Public Participation in Environmental Stewardship after MOOCs

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ABSTRACT. The proposed research is to examine MOOC students' environmental stewardship practice in a long term after the course and how they influence people around them to join practice in different cultural and language context. The research is based on an environment related MOOC which will be offered on edX in the US and XuetangX in China, and use social media including Facebook and WeChat as an informal discussion platform for students to interact. We propose to use mixed-methods including surveys, interviews, content analysis and social network analysis to measure post-course effect. The results will help us understand the long-term impact of environment related MOOCs on students' environmental stewardship practice after and beyond the course, and how the practice differs across culture and language.

Keywords: Massive open online courses; interactive learning; social media; post-course practice; environmental behavior

1   Introduction

In the context of global environmental change and climate change in particular, engaging the public in environmental stewardship practice is especially important to address equity, climate change, and other social and environmental issues. A Massive Open Online Courses (MOOC) on civic ecology provides an opportunity to engage individuals and communities in environmental stewardship [1] globally. Thus, Cornell University is offering a civic ecology MOOC on edX and xuetangX, and uses social media such as Facebook and WeChat as an informal discussion platform for students to share ideas and practice. The MOOC project is based on the hypothesis that social influence through networking plays a key role in forming individuals' behavior [2]. However,

little is known how students change their practice in a long term after the course and how they influence people around them to join environmental stewardship.

Online courses provide an opportunity for students exchange ideas and practices through interactions. The online interactions can be categorized into participant-content, participant-participant and participant-instructor interactions [3]. Such online interactions could lead to formation of online communication networks [4] and offline collaboration networks [5] among students. Through these interactions, communities of practice [6] may form for students to exchange information about their practices. For example, research found that environmental education professionals in an online course adapted or intend to adapt learned ideas into their environmental education practice [7], and some professionals changed their practice to some extent by the end of the course [5]. In addition to course platforms, social networking sites such as Facebook and Twitter encourage interactions among students. Research has found that such informal interactions could enhance the learning experience and provide a space to post personal feelings or reflections on learning [8]. Further, the influence of these interactions may vary depending on cultural [9] and language background [10]. Much research has focused on students' learning process and short-term outcomes. Recently research started exploring post-course development such as learning transfer beyond the course [11] and career advancement [12].

2   Research Questions

The proposed research is to examine MOOC students' environmental stewardship practice in a long term after the course and how they influence people around them to join practice in different cultural and language context. The specific research questions include: 1) How do MOOC students apply learned theoretical principles to environmental stewardship practice? 2) How do MOOC influence peers to join stewardship practice? 3) How do environmental stewardship practices differ between the US and China?

3   Methods

We propose three approaches to measure long-term impact of MOOC on students' environmental stewardship. First, we will conduct content analysis to examine students' posts and comments on course discussion board and social media (Facebook and WeChat). We will also analyze students' final project report to identify application of learned principles to their practice. Further, we will conduct social network analysis to examine students' interactive learning process on different platforms and social media, and post-course networks through which students exchange ideas and practice. Then we will conduct Simulation Investigation for Empirical Network Analysis (SIENA) to examine peer-effect [13]. Third, we will conduct surveys and interviews to examine students' environmental stewardship practice after taking the MOOC, and will monitor social media (Facebook and WeChat) after the course to investigate students' activities beyond the course. The results of the study will not only advance our knowledge of

online learning, but also help us understand how civic ecology principles work in different cultural and language contexts. Further, the study will provide strategies to engage public in environmental stewardship practice through participating in MOOCs.

4   Acknowledgements

5   References

1. Krasny, M. E., and Tidball K. G. 2015. *Civic Ecology: Adaptation and Transformation from the Ground Up.* MIT Press, Cambridge, MA, USA.
2. Friedkin, N. E., and E. C. Johnsen. 1999. Social Influence Networks and Opinion Change. *Advances in Group Processes*. 16:1-29.
3. Moore M. G. 1989. Editorial: Three Types of Interaction. *The American Journal of Distance Education* 3(2): 1-7.
4. Kellogg, S. B., Booth, S., & Oliver, K. 2014. A Social Network Perspective on Peer Supported Learning in MOOCs for educators. The International Review of Research in Open and Distributed Learning, 15(5), 263-289.
5. Li, Y. 2017. *Professional Networks and Practice Change in Environmental Education.* Doctoral Thesis. UMI Order No. 10168353. Cornell University.
6. Wenger, E. 1998. *Communities of Practice: Learning, Meaning, and Identity.* Cambridge, U.K.: Cambridge University Press.
7. Li, Y., Krasny, M. E., and Russ, A. 2016. Interactive Learning in an Urban Environmental Education Online Course, *Environmental Education Research,* 22(1), 111-128. DOI = http://dx.doi.org/10.1080/13504622.2014.989961.
8. Liu, M., McKelroy, E., Kang, J., Harron, J., & Liu, S. 2016. Examining the Use of Facebook and Twitter as an Additional Social Space in a MOOC. *American Journal of Distance Education*, *30*(1), 14-26. DOI= http://dx.doi.org/10.1080/08923647.2016.1120584.
9. Liu, Z., Brown, R., Lynch, C., Barnes, T., Baker, R., Bergner, Y., McNamara, D. 2016. MOOC Learner Behaviors by Country and Culture: An Exploratory Analysis. In *Proceedings of the 9th International Conference on Educational Data Mining, 127-134.*
10. Colas, J. F., Sloep, P. B., & Garreta-Domingo, M. 2016. The Effect of Multilingual Facilitation on Active Participation in MOOCs. *The International Review of Research in Open and Distributed Learning*, *17*(4).
11. Chen, G., Davis, D., Hauff, C., & Houben, G.J. 2016. Learning Transfer: Does It Take Place in MOOCs? An Investigation into the Uptake of Functional Programming in Practice. In *Proceedings of the Third (2016) ACM Conference on Learning@ Scale, 409-418.*
12. Wang, Y., Paquette, L., Baker, R. 2014. A Longitudinal Study on Learner Career Advancement in MOOCs. *Journal of Learning Analytics, 1(3),* 203-206.
13. Snijders, T. A. 2001. The statistical evaluation of social network dynamics. *Sociological methodology*, *31*(1), 361-395.