

Support Design for Massive Open Online Course (MOOC) Learners

-Voices from the Freshman MOOC Learners-

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The growing learner population of Massive Open Online Courses (MOOCs) indicates a large number of entry of beginners. For those novice MOOC learners, learning support is crucial. We have collected the data, informing issues and concerns that the Japanese university students experienced in their first MOOC learning. The intervention of eliminating the problems and promoting students' motivation and learning design was presented. The introductory orientation lesson was aimed to play the role of an external learning support. The effect of intervention was assessed, and the primary analysis indicated the positive effects on module completion and the students' self-study in MOOCs.

Key words: MOOCs, Learning Support, Self-Directed Learning, Orientation

INTRODUCTION

Open access nature of Massive Open Online Courses (MOOCs) allows participation of diverse learners. MOOC learners have different prerequisite knowledge and technical proficiency levels to conduct online learning using computers. In most cases, one-to-one support does not effectively fulfill the needs for massive course populations at the prompt timing, when learners face with troubles. In such online learning environments, therefore, a support system, underpinning accessible, effective, and engaging learning is crucial. Learner support is one of the key elements consisting of MOOCs in the "10 Dimensions Model" that we have proposed for MOOC design (Ichimura & Suzuki, 2017).

Looking at the current MOOCs, the existing support systems vary greatly, depending on the course providers. Furthermore, even in the same MOOC platforms, support services are unique by each course or a host institution.

In 2018, we have studied the learning experiences of MOOCs, with Japanese university students having least online learning experiences. Our research sought to key concerns of the MOOC beginners and associated with the instructional design framework, “The Five E-Model of Online Course Design” (Suzuki & Tada, 2009). The questionnaire collected the needs of MOOC beginners, particularly when and what difficulties the students experienced during their self learning. The students’ voices in the questionnaire in 2018 informed us the issues obstructed at the basic stage of MOOC learning.

The students in this study learned a MOOC provided by an outside institution, and we aimed an external learning support. In 2020, for this current study, we developed an orientation lesson, with a goal of eliminating the issues that the previous study informed. The responses to the questionnaires are under analysis. We are investigating the effect of our intervention, that attempted students’ motivation designing and leaning skills as self-directed learners. The aim of the study is to investigate 1) When and what support do MOOC beginners need? 2) Does an external orientation lesson play a role for learning support for MOOC learners? 3) If so, what does an external learning guidance lesson include? This paper reports the initial results.

Learner Support in Online Learning and MOOCs

Learning support is, in any settings whether face-to face or online, fundamentally crucial for executing tasks to achieve successful learning. In an online learning environment, learner support design is important, because learners and course providers are separated in distance (Brindeley et al, 2004). In addition, in the traditional online learning, learner support was considered as a critical component for students’ retention (McLaughlin,2002). McLaughlin (2002) suggested learning support in online learning with provision of social support. June and Hong (2014) qualitatively analyzed online learners’ comments on the open questions in the questionnaire. The researchers suggested effective and reflective support that develop and maintain learners’ motivation, reflection, and independent learning (June and Hong ,2014). Appropriate learning content promotes effective learning, with systematic support. The underlying concept of learning support seen in traditional online learning appeared to coin with MOOCs.

Research on learner support design in MOOC setting is limited in number to date. Gregori et al. (2018) pointed that MOOC leaning environment had not put major focus on learner support. According to their study, the learner retention was related to the teacher’s presence and students’ engagement before the second quarter of the course. However, even in the traditional online courses that are much smaller in size, direct support by the teacher is not always possible (McLaughlin, 2002). Jansen et al. (2020) argued, most MOOCs are more student-content interaction oriented, rather than teacher-student or student- student

interaction. Technology was viewed as the important role that the teachers had undertaken in face to face classroom (McLaughlin , 2002).

Thereby researchers addressed the importance of Self-Regulated Learning (SRL) for MOOC learners (Jansen et al., 2020). They created an intervention video, presenting the SRL model for MOOC participants. Their lessons supporting SRL were embedded in the MOOC course, rather than being located as a pre-activity prior to the course (Jansen et al., 2020). Their intervention positively affected the retention of learners.

With scale, and diversity in MOOCs, learning support should be conducted as one of the central design focuses, especially for novice learners who are starting MOOCs.

RESEARCH DESIGN & METHODS

Japanese private university freshman students, who registered introductory computer and information literacy course in the spring semester in 2018 and 2020 participated in the study. The 92 students in 2020, and prior to them, in 2018, 44 students responded to the questionnaires regarding their first MOOC learning experiences. None of the students had experiences of learning in MOOCs.

