

# Students Motivation in Asynchronous Online Discussions with MOOC Mode

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**Abstract** This paper investigates on MOOC, and analyzes issues in current Extension programs, addresses the attributes of MOOC for advancing Extension, and gives current MOOC programs and future directions. The findings continue to indicate that students motivation has a significant relationship with their participation in online discussion activities at time two and time three. Students perceived process, autonomy, competence, and relatedness have different levels of impact on their online discussion behavior. The motivation for participating in online discussions was self-reported three times throughout the semester. This discussion also found that students' intrinsic motivation and their perceived value of online discussions remained at a moderate-high level over time, although the perceived value had a significant drop from the mid-point to the end of the semester.

**Keywords:** MOOC technology, asynchronous online discussion, motivation, distance learning, collaborative learning

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## 1. Introduction

Recently, a new form of technology-mediated communication, MOOC (Massive Open Online Course), has been blooming, and it has been applied in various fields for knowledge distribution. Emerging technologies, such as computers and the Internet, have affected the Cooperative Extension Service tremendously. It has a great potential for advancing Cooperative Extension Services [1,2,3].

Distance learning is a mode of delivering education and instruction, often on an individual basis, to students who are not physically present in a traditional setting such as a classroom. Distance learning provides access to learning when the source of information and the learners are separated by time and distance, or both. An asynchronous online discussion is a text-based computer-mediated communication that allows human-to-human interaction without time and location constraints. Research suggests that asynchronous online discussions have many positive impacts on distance learning [4,5]. Online discussions enable convenient interactions among learners and instructors.

One factor that has been suggested as a predictor of success in distance learning is the level of students' technical skills, while other studies were unable to find a relationship between students' technical skills and success or participation levels in online courses [6,7,8,9]. Attitude toward online classes also has been linked to the use of online discussions and a sense of community students feel. Distance education courses that require a physical on-site

presence for any reason (including taking examinations) have been referred to as hybrid or blended courses of study. MOOCs aimed at large-scale interactive participation and open access via the web or other network technologies, are a recent development in distance education [10,11,12].

Although the expansion of the Internet blurs the boundaries, distance education technologies are divided into two modes of delivery: synchronous learning and asynchronous learning. These factors are encompassed in Intrinsic It discusses the affective and social issues in online learning environments and point out the importance of understanding the nature of students' motivation in participating in online discussions.

Similarly, in asynchronous learning, participants access course materials flexibly on their own schedules. Students are not required to be together at the same time. Mail correspondence, which is the oldest form of distance education, is an asynchronous delivery technology, as are message board forums, e-mail, video and audio recordings, print materials, voicemail, and fax. As noted earlier, attitude toward the class and confidence in technology skills is related to participation in online discussions [13]. These different MooC findings suggest a possible link between motivation and students' attitude toward a class and the confidence they have in their technical skills. Distance education can also provide a broader method of communication within the realm of education. With the many tools and programs that technological advancements have to offer, communication appears to increase in distance education amongst students and their professors, as well as students and their classmates [14,15,16].

## 2. Technology Motivation and Self-Determination with Previous Research

The distance educational increase in communication, particularly communication amongst students and their classmates, is an improvement that has been made to provide distance education students with as many of the opportunities as possible as they would receive in in-person education [17,18,19]. Intrinsic motivation emerges spontaneously from internal tendencies and can motivate behavior even without the aid of extrinsic rewards or environmental controls. Motivation refers to the incentive or energy that drives an individual to take an action. The high cost of education affects students in higher education, to which distance education may be an alternative in order to provide some relief. Distance education has been a more cost-effective form of learning, and can sometimes save students a significant amount of money as opposed to traditional education [20]. Distance education may be able to help to save students a considerable amount financially by removing the cost of transportation.

### 2.1. High Intrinsic Motivation

Students with high intrinsic motivation might demonstrate greater persistence, better ability to cope with failure, more positive self-perceptions, and higher quality task engagement [21]. Furthermore, In addition, distance education may be able to save students from the economic burden of high-priced course textbooks. Many textbooks are now available as electronic textbooks, known as e-textbooks, which can offer digital textbooks for a reduced price in comparison to traditional textbooks.

