CrossMark

MOOCocracy: the learning culture of massive open online courses

Jamie Loizzo[1] · Peggy A. Ertmer[2]

Abstract Massive open online courses (MOOCs) are often examined and evaluated in terms of institutional cost, instructor prestige, number of students enrolled, and completion rates. MOOCs, which are connecting thousands of adult learners from diverse backgrounds, have yet to be viewed from a learning culture perspective. This research used virtual ethnographic methods to investigate the adult learner experience in a MOOC learning culture. Specifically, authors observed and interviewed twelve adult learners from countries around the world to gain a richer understanding of their online experiences and interactions within a MOOC focused on the social justice topic of human trafficking. Results showed that while a MOOC learning culture has some similarities to traditional distance education environments, it is indeed complex due to the large global scale. Based on the six themes that emerged from the data, the authors present the concept of MOOCocracy—a social learning democracy, as a description of the MOOC learning culture. Implications for MOOC instructional design are also discussed.

Keywords MOOC · Learning culture · Distance education · Social learning · Virtual ethnography

Introduction

Higher education institutions today are being pressured to offer more courses and content, online, to digital learners on a worldwide scale (Jenkins 2013; Lombardi 2013; Pappano 2012). Massive open online courses, or MOOCs, offer one means to connect thousands of

✉ Jamie Loizzo
  jloizzo@unl.edu

  Peggy A. Ertmer
  pertmer@purdue.edu

[1] Department of Agricultural Leadership, Education, and Communication, University of Nebraska-Lincoln, Lincoln, NE, USA

[2] Department of Curriculum and Instruction, Purdue University, West Lafayette, IN, USA

learners from diverse locations, backgrounds, and cultures on topics of global interest. While connecting learners online is not new, MOOCs have broadened online learning to a massive worldwide scale, presenting new opportunities as well as new challenges.

Previous research has examined how to foster effective online learning with smaller numbers of learners (Garrison et al. 2010; Gunawardena, 1995; Gunawardena and Zittle 1997; Richardson and Swan 2003). However, optimal approaches for fostering successful MOOC learning are still developing (Liyanagunawardena et al. 2013; Macleod et al. 2015). Because MOOCs enroll large numbers of learners from diverse, global backgrounds, the pedagogy, design, content, and technology used in smaller, traditional, distance learning courses, require some adjustment. For instance, while traditional online courses employ a single entry point, multiple entry points might be needed in a MOOC in order to serve the diverse needs of participants. Additionally, given the diverse knowledge and skill levels, as well as the range of viewpoints of a MOOC audience, MOOC content may need to be expanded, as well as differentiated, to meet all learners' needs (Fredette 2013; McAndrew and Scanion 2013).

Existing quantitative data highlight the fact that thousands of educated adult learners have enrolled in MOOCs (Nesterko et al. 2014). As MOOC offerings continue to increase, these educated adult learners are forming learning communities in ways, and on a scale, never achieved before. Simply stated, MOOCs are changing the way many educated adult learners spend their personal time for informal learning, offering cultural experiences for those who wish to expand their knowledge, much like we previously accomplished by reading magazine articles about other countries or visiting museum exhibits. Yet, the MOOC experience goes beyond passive learning to actively connect learners not only with content, but with instructors and fellow learners to form massive social learning communities.

Literature review

The construct of a learning culture

Researchers in the areas of human resources, organizational learning, and performance improvement (Marsick and Watkins 2003; Xiaojun and Peng 2010; Yang 2003) have examined how an organization's culture can influence an individual's beliefs and attitudes. Xiaojun and Peng (2010) indicated, "this culture shapes the thinking mode and behavior pattern of the organization by changing an individual's attitude and behavior" (p. 1).

Within distance education and instructional design research, instructional models for fostering meaningful learning have been developed such as social learning networks, communities of practice (CoPs), and the community of inquiry (CoI) framework (Blackmore 2010; Garrison et al. 2010). By viewing online learning networks, CoPs, and CoIs as learning organizations, the construct of a learning culture could be applied. That is, the culture of an online learning environment also has the potential to influence an individual's beliefs and attitudes, as Xiaojun and Peng (2010) described. In fact, the learning culture of a MOOC could potentially have an even greater impact on learners' attitudes and beliefs because of the open nature and large global scale of the courses.

Information age lifelong learning culture

The culture of learning is said to be changing because of our constant access to content and collaboration via the internet and social media (Bonk 2009; Seely Brown 2008). According

to Bonk (2009), "We have stepped into a new culture of learning where we assume radically new perspectives of ourselves as learners and what it means to participate in the learning process. The culture is one of participation and personalization" (p. 327). In general, MOOCs represent this changing culture, reflecting the need to make educational opportunities open to everyone, regardless of background, location, profession, financial status, or other demographics. Watson and Watson (2014) advocated a need for systemic transformation across higher education institutions, noting existing pressure for universities to shift from an "elite" one-size-fits-all model to a "universal model" that is "tasked with educating the majority, if not all, of the population" (p. 48). To effectively address the diverse backgrounds and goals of today's learners, this new educational paradigm would need to "unbundle" higher education to be more learner-centered (pp. 49–50). MOOCs are just one part of this much larger discussion regarding the changing role of higher education institutions and the growing demand for free access to educational opportunities.

MOOCs were originally intended to open up higher education to people around the world, thus making a college degree more accessible and attainable for under-privileged populations (Bonk 2009; Jenkins 2013; Pappano 2012). However, data released by MOOC providers, HarvardX and MITx (Ho et al. 2014) challenged the assumption that students are taking MOOCs as part of their initial steps towards pursuing bachelor's degrees. Results showed students who enrolled in the companies' 17 MOOCs from fall 2012 to summer 2013 were typically 26 years old or older, and had already attained bachelor's degrees (Ho et al. 2014). While MOOC providers have not yet reached their intended goals of opening education to under-privileged populations, it is important to determine why adult learners with higher education degrees are taking MOOCs, what they are experiencing in those MOOCs, and subsequently to consider how their experiences might inform the design of future MOOCs.

MOOC design approaches: social learning vs. lecture-based

Initially, MOOCs were developed in response to the increasing demand for open access to educational materials and courses, specifically online. As described by Liyanagunawardena et al. (2013): "A MOOC brings together people interested in learning (or 'students') and an expert or experts who seek to facilitate the learning. Connectivity is usually provided through social networking, and a set of freely accessible online resources provides the content or the study material" (p. 204). The two most familiar models for delivering MOOCs are referred to as c-MOOCs and xMOOCs (Rodriguez 2012).

