satisfy learners’ various needs and learning, flexible with regards to learning content and objectives and involve learning resources and activities that support active learning (Chen, 2003; Kirschner et al., 2004).

The National Educational Technology Standards for Performance Indicators for Administrators (ISTE 2009) were designed to provide technology-rich, transformative online
learning environments. These standards served as the interview guide for the qualitative purpose of this study regarding administrator perceptions of the future of MOOCs in higher education. A fifth ISTE standard, systemic improvement, was not included based on the research design for this study.

**Visionary leadership.** Technology transformation can only occur through visionary leadership. Administrators who inspire and lead the development of online learning can be defined by three primary factors: (1) The ability to inspire and facilitate a shared vision for purposeful change. The change uses the digital age resources that will meet or exceed learning goals, support effective instructional practice and maximize performance; (2) The ability to engage in ongoing support and process development in order to implement and communicate effective technology-infused strategic plans that are aligned with the shared vision; (3) The ability to advocate for polices, programs and funding at the, local, state and national levels to support the implementation of the technology infused strategic plan (ISTE Standards for Administrators, 2009).

**Digital age learning culture.** 21st century learning is digitally enhanced in school and the workplace. Administrators who embrace a digital age learning culture create, promote and sustain a digital age society through rigorous and relevant education opportunities for students. Five benchmarks define leaders who embrace 21st century digital age learning. (1) Administrators ensure instructional innovation is focused on continuous improvement for digital age learning; (2) Administrators model and promote frequent and effective use of technology for learning; (3) Administrators provide learner-centered environments that are equipped with technology resources to meet individual and diverse needs for all learners; (4) Administrators ensure effective practice in the study of technology across all academic disciplines; (5) Administrators promote and participate in global learning communities that stimulate innovation and creativity in a digital age society. (ISTE Standards for Administrators, 2009).

**Excellence in professional practice.** Knowledge positively affects growth and sustainability in understanding concepts. Leaders who support digital age learning understand the importance of increasing opportunities for professional growth for those who deliver instruction. Leaders promote an environment that is rich in professional learning that empowers faculty to enhance student learning. Four benchmarks define excellence in professional practice: (1) Administrators allocate the time, resources and access to secure ongoing professional growth; (2) Administrators facilitate and participate in learning communities that stimulate, nurture and support all employees in the use of educational technology; (3) Administrators promote and model effective communication and collaboration among stakeholders; (4) Administrators stay abreast of education research and emerging trends in educational technology (ISTE Standards for Administrators, 2009).

**Digital citizenship.** Administrators are leaders in their respective areas or disciplines. They are the individuals that are looked upon to provide knowledge and guidance. Administrators model and facilitate an understanding of the social, ethical and legal issues and responsibilities related to an evolving digital age culture. Four benchmarks embrace the leadership qualities that characterize visionary leaders, (1) Administrators secure equitable access of all digital tools to meet the needs of all learners, (2) Administrators promote, model
and establish policies for legal and ethical use of digital learning, (3) Administrators promote and model responsible social interactions related to digital technology and learning, (4) Administrators model and facilitate the development of a cultural understanding of global issues through the use of digital age tools as a form of communication (ISTE Standards for Administrators, 2009).

Qualitative Methods: A Leadership Perspective

Qualitative research methods were selected for this study to understand the human leadership characteristics of higher education leaders and the influence of MVLE development on online learning within the higher education setting. Qualitative research seeks to probe deeply and gain additional insight into personal understandings of a phenomenon by relying on nonnumeric data such as interview data (Gay, Mills, & Ariasian, 2006).

The researcher examined the experiences of higher education leaders who were directly involved in the decision to design and implement MOOCs within their institutions. Specifically, data was collected regarding the perceptions of higher education administrators/insights of MVLE in terms of general systems, pedagogy, social presence, individual characteristics, and satisfaction. The ISTE standards served as the interview guide for the qualitative purpose of this study regarding administrator perceptions of the future of MOOCs in higher education.

The researcher selected a criterion based purposeful sample of institutional leaders among universities who had designed or implemented a MOOC. Five purposefully sampled higher education institutions were selected mirroring the sampling criteria of a previous exploratory study; MOOCs: Expectations and Reality conducted by Dr. Fiona Hollands and Dr. Dvayani Tirthali, Center for Benefit Cost Studies of Education, Teachers College, Columbia University in May 2014. Data provided in this study included higher education institutions that were involved in the development and delivery of MOOCs.

One-on-one interviews were conducted to understand administrators’ perceptions of visionary leadership, digital age learning culture, excellence in professional practice, and digital citizenship. In addition, administrators’ perceptions and visions for MOOC VLEs, specifically visionary leadership, digital age learning culture, excellence in professional practice and digital citizenship in a broader vision of technology as a form of online learning was examined.