The DETC was established in 1926 as the National Home Study Council (NHSC), a trade association for correspondence schools. Its formation was in response to a Carnegie Corporation study that found a lack of standards to ensure quality in correspondence schools and protect their students and the public from fraud. Under its first director, John Noffsinger, the NHSC developed a list of minimum standards for proprietary schools. The NHSC adopted its current name in 1994. Perceived value is the degree to which a person believes that using a particular information system would enhance their learning or task performance. It directly impacts not only a person's interactivity in online communication, but also his/her motivation toward using an information technology. It is suggested that perceived value is one of the major determinants of users' motivation to accept and use a technology [22]. Research suggests that internalization and integration of values and behavioral regulations are the processes through which a student's motivation orientation can be shifted from extrinsic to intrinsic. Self-Determination Theory (SDT) identifies three innate psychological needs of intrinsic motivation – autonomy, competence, and relatedness. In online courses, autonomy should not be confused with social presence or isolation. The need for autonomy refers to the desire individuals have to determine their own behavior and be free to behave of their own volition. Online courses tend to increase students' sense of autonomy.

The need for competence refers to individuals needing to feel successful in their attempts to understand and master their environment. This concept of competence can

be extended to not only technically understanding how to participate in an online discussion, but also feeling successful in what is contributed to the discussion. Competence also extends beyond online discussion contributions to competence with the curriculum. The need for relatedness refers to individuals needing to relate to others in ways that reinforce their feelings of emotional security and belonging. Distance Learning may also offer a final opportunity for adolescences that are no longer permitted in the General Education population due to behavior disorders. Instead of these students having no other academic opportunities, they may continue their education from their homes and earn their diplomas, offering them another chance to be an integral part of society. They also investigated the trends and change of students' motivation over time. The research sample involved a total of 100 undergraduate students from different sections of a traditional face-to-face lecture-based instructional technology course.

The students participated in online discussions as a normal part of their classes. The purpose for the inclusion of the online discussions in that course was to extend collaborative learning beyond traditional classrooms. The results showed that students' participation was related to their intrinsic motivation. The interviews indicated that students' motivation was impacted by the instructor's involvement, interaction with peers, discussion topics, course requirements, and system functions. Over time, students' intrinsic motivation for participating in online discussions dropped steadily.

### 2.2. Barriers to Effective Distance Education under Questions

Barriers to effective distance education include obstacles such as domestic distractions and unreliable technology, as well as students' program costs, adequate contact with teachers and support services, and a need for more experience. Research suggests that students' motivation is especially important for learning activities in online classes as compared to face-to-face settings. It is found that academic motivation influences the type of contributions that students make to online interaction discourses. Highly intrinsically motivated students became central and prominent contributors while extrinsically motivated learners had limited responses in cognitive discourses. However, little research has considered the time factor when investigating the relationships between motivation and online discussion participation in a fully delivered online context.

The current study investigated the relationship between students' intrinsic motivation and their behavior in participating in online discussion activities, tracked students' motivation to reveal the pattern of changes in students' motivation during the course of online discussion, and identified factors that impacted students' motivation in online discussion activities. The results of a study of Washington state community college students showed that distance learning students tended to drop out more often than their traditional counterparts due to difficulties in language, time management, and study skills. We believe the findings of the current study may provide valuable guidelines for supporting effective online discussion activities in distance learning classes. The following research questions guided this study:

1. Are there relationships between motivation and students' participation in online discussions, attitude towards the class?
2. What factors impact students' motivation toward online discussions?
3. How does students' motivation toward online discussions change over time?