Siemens and Downes are credited with formulating the learning theory of connectivism and developing the c-MOOC (Clarà and Barberà 2013; Liyanagunawardena et al. 2013; Rodriguez 2012). Connectivism comprises teaching and learning through symbols and information and social exchanges using Web 2.0 technologies. c-MOOCs focus on learners using social media tools to collaborate and develop knowledge. Clarà and Barberà (2013) outlined three areas of debate regarding the application of connectivism within c-MOOCs: many learners feel lost, in part due to limited instructor presence, students are expected to form relationships without support, and it does not explain how concepts develop over time (pp. 130–132).

The next iterations of MOOCs are often called AI-Stanford or xMOOCs. MOOC platform companies such as Coursera, edX, and Udacity all emerged as xMOOCs (Rodriguez 2012). The important distinction between the MOOC formats is that c-MOOCs rely more on student-developed social networks, limited instructor presence, and collaborative, social learning. In contrast, xMOOCs follow a more traditional learning model,

with a structured focus on content. Learners work more individually, at their own pace, with a limited amount of social connectedness. xMOOCs are often focused on increasing scalability and offering lecture videos and lessons to the largest number of interested learners possible (Bremer and Weiss 2013).

Whether the format is that of a c-MOOC or an xMOOC, it is noticeable that MOOCs are bringing together thousands of learners from diverse backgrounds. Learners are connecting, developing, and participating in digital learning cultures on a massive scale. This study aimed to gain a rich understanding of the learner MOOC experience as well as participants' perceptions of MOOC culture.

Problem statement and purpose of the study

To date, MOOC research has typically used quantitative methods to examine the demographics of, and completion rates for, MOOC participants. However, there is an opportunity to examine, more closely, learners' MOOC experiences by using qualitative methods. Given the need for a richer account of the MOOC learning experience, this study was designed to gain a deeper understanding, using virtual ethnographic methods, of the experiences of adult learners with post-secondary degrees who enroll in MOOCs. Our overarching research question was: What are adult learners' perceptions of their experiences within a MOOC learning culture? To answer this overarching question, we examined participants' perceptions of teaching/learning components that seemed specific to the MOOC environment: (1) up-voting, (2) down-voting, (3) forum reputations, and (4) peer review processes. In addition, we examined participants' perceptions of their online interactions with classmates and instructors within the MOOC learning culture.

Methods

Research design

To answer our research questions, virtual ethnography (VE), a specific Internet-based research method (IBR), was used. Bianco and Carr-Chellman (2002) explained, "In an attempt to understand the culture of online learning, qualitative methodology (specifically ethnography) is a natural choice for research design" (p. 252). VE is a methodology that can "be used to develop an enriched sense of the meanings of the technology and cultures which enable it [the Internet] and are enabled by it" (Hine 2000, p. 8). Specifically, the first author enrolled, participated in, and researched two MOOCs. We gained Institutional Review Board (IRB) approval from our home institution and permission for entry from the university offering the MOOC. MOOC learners volunteered to participate in the research via an online survey and consent form. In this study, the learners served as informants about their experiences in the MOOC environment. Boellstorff et al. (2012) pointed out that the term 'informant' "signifies that members of a culture inform ethnographers, sharing understandings about their lives through conversation and participatory activity" (p. 17). VE methods were utilized to conduct weekly observations of the MOOC environment, including screen captures of informants' participation and course artifacts, as well as researcher reflective field notes. We also conducted post-MOOC interviews with informants.

Research context and informants

This study had two research contexts. The first context was a 7 week MOOC, *Technology and Ethics,* which was offered by a Midwestern public university via the Coursera platform, from May to July 2014. *Technology and Ethics* had 15,361 enrolled learners from 173 different countries. Of these learners, there were 7943 who visited the course at least once. The first researcher enrolled in the course, covertly, to make weekly observations about her experience as an adult MOOC learner. This auto-ethnographic approach helped the research team become familiar with and experience the MOOC environment first-hand in order to inform the overall design of the main study. For example, Loizzo's experience informed the development of our interview protocol including questions regarding our initial observations of the MOOC learning culture including such features as up-voting, down-voting, and lurking.

Human Trafficking, a four-week MOOC offered by the same university on the Coursera platform from August to September, 2014, served as the central context for this study. The course content focused on raising awareness among, and educating learners about, human trafficking, which is described by the United Nations (2012) as "a crime that ruthlessly exploits women, children, and men for numerous purposes including forced labour [sic] and sex" (preface, para. 1). The course activities consisted of weekly videos, several readings, two quizzes, a public service announcement project (PSA), and weekly discussion questions.

This human trafficking course was a somewhat unique context in that the majority of current MOOCs focus on the hard sciences such as computer programming. *Human Trafficking* focused on a controversial issue and was intentionally designed to change perceptions and attitudes regarding the subject. Reichard (2013) pointed out that MOOCs in the humanities face the challenge of tackling a wide array of viewpoints across thousands of learners, as compared to traditional humanities courses which would typically break learners up into smaller groups and include more direct instructor attention and interactions for discussing and analyzing controversial issues. Recently, however, Scharmer (2015) described the potential for a MOOC 4.0 version in which learners come together to mindfully consider and organize around social issues of global importance. The research context led to some unanticipated challenges such as discussions with informants about their human trafficking attitudes and experiences, as well as navigating a MOOC which incorporated both c-MOOC and xMOOC design elements in an effort to launch global discussion and learning about a sensitive topic.

Human Trafficking had 30,207 enrolled learners from 186 different countries. There were 14,541 learners who visited the course at least once. 34 % of the enrolled learners had a bachelor's degree, 26 % had a master's degree, and 4 % had doctoral degrees. 62 % of the learners were female and 37 % were male. 1253 learners earned a statement of accomplishment, meaning they completed the course quizzes, PSA assignment, and participated in the peer review process. Twelve enrolled learners, from locations around the world, voluntarily participated as informants in our study (see Table 1).