The students registered in the recommended MOOC and replied to the questionnaires. They were encouraged to take subject related MOOCs as an out of classroom optional work; therefore, MOOC learning was not mandatory after they received the in-class introduction. The initial two modules of Japanese MOOC, “Computer no Shikumi (Mechanism of Computers)”, provided by Japan Massive Open Online Education Promotion Council (JMOOC) through Fisdome platform were recommended by the instructor and completion of the modules were assessed as an additional grade. The participants were Japanese speakers; therefore, subject -related MOOC taught in Japanese during the periods of the semester was chosen. The students answered the questionnaires and reported their learning experiences after they completed each module. The questions asked general learning experiences and students’ feedback, learning support that they needed during their process of learning and students’ perceived outcome of learning. In addition, at the end of the semester, students, including those who did not study MOOC, answered the survey. A commercial online survey system was used for collecting the feedback.

The comments on the open questions were analyzed and classified in the five groups of design categories using “The Five E-Model of Online Course Design” (Suzuki & Tada, 2009). The five categories illustrated hierarchical layers, constructing quality online learning design. The model suggests the layers, from the bottom, 1) Environmental Design 2) Content Design 3) Information Design 4) Learning Design and 5) Motivation Design. Each layer is associated with the Instructional Design (ID) techniques.

PROCEDURE

In 2018, we have studied the freshman students’ MOOC learning experiences, in order to investigate when and what support MOOC beginners needed (Ichimura, Nakano & Suzuki, 2018). A brief introduction about MOOCs and the basic technical instruction were provided in the regular lesson in 2018. Prior to the

students' MOOC learning, the instructor introduced the MOOC, "Computer no Shikumi" (Mechanism of Computers), and demonstrated the course overview and the registration process on the platform. During the introduction lesson, students tried signing up and registering. After their registration, MOOC learning was students' voluntary participation. The introductory lesson in 2018 was minimized, and the students enrolled in the MOOC as almost the same condition with the regular MOOC learning beginners.

The chosen course "Computer no Shikumi (Mechanism of Computers)" and Fisdom platform equipped general description of learning process in PDF file, FAQ, Discussion boards, and progress viewer for learner support. Help link jumps to the general explanation of PDF file that is simple structure.

The excerpt comments regarding the issues when the students needed supports were classified in the Five Layers (Table 1). Troubles and confusion of the initial process were appeared in layer 1 and 3. Issues about the contents design and mismatch of the course level were addressed in layer 2 and 4. The difficulty of content and registration process affected their motivation to maintain their learning (layer 5).

The results of 2018 revealed the basic introductory issues that the beginner MOOC learners had.

Having the students' concerns on the process of MOOC learning, especially at the entry stage (Ichimura, Nakano & Suzuki, 2018), in 2020, the current study designed an orientation lesson as an intervention for students in 2020. Self-directed Learning model (Garrison, 1997), including "self-

Quality of e-Learning Model	Students Comment
Layer 5: "Engaging": Motivation Design (Maintaining motivation, self-directed, volition, ownership)	The explanation was too difficult that I lost motivation. I gave up during the registration.
Layer 4: "Effective": Learning Design (Nature of tasks, Learning support and learner needs, interaction, self-regulation)	There was no definition and explanation for the new technical languages. Verbal explanation was difficult to understand. To understand the contents, I needed to stop the lecture videos. Need more clear states of what I can gain by the course.
Layer 3: "Easy": Information Design (Usability, Navigation and Layout, Faster and accurate access to needed information, No disorientation problem)	Registration process needed repeated procedures. Email address and personal information was required repeatedly. The course was not appeared on the course search page. Each time, searching the course took time. Horizontal navigation scroll was not easy to notice.
Layer 2: "Exact": Content Design (Content accuracy, Validity of learning scope, Rational and reliable)	The contents were difficult. Instructor's explanation was based on learners' prior knowledge. The level of the quizzes was too difficult. The expression of the quizzes was not clear.
Layer 1: "Ecological": Environmental Design (Access environment, Stability of service, Feeling of security)	Troubles before actual learning, such as account registration. Confusion in login requirement between user ID and email address. I could not log in at the first attempt. The internet access was not stable at home to keep learning.

Table 1. Students' Comment in the Five-E Model of Online Course Design (Suzuki & Tada, 2009)

management (task control), self-monitoring (cognitive responsibility) and motivation (entering and task) helped our design of the intervention lesson.

Orientation as an External Learning Support

The orientation lesson aimed external learning support that aid self-directed MOOC learning, eliminating students' troubles for starting, continuing, and completing modules, informed by the 2018 results. The main topics in the orientation focused basic literacy for MOOC learning, motivation design and learning design of learners' themselves.

The main issues that emerged from the 2018 students' learning experiences were in basics at the entry of MOOCs. About 48.1% of the students answered that they had troubles and stresses at the log-in and registration stage (Ichimura, Nakano & Suzuki, 2018). In addition, the observation in the first MOOC introduction lesson informed more fundamental technical issues. Some students misused character input mode, that were associated with characteristics of Japanese character input system and key boards. Japanese learners need caution in this fundamental issue.