### 3. Proposed Method

Not all courses required to complete a degree may be offered online. Health care profession programs in particular, require some sort of patient interaction through field work before a student may graduate. The quantitative approach involved repeated measures to track students' motivation throughout the semester and correlation analyses among variables of intrinsic motivation and online discussion participation. Early proponents of Massive Open Online Courses (MOOC) s saw them as just the type of experiment that Barwick had pointed out was lacking in higher education, although Barwick himself has never advocated for MOOCs.

#### 3.1. What is MOOC

A Massive Open Online Course is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help build a community for students, professors, and teaching assistants (TAs). MOOCs are a recent development in distance education.

#### 3.2. Participants and Instructional Context

The Council for Higher Education Accreditation (CHEA) offered an opinion in a November 2000 statement that, Institutions and accreditors need to assure that transfer decisions are not made solely on the source of accreditation of a sending program or institution. The study participants included 20 graduate and 36 undergraduate students (N=56) from four sections of a mixed level online course offered in the College of Education at a large Southeastern University. The sample included 22 males and 34 females. Their age ranged from 20 to 48.

Early proponents of Massive Open Online Courses (MOOC) s saw them as just the type of experiment that Barwick had pointed out was lacking in higher education, although Barwick himself has never advocated for MOOCs. The title of the course was "Integrating Technology for Meaningful Learning." The course was designed to introduce students to different means of integrating technology into the K-12 classroom curriculum. Participation in online discussions was a significant portion of the class and accounted for 30% of students' final grade in the course.

Online discussions were primarily moderated by the students with occasional discussions led by the instructor. All student-moderated discussions were designed to last one week. The instructor followed the institution's academic calendar and when there were shortened weeks due to holiday's the instructor led discussions during those weeks. The first two weeks of the course were built

around students becoming familiar with the course structure and an ice-breaker activity. There were ten student-led discussions related to topics selected by the instructor. Distance e-Learning combines the strengths and advantages of Distance Education and e-Learning. The Distance Education model has its traditional focus on content delivery or correspondence, and emphasis on independent learning. Distance e-Learning has its roots on computer conferencing and collaborative constructivist learning approach; it encourages collaboration in an interactive learning environment.

#### 3.4. Data Collection

The participants in this study were asked to complete survey questionnaires measuring demographic information, attitude toward the class and the instructor, and intrinsic motivation related to participating in online discussions. In order to track students' motivation, the same motivation questionnaire was given to the participants three times: at the beginning, the mid-point, and the end of the course. A subset of students who showed consistently high or low in their level of motivation was interviewed to discuss the factors related to their motivation in online discussion activities. The instructor of these classes was interviewed at the end of the semester. Students' participation data, the number of messages posted were recorded by the course management system.

### 4. Correlation Analyses

To reveal the relationship among the intrinsic motivation variables, the students' participation variables, the attitude variables and the confidence variables, we conducted a series of correlation analyses. In the correlation matrix, none of the intrinsic motivation variables were significantly correlated with the number of messages posted for time 1. However, for time 2, the enjoyment scores, the value scores, the perceived competence scores, and relatedness scores were significantly correlated with the number of messages posted. For time 3, the enjoyment scores, the value scores, and the perceived competence scores were significantly correlated with the number of messages posted.

Educational Technology relies on a broad definition of the word "technology." Technology can refer to material objects of use to humanity, such as machines or hardware, but it can also encompass broader themes, including systems, methods of organization, and techniques. Technology confidence was significantly correlated with competence over time, and was correlated with value for time 3. No significant correlations were found between students' technology confidence and any other variables of interest. The DETC has strict criteria for approving schools for accreditation, and the process includes examining the schools' educational, ethical, and business practices.

#### 4.1. Changes in Intrinsic Motivation

Five repeated measures MOOCs were conducted on the five intrinsic motivation sub-scores in order to examine the changes in students' intrinsic motivation variables. The results for enjoyment indicated no significant changes

over time. Means indicated that enjoyment scores remained moderately high throughout the semester ( $M = 5.12$  at time 1,  $M = 4.82$  at time 2, and  $M = 4.64$  at time 3). The results for autonomy indicated no significant changes over time. Means indicated that autonomy scores remained moderately low through the semester ( $M = 3.68$  at time 1,  $M = 3.68$  at time 2, and  $M = 3.48$  at time 3). The results for perceived competence indicated no significant changes over time. Means indicated that competence scores remained moderately high through the semester ( $M = 5.04$  at time 1,  $M = 5.07$  at time 2, and  $M = 5.11$  at time 3).