Informants were recruited during the first week of the MOOC via an online survey. The survey received 671 responses, which were filtered to 628 to eliminate incomplete entries and those responses that did not meet the criteria of adult learners between the ages of 25 and 75 with a bachelor's degree or higher. The data were then filtered by gender and an online random number generator was used to select ten females and ten males as potential informants. Data were also filtered for all Indiana learners to potentially include learners from the researchers' state. All twelve randomly selected informants in this study agreed to

Table 1 Demographics of virtual ethnography informants

Pseudonym	Gender	Ethnicity	Age	Education	Location
Anne	Female	Caucasian	47	Bachelor's	Muncie, IN
Blake	Male	Caucasian	28	Bachelor's	Sandy, UT
Claudia	Female	American Indian	31	Master's	Peace Corp-Moldova
Elizabeth	Female	Caucasian	30	Bachelor's	Snohomish, WA
Isabella	Female	Caucasian	48	Master's	Beijing, China
Ed	Male	Caucasian	70	Bachelor's	Chiang Maii, Thailand
Joseph	Male	Caucasian	29	Bachelor's	Yale, MI—moving to Philippines
Lynn	Female	Caucasian	26	Bachelor's	West Lafayette, IN—moved to Indianapolis
Mimi	Female	Ethiopian-American	27	Bachelor's	North Brunswick, NJ
Regina	Female	Caucasian	50	Master's	Evansville, IN
Sean	Male	Caucasian	28	Master's	State College, PA
Torrence	Male	Multi-Racial	25	Bachelor's	Detroit, MI

participate via the online survey, including specific agreement to allow observations of their MOOC activities in discussion boards, and on quizzes and assignments. Each informant selected a pseudonym for use in this study.

Data collection and analysis

Multiple sources of data were collected throughout the study including (1) course artifacts such as the syllabus and assignment instructions, (2) demographic information of MOOC informants, (3) weekly screen-captured observations of informants' experiences, (4) informant-created photos and daily schedules, (5) interviews with informants, and (6) researcher field notes. The first step of data analysis comprised reviewing and transcribing post-course interviews and reviewing field notes. The transcriptions and field notes were coded using open, focused, and axial coding techniques for emerging patterns (Miles et al. 2013). The second step of data analysis comprised using the codes that emerged from the interview and field notes data to analyze the course artifacts and observations.

The study followed validity procedures, recommended by Schwandt (1997), including reflexive journaling and collaboration with informants on emerging data patterns. Schwandt (cited in Creswell and Miller 2000) defined validity in qualitative research as "how accurately the account represents participants' realities of the social phenomena and is credible to them" (pp. 124–125). Creswell and Miller identified researcher reflexivity, collaboration, and peer debriefing as validity procedures within the critical paradigm. The results are described and supported using 'thick description' (Denzin 1989), which provides rich details and examples from the data.

Findings

Based on the data collected and analyzed in this study, we propose that: (1) an adult learner MOOC culture does exist and (2) an adult learner MOOC culture comprises a dynamic global social learning democracy. To encapsulate this result, we propose the term

Table 2 MOOCocracy supporting themes

Theme	Description
1	Frequent MOOCing Leads to Critical Education Consumers
2	Voting and reputations—MOOCs enable social media mentality
3	Lurking as learning
4	Instructor engagement is nice, but not expected
5	The power of peer review
6	Hopeful for the future

'MOOCocracy.' This cultural label and description is supported by six themes that emerged from observations and informants' post-course interviews (Table 2).

Theme 1: frequent MOOCing leads to critical education consumers

As a possible symptom of the free and accessible nature of the MOOC marketplace, adult learners have become critical consumers of MOOC courses. Because of their frequent enrollments in MOOCs, these learners are highly aware of specific course design elements and are quick to critique instructional design choices made by MOOC instructors. They also link these various MOOC design elements to their overall perceptions of learning achievement and course satisfaction.

Ten of the 12 informants in this study had previously enrolled in a MOOC, and eight had already completed a MOOC. Seven of the informants completed *Human Trafficking* to earn a Statement of Accomplishment. Nine of the informants were concurrently enrolled in one or two other courses while enrolled in *Human Trafficking*. Claudia, Joseph, and Mimi were the only three informants who had not taken multiple previous courses.

Lynn described her frequent MOOC participation as follows: "Well, this is one of the shorter courses I've taken. … I've been taking MOOCs for probably eight or nine months now and participating in at least one, if not two, at a time." Isabella shared in her post-interview as well as her daily schedule (see Figs. 1, 2) that she takes three to four MOOCs at a time from universities all over the world and often compares the different course structures: "You can see, for example, that courses organized by universities in Asia—and I took one from Tokyo because I was curious to see that one from Hong Kong, and now a second one from Hong Kong—they are very, very different from courses structured by universities in the UK or in the States."

Because many of the informants were enrolling and participating in numerous MOOCs from a variety of institutions, they often compared their experiences in *Human Trafficking* to other courses in which they had participated. Anne described, "I don't think the *Human Trafficking* MOOC, it doesn't feel typical for me. I've done quite a few now. I don't know, maybe 15 or 20—and this has been, it felt a lot different than the others."

When informants were asked how they would rate their *Human Trafficking* MOOC experience on a scale from one to five, with one being completely disappointed and five being completely satisfied, many of informants' ratings and responses were tied to their critiques of the course design. For instance, Blake said, "I'd say about a three. The information was really good, but I really think it should have been a lot longer." Joseph gave the experience a four and also tied his rating to the course design. He said, "I think

████████████ - Coursera Learning Diary

August, 21st, 2014 - Thursday

Human Trafficking - ██████████████ **- week 1**

7:00 pm - 9:00 pm - location: bedroom with a/c on (it's very hot at the moment here)
read introductory material/announcement and some posts (forum)
tried to understand how I can access to the external videos (no success because of Chinese fire wall)

downloaded all suggested sources (texts) by instructors

30 minutes reading material having the week 1 quiz in mind

August, 22nd, 2014 - Friday

Human Trafficking

8:00 am - 9:00 am
reviewed material (texts) and taken week 1 quiz

Learning How To Learn - ██████████ **week 4/4**

8:00 pm - 9:15 pm read posts on the Forum (looking for interesting inputs/ideas)

August, 24th, 2014 - Sunday

Learning How To Learn - █████████ **week 4/4**

7:00 pm - 7:30 pm
downloaded video lectures (I can view them with no interruption - sometimes if watched online

August, 25th, 2014 - Monday

Learning How To Learn ██████████ **week 4/4**

7:45 am - 8:30 am
watched lectures from 4-0 to 4-3

Fig. 1 Isabella's daily MOOC schedule

there could have been more in the class, more interaction, more videos, more documents that could have been sent our way."