Intervention reinforcing the introductory computer literacy skills was designed, which was necessary for MOOC learning. In the guidance, a notice was given, using examples of errors that the previous students experienced.

Five Layers Model analysis was the base for our intervention design. Corresponding to the reported issues in Layer 2 and Layer 4 that are associated with learning contents and design, the orientation included the way how to progress their knowledge, using learning resources in MOOC itself, as well as wider internet connection. Many of the students did not explore the available resources in the platforms. The previous students' survey revealed that many of them did not use caption for video lectures, or speed control function that were available on the platform. Knowing and making full use of technological functions supporting MOOC learning was integrated. Students' comments categorized in Layer 5, Motivation Design, reported that the issues related to other layers affected continuous of their learning. Therefore, motivation support was sought in the orientation design. In addition, learning skills in the isolated open online environment will support MOOC learning.

The guidance lesson covered the concept of "Learning Design" (Suzuki & Mima, 2018) tackled by freshman themselves. Resources and activities, aimed to develop students' learning skills as a self-directed learner were integrated in the guidance. The students were to think about their learning environment and learning resources, particularly in the online settings (Suzuki & Mima, 2018). In addition to the traditional face-to-face learning communities where the students had been in, the students learned the benefit of open and sharing nature of the web. MOOCs and other online learning resources, such as Open Educational Resources, webinars, and Youtube were introduced as a reference tool for their online learning. In addition, self-direction was encouraged during the instruction of MOOC learning steps. The features and the functions of MOOC platforms were introduced with comparison between the traditional classroom settings. The MOOC guidance lesson covered how to prepare, register, learn in MOOCs, as well as the students

learned how to learn for the lifetime. The guidance was provided online, with self-learning part and a live lesson, using ZOOM.

RESULTS

This paper includes a preliminary report of the results gained in the Spring semester in 2020. After the orientation in 2020, the students' module completion rate improved. 68.5% of the students completed at least one module. Compared to 45.4% in 2018, about 23% more students completed the modules.

The feedback comments regarding the orientation were positive. Amongst the all free comments, 69.4% mentioned positive impacts of MOOCs. 19.4% expressed the willingness to learn. About 2.8 % expressed anxiety for learning. Overall, the students' reaction toward MOOCs that enables free access to the university courses worldwide illustrated their excitement for knowing new online learning resources. The excerpts of the comments were as follows:

“Getting access to courses by famous universities is an innovative system, and I would like to widen my view”. “I thought we have benefits of more learning opportunities, and I would like to register something that I find interesting”. “I felt that knowing about MOOCs broadened my horizon.”

The questionnaire asked if the students had any troubles before and during the process of learning, after they finished each module. In the result in 2018, 27.6% reported that they experienced troubles to start the course, and 40.2% reported that they had troubles before completed the modules. In 2020, after the guidance lessons were presented, the students' perceived experience was improved. 100 % replied that they could completed the module without troubles. 1 % in 2020 reported that they had troubles to start the course. The orientation helped eliminate the pain and issues. A statistical analysis of Chi-square test indicated significant difference between 2018 and 2020.

DISCUSSION

After the guidance lesson in 2020, that aimed motivation design and development of learning skills, students' module completion rate grew. The 2020 Spring semester was the time to coincide with the impact of COVID 2019. Possible third factor of high module completion in the 2020 spring semester is that their regular lessons converted online, and they stayed at home. Another consideration is that regular online lessons helped improve students' basic computer literacy skills for learning in MOOCs.

We are conducting a qualitative analysis on the students' comment that will inform more in depth.

This study assessed only one MOOC that is delivered in Japan, and the condition of MOOCs presented by other world-wide MOOC providers would be the area for further investigation.

CONCLUSION

In the reviewed paper, the past researchers recommended learning support for online learning in the relatively higher order domains, as exemplified as the notion of social support (McLaughlin, 2002). The Japanese students' voices, however, called for learning support from more fundamental levels in the very

beginning stage of learning. In the current study we designed the initial orientation lesson for MOOC learning as an external support that enables learning by students themselves. We investigated if it eliminates the students concerns, and if it supports students' module completion, even though the MOOC course design was under the same condition. We designed the lesson, including fundamental technical literacy, motivation design, and learning design of students themselves for their self-directed learning, using the Five Layers Model (Suzuki & Tada, 2009). The results indicated that the orientation lesson gave a positive impression about learning in MOOCs, and the motivation to learn. Module completion rate and the reduced number of perceived issues during their learning appear to that the orientation lesson functioned as an external support for starting, continuing, and completing MOOC learning. Technical skills training is not sufficient to sustain the MOOC beginners learning, especially if we intend to support them from outside of the institution who provides MOOCs. Motivation design and self-directed learning design would be important factors that inspire the learners who have had traditional education in the K-12 school systems. In MOOC learning, without skills of self-directed learning, students experience anxiety, frustration, and failure as Knowles stated (1975).

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