Technology in education is most simply and comfortably defined as an array of tools that might prove helpful in advancing student learning and may be measured on how and why individuals behave. The results for value indicated a significant difference across time [Wilk's Lambda = .66;  $F(2, 54) = 5.45$ ;  $p < .05$ ]. Means indicated value scores fell steadily across time ( $M = 5.66$  at time 1,  $M = 5.61$  at time 2, and  $M = 5.14$  at time 3). A follow-up ANOVA revealed value scores between time 2 and time 3 were significantly different [ $F(1, 55) = 11.03$ ;  $p < .01$ ], but no significant difference was revealed on value scores between time 1 and time 2. The results for relatedness indicated a significant difference across time [Wilk's Lambda = .68;  $F(2, 54) = 4.94$ ;  $p < .05$ ]. Means indicated value scores fell steadily across time ( $M = 4.73$  at time 1,  $M = 4.21$  at time 2, and  $M = 4.06$  at time 3). A follow-up ANOVA revealed relatedness scores between time 1 and time 2 were significantly different [ $F(1, 55) = 11.03$ ;  $p < .01$ ], but no significant difference was revealed on relatedness scores between time 2 and time 3.

## 4.2. Current Issues in Cooperative MooC Extension

Principles stated by Burns on adult learning are similar to those in Extension education. The learning process of Extension clientele is more self-directed compared to that of students in classroom settings. Extension clientele normally have established a certain level of expertise related to their previous learning and professional experience. They are aware of the deficiency in their knowledge and learn to compensate through problem-solving experience. Often when an Extension client encounters a problem beyond his or her expertise level, he or she seeks Extension associates for support through individual visits, telephone, or email communications. In addition, many Extension clients attend professional events organized by Extension institutions, including field days, demonstrations, seminars, workshops, and short courses, to keep their knowledge up-to-date.

However, there are some potential limitations existing in the traditional methods used in Extension. A list of potential problems follows.

1. Tradition Extension activities involve direct contacts between Extension associates and clients, which require both to be at the same time (e.g., phone conversation) and/or at the same place (e.g., field days, demonstrations, seminars, workshops). Those who cannot attend these activities may lose opportunities to learn.

2. Attending Extension activities demands high investments of cost and time on travel for both Extension associates and clients. Moreover, travel and outdoor events can be easily affected by inclement weathers.

3. Due to the fact that Extension is an inquiry-based service, Extension associates often need to deal with the same problems repeatedly from different clients. Duplicated presentations and deliveries of the same information may lead to inefficiencies.

4. Extension relies on individual associates' expertise. When an Extension associate retires or leaves the position, his or her expertise may become unavailable.

5. When dealing with emergency problems, Extension clients do not often have access to "First Aid" instead of direct contact with Extension associates.

6. Because direct contact with clientele is inevitable in Extension, the efficacy of Extension can be influenced by "human" factors (e.g., personality and communication skills).

## 4.3. MOOC for Advancing Extension

By combining the power of radio broadcast and Internet, MOOC has some unique attributes that make it popular for knowledge distribution. It has a strong potential to be used for advancing Extension.

First, MOOC brings flexibility and mobility. Instead of having to be present at a certain time and/or at a designated place, Extension associates can publish their demonstrations, seminars, or workshops through MOOCs. Extension clients can download these MOOCs on their computers and mobile devices to enjoy these contents at any time and at any place. Extension associates and/or clients would not have to spend hours driving to a physical location for an event. Also, these events will less likely to be constrained by weather conditions. On the other hand, the mobility of MOOC extends Extension beyond the traditional Extension networks. Extension clients will be able to listen to their favorite MOOCs in their car, at an airport, or even at their farms.