In a MOOCocracy culture, the role of the adult learner is changing from one of passively participating in a pre-determined sequence of courses, which has traditionally been established by an educational system, to having more freedom to independently select courses and critically examine educational experiences. Hall (2013) cautioned that learners' new consumerism attitudes place more pressure on instructors to meet all of the

Fig. 2 Isabella's home and laptop in Beijing where she typically logged into MOOCs

various consumer demands, which could ultimately lead to teacher and learner dissatisfaction. Bottom line, the wide range of available MOOCs appears to be changing the culture of distance education to one in which adult learners have more voice in, and control over, their learning paths.

Theme 2: voting and reputations—MOOCs enable social media mentality

Another facet of the MOOCocracy culture is the learner's ability to up-vote or down-vote comments posted in the discussion board. While voting appeared to be a standard feature in the Coursera platform, informants described different perspectives on exercising their right to vote in the MOOC environment. Sean found the voting option somewhat in bad taste, especially given the human trafficking subject matter. He said:

> I felt like it would be rude to vote people's comments either way. Especially because this is a sensitive topic and a lot of the things that people were posting were personal experiences and stories about their life or somebody who they know, and I was like, 'Why would you vote up or down somebody's traumatic story about that?' It struck me as a little odd.

When asked if they ever down-voted a fellow learner's comments, every informant indicated they had never down-voted. However, there was often eager discussion of the benefits of casting an up-vote. Anne said she used her up-vote to show support, "It's the mom in me again, sometimes, I vote something up because I think that person needs to be validated. (laughs) They sound like they need encouragement! (laughs) And I want them to know I read, somebody read your thing and thought it was good."

The Coursera platform also ranks learners on a 'Forum Reputations' board based on number of discussion posts made and number of up-votes received. When asked about the 'Forum Reputations' ranking board, none of the informants knew it existed. Regina described that she observed other learners posting comments as if they wanted attention and up-votes. She said, "It just seems like people will say things to get up-votes, and to be popular. And I wonder if they're retired, and that's why they have so much time to post.

(laughs)" Mimi shared that she found herself becoming concerned with whether or not her discussion posts were gaining any attention. She described:

> There are times when I would do a post (laughs) - it's funny how this social media world, you know, makes you keep track of how many people are looking at your post or commenting (laughs). So, it's funny how I had that same mentality when it came to if I posted something, and I would go check and see how many people looked at it or commented.

The voting system was another feature of the democratic MOOC environment in which learners had the power to exercise their approval or disapproval. Smaller distance education courses have made use of social media, which could include features such as voting to increase student engagement (Freidman and Friedman 2013), and face-to-face lecture hall courses have also used student response technologies for students to vote and provide feedback (Heaslip et al. 2014; Mathiasen 2015). In this research, learners utilized voting as a means to show approval or disagreement with fellow learners' and the instructor's viewpoints, as well as the course design. In turn, a learner's position on the reputation ranking board increased as he or she garnered more up-votes from fellow learners.

Theme 3: lurking as learning

All 12 of the informants in this study posted less than 10 times in the discussion board. While informants chose to minimally engage in the discussions, they described spending time reading through and learning from several posts made by their fellow learners. Analytics from *Human Trafficking* showed that 7007 learners browsed the forums. As is typical for most MOOCs, thousands of the enrolled learners did not visit the forums, hundreds of others only viewed the forums, while a minority of learners actually posted in the forums. Observations in the *Human Trafficking* course showed that while a discussion thread may have had a small number of posts, it could potentially have had hundreds of 'views' (see Fig. 3).

Fig. 3 Screen capture of posts vs. views in discussion threads

points	posts	views
86 points	144 posts	902 views
50 points	46 posts	403 views
39 points	30 posts	371 views
13 points	12 posts	117 views
9 points	106 posts	371 views
20 points	172 posts	995 views

All of the informants in this study viewed the *Human Trafficking* discussion forums at different points throughout the 4 weeks and described different tactics for organizing their discussion reading. Joseph said he read, "Anything that caught my eye with their titles." Isabella used the search function to find specific discussions about topics she was interested in learning more about. She said, "I searched about adoption. I read the posts by Indian students because I wanted to see how they see the issue in their own country." Elizabeth described how she used the Coursera discussion sorting tools such as 'Top Forum Threads' to view different posts. She said, "Typically, what I would do is I would go through to see where the most responses had shown up, and also, where there was the most of those little thumbs ups because those were the really valuable points that people feel like they want to call out and give a kudos to. That's typically how I did it, and then, I would just read through the topic lines." Elizabeth also mentioned reading the posts based on location. She read posts from people in Boston, where she grew up, and Dallas, where she went to college.

Eight of the informants described factors that prevented them from posting, such as not having anything new or interesting to contribute, not wanting to offend others, and an inability to effectively put their thoughts into written words. Claudia explained why she tended to be a lurker, "I would come in late to a conversation. I would wait a couple of days because I always realized that if I write something now, someone else is going to say something really interesting later on." While this type of online learner behavior is often described as lurking, in a MOOCocracy, lurking is a form of learning. Many of the informants perceived viewing the discussion threads as an effective way to learn about human trafficking, others' experiences, and perspectives from other parts of the world.

While lurking is not a new phenomenon in distance education or online communities, it appears to be amplified in MOOCs with thousands of learners opting only to view discussions rather than to post comments of their own. Sun et al. (2014) indicated that there are opposing viewpoints about lurking—some researchers consider lurkers to be "free-riders," while others note, "lurking is not only normal but also is an active, participative and valuable form of online behavior" (pp. 110–111). Several of the informants in this study, as well as hundreds of learners in the MOOC, chose not to establish a social presence. However, the informants who lurked still described learning from reading social exchanges. This supports research studies that showed lurkers still felt they were members of the online community (Sun et al. 2014).

Theme 4: instructor engagement is nice, but not expected

Within the MOOCocracy, there is a sense that the instructor is present and important, yet not the focal point or dictator of their experiences as adult learners. Observations of *Human Trafficking* showed the instructor established an online presence in a number of ways: posting introductory weekly emails and announcements, creating weekly videos, interacting in the discussion forums, posting emails and announcements to remind learners to have civil discussions or to clarify a point, and providing a personal introduction on the Coursera, 'Meet the Team' page.