Administrator interviews were conducted electronically through Go To Meeting video conferencing technology. Five interviews were conducted. All interviews were recorded using video conferencing; video conferencing provided interviewees with flexibility of time and space. Flexibility of time and space provided the interviewee with more comfortable surroundings during the course of the interview. It also allows for more time for the interviewee to consider and respond to questions posed by the researchers in a more nonthreatening environment. This method also provides for greater ease for participants to discuss sensitive issues. The researcher transcribed all interview data from the recordings using transcription technology located on the researcher’s computer.
An interview protocol was established by the researcher to guide the time and flow of the conversation. The interview process was developed to gather information related to the experiences and perceptions of higher education administrators who were directly involved in the decision-making process in the design and implementation of MOOCs. A standardized open-ended interview approach was used to gather information related to the experiences and perceptions of higher education administrators. This design allowed participants to share their feelings and viewpoints (Gall, Gall, & Borg, 2007). Creswell states that the use of open-ended responses sometimes result in rich data that are difficult to code, however, can minimize researcher bias (Gall, Gall, & Borg, 2007). The interviewees were provided the interview questions in advance which allowed them the opportunity to provide more thoughtful responses and honor time restrictions due to administrative responsibilities and scheduling.

Interview questions examined two specific areas (1) What are higher education administrators’ perceptions of MVLEs in terms of general systems, pedagogy, social presence, individual characteristics, and satisfaction as measured by the administrator interview? (2) What are education administrators’ perceptions and visions for MOOC VLEs; specifically, visionary leadership, digital age learning culture, excellence in professional practice and digital citizenship in a broader vision of technology as a form of online learning? The initial set of questions were identified as general perception questions. The questions paralleled MVLE survey constructs. These questions incorporated the concepts of the National Educational Technology Standards for Performance Indicators for Administrator (ISTE 2009) that was used as part of this research study.

Data triangulation informed the researcher of the interpretation of combined data that was correlated into common viewpoints, central tendencies and inferences. Triangulation is the process of combining methodologies in the effort to increase the understanding of an experience (Holloway & Wheeler, 2002). Data triangulation is an important element of the mixed method approach. It serves as a catalyst in the interpretation of both quantitative and qualitative data. Collective findings from the quantitative and qualitative methods were explored based on the following areas of interest: data collected regarding MVLE constructs, specifically the general systems, pedagogy, social presence and individual characteristics used to augment descriptions from interview data with higher education leader’s regarding their perceptions of MOOC development, implementation, instructional, and professional learning as it relates to MVLE.

Conclusion

MOOCs have provided higher education institutions with the opportunity to expand current options for online learning. The MVLE scale and model was designed as a research study to provide academic leaders with an instrument to assist them in the design and delivery of a MOOC based on factors specific to the MVLE: general systems, pedagogy, social presence, individual characteristics, and satisfaction. Implications for leadership that can be made from this study include administrator perspectives as they relate to MVLE constructs, a general understanding of the MOOC learner, and, how this understanding can impact instructional delivery and design, and the ongoing support of faculty by academic leaders in the form of professional online learning communities.
This research study informed readers of MOOC student satisfaction and administrators’ experiences in the design and implementation of MOOCs within a university setting. In general, students and administrators were in agreement regarding many of the MOOC design characteristics, activities, and tools. Digital age learning culture promotes professional learning opportunities for faculty through professional learning communities, specifically collaboration with experts in the field, engagement, peer support, instructor presence and styles of collaboration. Administrators who understand the importance of digital age learning create an atmosphere that supports an environment for healthy communication and dialogue among faculty through professional learning communities and other rigorous and relevant education opportunities. Administrators who supported a digital culture reinforced learning through innovation, effective use of technology and learner centered environments within a globalized community. In addition, flexibility of course structure, the use of appropriate technology tools, resources and the instructor’s knowledge of MOOC design were important to instructional content and delivery within the virtual learning environment. The global expansion of learning and the use of technology to expand learning opportunities were important factors for consideration in university implementation of MOOCs.

MOOCs provide an opportunity for expansion of learner knowledge. They are massive in student enrollment but also to undertake both financially and physically. Administrators who engaged in the design and creation of a MOOC were open to transformational change and were visionary in their movement to guide and facilitate change within their university. They were creative leaders who “thought out of the box” in terms of identification of learner types and engagement of learners and instructors. They were supporters of faculty through a collaborative and open network of community learners (instructors, administrators, and students). Nevertheless, their purpose within the higher education community (university) can be a valuable tool if used appropriately. This can best be achieved through an understanding of MOOCs’ purpose of an instructional massive open online course opportunity for twenty-first century learning. Visionary leaders are needed to assist universities in understanding their role and contribution for MOOCs and its impact on twenty-first century learning.
References