Second, by adding different episodes into their MOOC collections, Extension clients can build a knowledge library related to their professional area. Moreover, these MOOC resources can help sustain Extension expertise and make them independent of individual Extension associates. Therefore, even if an Extension associate leaves or retires from the position, his or her expertise will still reside in the MOOC library from which Extension clients can seek help.

Third, although direct contact with clients is encouraged in Extension, MOOC, on the other hand, maximizes the efficiency and accuracy of Extension by bringing an alternative communication channel, which could reduce the risk of sabotage from bad communication skills.

In addition, setting up a MOOC station or receiving a MOOC is very simple. Virtually anyone with a personal computer and an Internet connection can produce a MOOC. Moreover, most Extension services have an IT support department. Therefore, integrating MOOC programs in Extension should not present insurmountable technical challenges to Extension associates.

## 4.4. Students' Interviews

Ten students agreed to have interviews with the researchers. Among them, there were 7 students who showed a consistently high or moderately high level of motivation (intrinsic motivation  $\geq 5.0$  at three time periods) in their self-reports, and 3 students who showed a

consistently low or moderately low level of motivation. Some modern tools include but are not limited to overhead projectors, laptop computers, and calculators. Newer tools such as smartphones and games (both online and offline) are beginning to draw serious attention for their learning potential.

**Students with high motivation reflected:** First, they were very clear of the requirements and assignments for the online discussion activities in their class. Second, they liked the opportunity to learn from and with their peers. Students appeared to appreciate the different viewpoints and experiences shared in the online discussions. "MooC was easy and enjoyable because I was learning not just from myself, but from the other entries that everyone else was putting on there." When students were in the role of discussion moderators, they identified the participation of their peers as motivating. In addition, they mentioned that having discussion participation as a component of their grade was an important factor that motivated them to participate, but they stressed that being graded was not the only important factor for their motivation. They also cited difficulties with time constraints, however, it seems they developed time management skills over time. One student mentioned, "At the beginning, MooC was just learning how to manage my time; that was the biggest thing." They liked the instructor and the topics covered in the class and appreciated the instructor's presence in the online discussions.

**Students with low motivation reflected:** First, According to some, an Educational Technologist is someone who transforms basic educational and psychological research into an evidence-based applied science of learning or instruction. "I really don't feel like I'm getting anything out of the discussion. I can listen to what everybody else has to say, but I still have to refer back to the book for a lot of things." They also felt they were forced to participate in the online discussion activity because it was a component of their grade. "I felt I have to do it because I want to get a good score in this class." Thirdly, they were confused about the course requirements and assignments. "I really didn't read through the syllabus like I should. I am sorry!" Furthermore, they felt they didn't have time for the discussions. "I have other things on my mind trying to do, I am not interested in the discussion."

## 5. Discussion

Now that big companies such as Google, Verizon, and Microsoft are funding schools to have the ability to teach their students through technology it is becoming easier to keep the students attention. This can help not only our students but also help us Americans as we are currently ranked 25th in math and 21st in science. The purpose of this study was to investigate the relationship between students' intrinsic motivation and their participation in online discussions. The results indicated there was no relationship between students' intrinsic motivation and their participation in online discussions at the initial stage of the classes. However, the relationship between motivation and participation became stronger and significant as the classes progressed over time. It seems to indicate that students' motivation was related to their online

participation, but the relationships need time in order to be established.

An interesting caveat to this was that the perceived value of the discussions significantly dropped between the mid-point of the course and the end of the course. Since value was correlated with level of participation and with attitude toward the course, the drop in perceived value was an interesting finding. The perceived drop in value would imply that there was a corresponding drop in the level of participation. The drop in value also would imply a decrease in attitude toward the course. Possible explanations for the decline in perceived value might be attributable to the design of the course. The instructor believed that a consistent course structure and format would allow students to increase their comfort level with the course. Therefore, he designed this course with similar format of class activities, assignments, and projects throughout the semester, instead of having final projects and exams at the end of semester. This consistent structure might have eased students' feeling of heavy workload at the end of the semester, but on the other hand it also contributed to potential boredom with the course design. It is a dichotomy that would be an interesting topic for further research. The relationship and interaction between the factors of perceived value, participation, and attitude need to be studied further.