When asked if they noticed the *Human Trafficking* instructor's presence, all of the informants stated that they noticed her in the weekly videos and some of the discussion threads. No one mentioned her weekly announcements or her introduction on the 'Meet the Team' page. Discourse analysis of post-interview transcripts showed that only one of the informants called the instructor by her name. The informants would refer to Melanie (pseudonym) as "she," "her," or "the instructor." For example, Ed said, "I couldn't find

her email address, so I sent her a tweet." Sean was the only one to use Melanie's name in his description of her presence in the course: "Melanie, I think was her name, the instructor, or Mel. She would comment on a lot of people's comments that they would leave in the discussion forum."

The informants did not expect the instructor to be responsible for their learning. Isabella and Anne noted that it is nice to sometimes connect with an instructor in a MOOC, but whether or not they have that connection did not influence their motivation to participate. Isabella said, "If it happens, I appreciate that, but it's not something that I look for and I try to switch on." Anne accepted not having the one-on-one instructor interaction in MOOCs. She explained:

> When it's something I'm really interested in, it would be really cool to actually be able to go up after the lecture, like in the old days. At school, you could go up and ask a question about something, and so, would that be neat? Yeah. But, I guess I'm resigned to not having that. It doesn't keep me from taking the courses.

Mimi was the only informant who had direct interaction with the instructor, and the relationship grew after Mimi initially emailed the instructor before the course began to confirm the start date. Mimi described herself as a relational person and valued building friendships with others. She was very excited to develop a relationship with the instructor outside and inside the MOOC. Mimi said, "I remember even one time when I was emailing her, she emailed me and said, 'Hey, someone posted about Ethiopia, and you should check it out.' So, that to me, was like, 'Wow! She remembers me!'" While Mimi was the only informant to describe a direct relationship with the instructor via email, the remaining informants did not directly connect with the teacher.

In a MOOCocracy, most learners accept that they are one of thousands, may not receive direct instructor attention, and need to take responsibility for their own learning. In traditional distance education ID models such as the CoI framework (Garrison et al. 2010), it is recommended that the instructor develop a strong online presence through tools such as videos, chat rooms, discussion boards, and real-time virtual office hours to clarify course guidelines and expectations, develop direct connections with students, foster learning, and increase student motivation (Li and Pitts 2009; Richardson and Swan 2003). This study showed that in a MOOCocracy, informants expected to see the instructor in the course, but they did not require direct interactions with the instructor or rely on her for their learning. This coincides with Preisman's (2014) finding that it is more important for an online instructor to make time available for students who need attention, rather than spending a large amount of time and concern with tools and efforts for establishing online presence.

Theme 5: the power of peer review

The *Human Trafficking* MOOC included a peer review grading process for the public service announcement (PSA) assignment (Fig. 4). In this study, seven of the informants participated in the peer review process. Peer review appears to be a somewhat accepted and common way for grading projects within MOOCs. Elizabeth described a respect for the peer review process in MOOCs as a "way to leverage the resources for grading because there's no way a single person can grade 30,000 [assignments]." The peer review process gives learners the power to critique and grade their classmates' work based on criteria established in a rubric created by the instructor. In *Human Trafficking*, each learner who submitted a PSA assignment was randomly assigned five classmates' PSAs to grade based

Fig. 4 Informant Joseph's PSA assignment

on the rubric. Then, each learner received five reviews of his/her submitted assignment. The five peer review grades were averaged together for a final grade.

Common threads from the informants' interviews, related to peer review, were (1) the learner's responsibility to provide fair peer reviews and (2) what it means to be an effective peer reviewer of assignments from participants from all over the world. Elizabeth discussed the difficulty of grading PSAs that were in other languages from places she did not know and finding a way to be fair in her assessments. She described, "Well, how am I supposed to give this an objective grade? I don't even know what it says. There's a lot of writing on it, but I don't know what it says."

Some of the informants comfortably assumed the role of reviewer. Claudia explained how she would point out needed changes in her critiques, "They were really creative, and some of them were really good. Because I look at things critically, I will always say, 'Oh well, I would change this or I would do that,' but they were such minor changes." Regina and Mimi each reviewed more than the required five PSAs, which is allowed in the Coursera platform. Regina is a teacher by profession and experienced in the reviewer and grading roles. She described holding peers accountable for copyright issues: "I think three of the six that I looked at, I could just type in a description of what the picture was and up popped somebody else's website, and they hadn't done any attribution or citations or anything like that." Mimi also seemed comfortable taking on the role of reviewer. She said, "I remember watching the first one, and I'm just like, 'Woah. This is amazing.' And then, some were just like okay. But, I enjoyed that part—being able to learn, engage, and then, critique."

Peer review has a controversial history in distance education with learners expressing a complicated range of positive to negative attitudes about the process (Wen and Tsai 2006). In a MOOCocracy, learners realize and accept that one instructor could not possibly grade thousands of submitted assignments and so peer review is a common, accepted practice. Suen (2014) pointed out that many discrepancies can occur with peer grading including: a wide range of variability in scores across peer graders, inconsistency of ratings on assignments of similar quality, differences in raters' approaches regarding leniency and rigor, and more. To remedy some of these issues, MOOCs may use a system such as Calibrated Peer Review[TM] (CPR[TM]), "to evaluate the accuracy of the ratings provided by each student rater and assign weights to their ratings according to their relative degree of

accuracy. The final rating score for the submission would be a weighted average of the rating scores from peer raters" (Suen 2014; pp. 319–320). Some of the informants in this research described an understanding of the complicated and subjective nature of the peer review process. However, informants who peer reviewed mostly had positive perceptions of the process as a way to learn from others' work. Overall, informants described the responsibility and power incumbent upon them when taking on the role of reviewer and the need to grade fellow learners' work in a fair manner.

Theme 6: hopeful for the future

While MOOCs are still in experimental stages, observations and interviews showed an adult learner culture that encompasses respect for the experimental learning environment and hopeful for the future of accessible education for the masses. Isabella, who takes up to three MOOCs at any given time, said, "I find the idea and the concept behind it amazing, and I hope that it's just the beginning. I hope that the whole project behind it can only get better." Elizabeth shared a similar outlook, "I think there's so much potential here that if we could figure out how to do it—wow! What an opportunity for continuing education, for providing education to people who can't afford traditional college." Ed was the only informant who recognized the sustainability issue for MOOCs, "Maybe the thing is that the people need to pay some stipend to participate in one of these things. I would not be surprised that, in and of itself, would increase the completion rate." At the same time, Ed noted that people living in Thailand and Burma who are living in poverty, and who make very small wages, would not be able to afford to pay for MOOCs with an enrollment fee.

Overall, the informants in this study described a respect for MOOC providers and the intended goal of making higher education more accessible. The general sense from informants was that they see potential in MOOCs and hope that courses, covering a variety of topics, continue to be developed, improved, and offered to the masses. As platform providers and higher education institutions continue to experiment and search for the most effective MOOC business model, it is important to note that the adult learners in this study did not discuss or mention whether they would be willing to pay for their MOOC enrollments. However, there was a sense of appreciation among the informants for free access to education for their graduate and lifelong learning endeavors.

Discussion and implications

MOOCocracy as a learning culture construct for MOOCs in the social sciences

This study was designed to qualitatively examine adult learners' MOOC experiences. What resulted were themes that support the emergence of a MOOCocracy learning culture. We have proposed the term MOOCocracy to encapsulate the construct of a democratic global social learning culture that is developing in social science MOOCs with predominantly adult learner participants. Researchers' experiences and observations across two MOOC contexts, as well as interviews with informants within the *Human Trafficking* course, suggested the adult learners assumed the role of critical consumers who were taking multiple MOOCs at one time, comparing and critiquing course designs, engaging in voting

and peer review systems within the course, socializing, lurking, and dropping out of courses that did not meet their expectations for effective MOOC designs. Hall (2013) suggested that these learners who are enjoying increased access to education are developing consumerism attitudes, which in turn, are placing more pressure on instructors to meet all of the various demands, and ultimately may lead to teacher and learner dissatisfaction. Hall concluded:

> …professors and university administrators need to rise to the challenge of confronting new consumer attitudes and designing different ways of approaching and evaluating teaching that take into account fit between consumer images and university professors as well as structural features influencing teaching (p. 722).

The findings of this study suggest that MOOC providers should shift from a uni-directional, instructor-focused, one-size-fits-all model toward a more customizable and dynamic learner-centered design. This is especially important for MOOCs in the social sciences that are focused on controversial subject matter and issues of social justice, as the MOOC experience has the potential to influence learner attitudes and behaviors. Scalability and technology infrastructure are hurdles to overcome in creating customizable learner-centered MOOCs. Greener (2010) described a 'plasticity' to virtual learning environments and a potential for "…progression from a teacher-constructed online environment, based on their own views of student needs and learning behaviors, to an environment which, potentially, could adapt itself to the student's needs and preferences" (p. 260–261). Reigeluth, Watson, and Watson (2012) outlined the systematic development and application of Personalized Integrated Educational Systems (PIES) for individualized information age learning. The PIES model addresses the following learner characteristics: "(1) students learn at different rates; (2) students have differing amounts of time per day that they can devote to learning; and (3) students have different needs, interests, and talents that influence what they should or want to learn" (p. 43). As the MOOC experiment progresses and pedagogical approaches and delivery platforms evolve, the PIES model, as an individualized, customizable approach could potentially address the complexities of the adult learner MOOC experience.

Combine c-MOOC and xMOOC designs to foster a flexible learner-centered culture

The first iterations of MOOCs (c-MOOCs) focused on connectivist pedagogical approaches and designs (Clarà and Barberà 2013; Liyanagunawardena et al. 2013; Rodriguez 2012). The c-MOOC model comprised students socializing, collaborating, and learning from one another via social media tools external to the MOOC environment. The more recent xMOOC, or AI-Stanford MOOC, design (Rodriguez 2012) comprises a more self-paced approach in which learners individually watch lecture videos, complete assignments and assessments, and sometimes participate in discussion boards within the environment.

Results from this study showed that adult MOOC learners valued a combination of social learning and self-paced, individualized learning. Some informants completed course assignments, yet chose to lurk rather than participate in the discussion boards. Even though they were lurking, the informants still described a degree of social learning via reading the posts of their fellow learners. Research has shown that while lurkers do not actually engage in social interactions, they still learn vicariously through reading social exchanges (Sun

et al. 2014). At the opposite end of the socialization spectrum, other informants described an appreciation for the opportunity to interact with learners from around the world.

Social learning theory maintains that we all learn in a social context (Schön 2010; Vickers 1978). We may learn individually or collectively from public social systems such as our governments and cultures (Schön 2010). We may also choose to form collaborative groups referred to as communities of practice (CoPs) to learn from one another, our surroundings, and our shared history (Blackmore 2010). Bandura (1977) described social learning as "a process of reciprocal determinism, behavior, personal factors, and environmental factors [which] all operate as interlocking determinants of each other" (p. 10). In this view, social learning is a combination of personal motivation and environmental factors. The MOOC environment has great potential for leveraging social learning on a global scale. Specific suggestions for developing MOOCocracies for democratic social learning, while also respecting the values of learners who prefer an individualized, self-paced approach include:

Embrace lurking

- Utilize discussion boards and up-voting/down-voting features by posting weekly discussion questions for learner social engagement. Many learners will only read discussion posts, while some will post consistently and/or frequently. Do not require learners to post as part of their grade in an open learning course, as this could cause less social learners to withdraw from the course. Remember that discussion "views" are also a type of social, vicarious learning. Learners who prefer to lurk could be encouraged to use up-voting/down-voting and 'anonymous' posting features. Instructors should remind students to follow respectful social learning guidelines in the course code of conduct.

Strategically structure discussion boards

- Encourage learners to form groups within and outside the online learning environment via internal course tools and external social media. Structure discussion boards so that learners with similar backgrounds, motivations, interests, and learning questions could potentially develop CoPs. This would involve consciously structuring areas in the online discussion where learners with common interests could come together in a shared space.

Peer review to promote learning and global engagement

- Include peer-review of assignments in the course design. Much of the MOOC controversy concerns how a single instructor, with or without teaching assistants, can effectively facilitate learning for thousands of learners in one course (Suen 2014). However, if we view MOOCs as social learning environments, learners can work together to learn the content, expand their worldviews through interactions, and support social learning. By including peer-review opportunities in MOOCs, learners have another means to reinforce the content, share ideas, and increase their knowledge of global cultures and perspectives.