Competence also revealed a strong correlation with participation and attitude toward the course. Competence was also moderately to strongly correlated with technology confidence and course attitude. This correlation suggests that when students feel competent in their ability to participate in the online discussions they also have confidence in their technological abilities, have more positive attitudes about the course, and tend to be more active participants in the online discussions.

The results indicated the correlation between perceived relatedness with peers and their participation was only moderately significant at the mid-point of the course. Cognitive science has changed the way educators view learning. Since the very early beginning of the Cognitive Revolution of the 1960s and 1970s, learning theory has undergone a great deal of change. Much of the empirical framework of Behaviorism was retained even though a new paradigm had begun. Cognitive theories look beyond behavior to explain brain-based learning. Cognitivists consider how human memory works to promote learning. Constructivist learning environments require students to use their prior knowledge and experiences to formulate new, related, and/or adaptive concepts in learning.

One possible explanation to the change in relatedness from the beginning to the middle of the class might be associated with how the instructor began the class. The moderately low perceived autonomy indicated that students did not believe their participation in the discussions was self-determined, instead, there was some extrinsic drive introduced to the students. Under this framework the role of the teacher becomes that of a facilitator, providing guidance so that learners can construct their own knowledge. Constructivist educators must make sure that the prior learning experiences are appropriate and related to the concepts being taught. However, the correlation matrix specified the perceived autonomy was not significantly correlated with online discussion participation, technology confidence, or course

attitude variables. Therefore, the extrinsic drive introduced by the course grade might have been a good trade-off.

Educational technology is intended to improve education for the 21st century learner. Students today are considered Digital Natives who were born and raised in a digital environment and inherently think different because of this exposure to technology. However, there were still students who perceived the online discussion activities were not enjoyable and did not believe they added any contributing value to their learning. Accreditation of higher education varies by jurisdiction and may be focused on either or both the institution or the individual programs of study.

These findings suggest that students' perceptions of enjoyment, value, competence, and relatedness are related to students' participation in and attitude towards the course. In the majority of States, institutions of higher education are autonomous, taking their own decisions on the admission of foreign students and the exemption of parts of courses of study programmes that students may be granted on the basis of education undertaken abroad. As a result, most MooCs do not take a decision, but offer on request information and advice on foreign education systems and qualifications. Further research into the role time plays and more detailed characteristics of online discussions over time will provide more insight into the interaction of these variables.

The results indicated declining student perceptions over time. Future research should focus on identifying characteristics of online discussions related to enjoyment, value, and relatedness. The strengthening relationship between these motivational factors and student participation and course attitude, suggests that not only should characteristics of online discussions be identified, but also course design and teaching techniques related to participation in online discussions. Since perceived competence was found to be related to participation, providing opportunities for students to have success with the online discussions and online environment early in the course should enhance students' perceived level of competence. For online instructors this study provides insight and guidance for online discussions. While linking online discussions with grades was seen as an extrinsic motivator it also appears that it served as a good means of initiating discussion participation.

## 6. Conclusion

Online discussions continue to be a learning tool used in online classes and the insights provided in this study will contribute to the knowledge base of factors related to student participation. One limitation is that the research samples of this study were from an instructional technology course where the course content of "technology integration for learning and teaching" might have had some influence on students' motivation and their participation rate. Educational technology provides the means to focus on active student participation and to present differentiated questioning strategies. Overall, the use of internet in education has had a positive impact on students, educators, as well as the educational system as a whole. Effective technologies use many evidence-based strategies (e.g., adaptive content, frequent testing, immediate feedback, etc.), as do effective teachers. Future

research should examine students' motivation and their online engagement in different instructional contexts in order to draw broader implications for distance education.

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