Limitations and future research

Generalizability of these results is limited by the small, self-selected, voluntary sample focused on adult learners between the ages of 25–75 with bachelor's and master's degrees, and the short duration of the *Human Trafficking* MOOC. A sample of only 12 informants may have resulted in a narrow view of the adult learner MOOC experience, especially in regards to diversity of informants' ages, education levels, backgrounds, locations, and experiences. The small number of informants may have had different qualities than leaners who did not volunteer to participate. Also, those who volunteered to participate provided their demographic information and education levels via an online survey tool. The possibility exists that informants may have provided false information about themselves. In addition, the informants were recruited to participate during the first week of the MOOC. Therefore, informants knew they were being observed, which could have influenced their MOOC participation. Finally, while the research design included member checking, triangulation of data sources, and rigorous coding, the researchers' biases and perceptions may still have influenced the findings.

The initial goal of this research study was not to examine, specifically, the MOOC learning culture. However, observations and interviews strongly suggested that the culture of MOOCs should not be ignored. There is still much research to be done to determine how to best foster a MOOCocracy where instructors and learners can interact or lurk within a learning culture of respect and curiosity for informing and potentially influencing attitudes and beliefs concerning controversial subjects. This study could be replicated across other MOOC contexts to further determine whether or not a MOOCocracy is an effective learning culture in other subjects and large-scale delivery platforms. Instructional strategies for developing and facilitating an effective MOOCocracy need to be further investigated. MOOC culture could also be researched on the individual level. For instance, what are the specific perceptions and experiences of learners and instructors from other countries within a MOOCocracy? How do individual backgrounds, languages, beliefs, and cultures influence participants' engagement and learning within MOOCs?

Another area for future research is to intentionally design and test a MOOC approach that combines c-MOOC and xMOOC approaches for fostering a socially democratic learner-centered culture. There is an opportunity to apply a PIES model to MOOCs for richer learner-controlled experiences, as well as continued improvement of discussion boards, voting features, and peer review processes.

Conclusion

As learners in the information age, we now have more immediate access to technologies and content than ever before (Prensky 2010). Bonk (2009) described how the Internet, open learning, and mobile technologies are transforming the culture of learning into a global and participatory enterprise. In the areas of human resources and performance improvement, researchers have described how a learning culture could potentially influence learners' attitudes and beliefs (Yang 2003). The construct of a learning culture has yet to be used to describe the global connectedness that is occurring in MOOCs. Thousands of educated adult learners from all over the world are participating in MOOCs for a variety of reasons (Macleod et al. 2015; Nesterko et al. 2014). As the results of this research demonstrated,

MOOCs in the social sciences are connecting learners for important conversations and lessons surrounding controversial social justice topics such as human trafficking.

This study used virtual ethnographic methods to gain deeper insights into how adult learners are experiencing MOOCs. Interviews with 12 adult learners from all over the world, as well as observations of their experiences in the MOOC itself, led to the realization that a unique learner culture is occurring within MOOCs. We propose the construct of MOOCocracy—a global social learning democracy to encapsulate the dynamic learning culture of social science MOOCs. This idea of MOOCocracy is supported by six themes (Table 2), which emerged from the data. The results showed that adult MOOC learners are critical education consumers who take different approaches to engaging in the MOOCocracy culture including lurking and voting in discussion boards, self-directed learning, thoughtfully and responsibly critiquing fellow learners' work through peer review, and holding an optimistic view of the potential of MOOCs for opening up higher education for global social learning.

By viewing MOOCs as dynamic global social learning cultures, we offer a new lens for instructional designers and instructors to use when developing, delivering, and facilitating MOOC instruction, specifically concerning controversial issues in the social sciences. It is important to intentionally consider adult learners' frequent MOOCing habits and platform design features, such as discussion board voting and peer review, when developing and fostering a respectful and productive MOOCocracy where learners can choose their own learning paths. Further research is needed to (1) explore the facets of MOOCocracy across multiple MOOC contexts, (2) identify instructional strategies for effectively developing the learning culture across subject areas and various MOOC delivery platforms, (3) determine how learners' and instructors' individual backgrounds and beliefs influence their experiences within the learning culture, and (4) examine how MOOCocracies in various subjects impact learners' attitudes and behaviors.

Compliance with ethical standards

Conflict of interest   The authors declare that they have no conflict of interest.

References

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs: Prentice Hall.
Bianco, M., & Carr-Chellman, A. A. (2002). Exploring qualitative methodologies in online learning environments. *Quarterly Review of Distance Education, 3*(3), 251–260.
Blackmore, C. (Ed.). (2010). *Social learning systems and communities of practice*. London, UK: Springer. http://dx.doi.org/10.1007/978-1-84996-133-2.
Boellstorff, T., Nardi, B., Pearce, C., & Taylor, T. L. (2012). *Ethnography of virtual worlds*. Princeton, NJ: Princeton University Press.
Bonk, C. J. (2009). *The world is open: How web technology is revolutionizing education*. San Francisco: Wiley.
Bremer, C., & Weiss, D. (2013). How to analyze participation in a (C) MOOC. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.), *Proceedings of Edulearn13* (pp. 992–1002).
Clarà, M., & Barberà, E. (2013). Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology. *Distance Education, 34*(1), 129–136. doi:10.1080/01587919.2013.770428.
Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(3), 124–131.
Denzin, N. K. (1989). *The research act: a theoretical introduction to sociological methods* (3rd ed.). Englewood Cliffs: Prentice Hall.
Fredette, M. (2013). MOOC over: how to convert a classroom course into a MOOC. *Campus Technology Magazine, 26*(12), 27–30.

Freidman, L. W., & Friedman, H. H. (2013). Using social media technologies to enhance online learning. *Journal of Educators Online, 10*(1), 1–22.

Garrison, D. R., Anderson, T., & Archer, W. (2010). The first decade of the community of inquiry framework: a retrospective. *Internet and Higher Education, 13*(1), 5–9. doi:10.1016/j.iheduc.2009.10.003.

Greener, S. L. (2010). Plasticity: the online learning environment's potential to support varied learning styles and approaches. *Campus-Wide Information Systems, 27*(4), 254–262. doi:10.1108/10650741011073798.

Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications, 1*(2), 147–166. doi:10.1080/08923649709526970.

Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *The American Journal of Distance Education, 11*(3), 8–26. doi:10.1080/08923649709526970.

Hall, W. W. (2013). Consumerism and consumer complexity: implications for university teaching and teaching evaluation. *Nurse Education Today, 33*(7), 720–723. doi:10.1016/j.nedt.2013.03.004.

Heaslip, G., Donovan, P., & Cullen, J. G. (2014). Student response systems and learner engagement in large classes. *Active Learning in Higher Education, 15*(1), 11–24. doi:10.1177/1469787413514648.

Hine, C. (2000). *Virtual ethnography*. London: Sage Publications.

Ho, A. D., Reich, J., Nesterko, S. O., Seaton, D. T., Mullaney, T., Waldo, J., & Chuang, I. (2014). *HarvardX and MITx: The first year of open online courses, Fall 2012–Summer 2013* (HarvardX and MITX Working Paper No. 1). http://www.ssrn.com/abstract=2381263.

Jenkins, R. (2013). Who is driving the online locomotive? *The Chronicle of Higher Education*. http://www.chronicle.com/article/Who-Is-Driving-the-Online/140505/.

Li, L., & Pitts, J. P. (2009). Does it really matter? Using virtual office hours to enhance student-faculty interaction. *Journal of Information Systems Education, 20*(2), 175–185.

Liyanagunawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: a systematic study of the published literature 2008–2012. *The International Review of Research in Open and Distance Learning, 14*(3), 202–227.

Lombardi, M. M. (2013). The inside story: Campus decision making in the wake of the latest MOOC tsunami. *Journal of Online Learning and Teaching, 9*(2). http://www.jolt.merlot.org/vol9no2/lombardi_0613.htm.

Macleod, H., Haywood, J., Woodgate, A., & Alkhatnai, M. (2015). Emerging patterns in MOOCs: learners, course designs and directions. *TechTrends, 59*(1), 56–63. doi:10.1007/s11528-01400821-y.

Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in Developing Human Resources, 5*(2), 132–151.

Mathiasen, H. (2015). Digital voting systems and communication in classroom lectures. *Journal of Interactive Media in Education, 2015*(1), 1–8. doi:10.5334/jime.ah.

McAndrew, P. P., & Scanion, E. (2013). Open learning at a distance: lessons for struggling MOOCs. *Science, 342*(6165), 1450–1451.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2013). *Qualitative data analysis: a methods sourcebook*. Thousand Oaks: Sage Publications.

Nesterko, S. O., Seaton, D. T., Kashin, K., Han, Q., Reich, J., Waldo, J., & Ho, A. D. (2014). Education levels composition. *HarvardX Insights*. http://www.harvardx.harvard.edu/harvardx-insights/education-levels-composition.

Pappano, L. (2012). The year of the MOOC. *The New York Times, 2*(12). http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html.

Preisman, K. A. (2014). Teaching presence in online education: from the instructor's point of view. *Online Learning, 10*(3), 1–16.

Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks: Sage Publications.

Reichard, C. (2013). MOOCs face challenges in teaching humanities. *The Stanford Daily*. http://www.stanforddaily.com/2013/06/04/moocs-face-challenges-in-teaching-humanities/.

Reigeluth, C. M., Watson, W. R., & Watson, S. L. (2012). Personalized integrated educational systems: Technology for the information-age paradigm of education in higher education. In S. P. Ferris (Ed.), *Teaching and learning with the net generation* (pp. 41–60). Hershey: IGI Global. http://www.dx.doi.org/10.4018/978-1-61350-347-8.ch003.

Richardson, J., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks, 7*(1), 68–88.

Rodriguez, C. O. (2012). MOOCs and the AI-Stanford like courses: Two successful and distinct course formats for massive open online courses. *European Journal of Open, Distance and E-Learning.* http://www.eurodl.org/?p=archives&year=2012&halfyear=2&article=516.

Scharmer, O. (2015). MOOC 4.0: The next revolution in learning and leadership. *Huffington Post Education.* http://www.huffingtonpost.com/otto-scharmer/mooc-40-the-next-revoluti_b_7209606.html?utm_campaign=naytev&utm_content=55490346e4b0bbbca9fbc359.

Schön, D. (2010). Government as a learning system. In C. Blackmore (Ed.), *Social learning systems and communities of practice* (pp. 5–16). Dordrecht: Springer. doi:10.1007/978-1-84996-133-2_1.

Schwandt, T. A. (1997). *Qualitative inquiry: a dictionary of terms.* Thousand Oaks: Sage.

Seely Brown, J. (2008). Forward: creating a culture of learning. In T. Iiyoshi & M. S. Vijay Kumar (Eds.), *Opening up education: The collective advancement of education through open technology open content and open knoweldge* (pp. xi–xx). Cambridge: MIT Press.

Suen, H. K. (2014). Peer assessment for massive open online courses (MOOCs). *International Review of Research in Open & Distance Learning, 15*(3), 313–327.

Sun, N., Pei-Luen Rau, P., & Ma, L. (2014). Understanding lurkers in online communities: a literature review. *Computers in Human Behavior, 38,* 110–117. doi:10.1016/j.chb.2014.05.022.

United Nations Office on Drugs and Crime (2012). Global report on trafficking in persons (United Nations publication, Sales No. E.13.IV.1). Vienna. https://www.unodc.org/documents/data-and-analysis/glotip/Trafficking_in_Persons_2012_web.pdf.

Vickers, G. (1978). Some implications of systems thinking. In G. Vickers (Ed.), *Responsibility—its sources and limits.* Salinas: Intersystems Publications.

Watson, W. R., & Watson, S. L. (2014). Redesigning higher education: embracing a new paradigm. *Educational Technology, 54*(34), 47–51.

Wen, M. L., & Tsai, C. (2006). University students' perceptions of and attitudes toward (online) peer assessment. *Higher Education, 51*(1), 27–44. doi:10.1007/s10734-004-6375-8.

Xiaojun, L., & Peng, L. (2010, Aug 24-26). *The impact of learning culture on individual innovative behavior. Proceedings of Management and Service Science (MASS)*, Wuhan.

Yang, B. (2003). Identifying valid and reliable measures for dimensions of a learning culture. *Advances in Developing Human Resources, 5*(2), 152–162.

Jamie Loizzo is Assistant Professor of Agricultural and Environmental Sciences Communication at the University of Nebraska-Lincoln. Her research interests include free-choice learning, informal science communication, emerging communication and instructional technologies and Internet and arts-based research methods.

Peggy A. Ertmer is Professor of Learning Design and Technology at Purdue University. Her research interests relate to technology integration, teacher beliefs, and helping students become expert instructional designers, specifically through the use of case- and problem-based learning methods.