

An Analysis of Students' Questions in MOOCs Forums

Meng Cao

School of Psychology, Central China
Normal University, Wuhan, 430079
caomeng@mails.ccn.edu.cn

Yun Tang

School of Psychology, Central China
Normal University, Wuhan, 430079
tangyun@mail.ccn.edu.cn

Xiangen Hu

School of Psychology, Central China
Normal University, Wuhan, 430079
xiangenu@mail.ccn.edu.cn

ABSTRACT

When learners become frustrated or confused, they can ask for help by posing questions in MOOCs forums. Students' questions reveal their needs and learning problems. If not answered timely and effectively, they may drop out. In the present study, students' questions from one Chinese MOOCs forum were collected and classified. Results showed that most of the posts in the forum were questions and the quantity of questions decreased over time although in some weeks the number of questions increased. Different types of questions have their own variation characteristics which means that the instructors need to focus on certain types of questions in the corresponding period.

Keywords

Student questions, MOOCs forum, classification, time-variation.

1. INTRODUCTION

Educators think highly of students' question asking. Questions posed by students can reflect active learning, knowledge construction, curiosity and the depth of the learning process [1]. Through analysis of these questions, instructors can better understand a student's thinking, so as to make more targeted teaching decisions [2]. Besides, students' questioning asking has association with their achievement. Learners with good performance behave better in the frequency or quality of questioning [3][4]. Thus, Teachers can also assess students learning based on their questions.

Researchers have investigated students' questioning behavior in a variety of educational settings, such as classroom, tutoring, online learning environments[1]. MOOCs allow students to pose their questions in a forum format and then wait for their questions to be answered by instructors and peer students. This online learning mode and asynchronous discussion pattern influences students' questioning behavior. Students may pose different kinds of questions at any time and at any place anonymously. The present study investigated students' questioning behaviors in the MOOCs forums including the quantity, classification and variations over time. According to previous research and forum data, we first establish standards to screen question posts, then classify and count the quantity of them, and finally observe the variation in the entire course.

2. DATA AND ANALYSIS

2.1 Platform and Data

We analyzed a forum of the course *The Introduction to Psychology* on the Chinese MOOCs platform XuetangX, which was launched in October 2013. This course has been opened for several sessions and has a large enrollment with tens of thousands learners. We chose the data for the 2015 Spring Session as it had the largest number of posts in the forum, starting from March 4th to September 15th. The whole course had 12-week lectures and two exams. The mid-term test took place between the 10th week and the 12th week. The final exam period ran from the 15th to 16th week. All the data came from www.kddcup2015.com and www.xuetangx.com.

2.2 Question Selection and Classification

First, we selected question posts from all the data. We regarded the question mark in the sentence as a marker feature. Some modal words and question words were also taken into consideration, such as “是不是 (whether or not)”, “什么 (what)”, “怎么 (how)”, “为什么 (why)”. And there are some fixed expression of questions, such as “我不懂 (I do not know)”, “我很困惑/疑惑 (I am confused)”[4]. Two researchers labeled the posts separately, then compared and made an agreement on the differences. The inter-rater agreement was 86% (representing agreement on 880 items out of 1029 opportunities for agreement multiplied by 100).

After filtering posts, a taxonomy of the questions was created based on Brinton's[5] classification on MOOCs discussion threads and question posts in the forum, including five categories: (1) Course management questions, relating to course design, time arrangement, learning resources, etc.; (2) Course content questions, involving learner's understanding of the learning materials or exercises; (3) Interaction questions, where learners ask and exchange experiences, learning methods and emotions; (4) Platform operation questions, students encounter when operating the platform; (5) Other, including vague expression and irrelevant questions. Two researchers classified the question posts separately and then reached an agreement. The inter-rater agreement was 82% (representing agreement on 613 items out of 751 opportunities for agreement multiplied by 100).

We calculated the total amount of students' question posts, the distribution of different classifications and different types of question variation over the weeks of the course.

3. RESULTS

3.1 The Quantity of Students' Question Posing

In the forum, 1002 people participated in the discussion, accounting for only 3 per cent of the total registers. Among them, 569 students posed 1029 posts, getting 3165 replies, which means that the average reply per post is 3.1. Two researchers screened 751 question posts, accounted for about 73% of the total posts,

indicating that learners' main activity in the MOOCs forum was question asking and answering. Figure 1 shows the quantity of students' questions over the course weeks. The number of posts decreased in general with a few fluctuations.

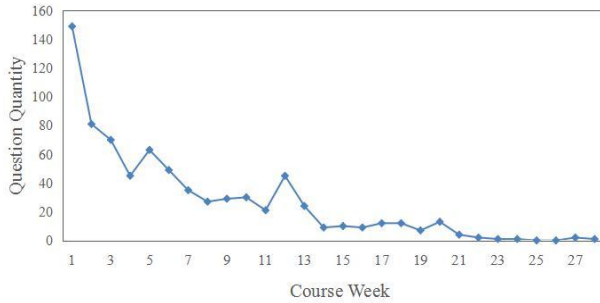


Figure 1: The quantity of students' questions over course weeks

3.2 The Distribution of Five Categories

Table 1 shows the amounts and proportions of five categories, as well as number of replies and average reply per question on each category. The quantity of course management questions are the most while course content questions are only the second. This may due to instructors' low participation in the forum. In the whole course, only some community assistants and administrators posed a limited number of posts and answers. However, course management questions and platform operation questions mainly rely on instructors' answers. As for the course content questions and interaction questions, they can be answered by both instructors and peer learners. Without prompt and proper replies, the first and fourth kinds of questions will be repeatedly asked. So the average reply of them are lower than course content questions and interaction questions.

Table 1. The quantity of questions and their replies

Question type	Quantity	Proportion of the total questions	Replies	Average reply per question
Course management questions	334	44.5%	827	2.5
Course content questions	248	33.0%	875	3.5
Interaction questions	49	6.5%	218	4.4
Platform operation questions	111	14.8%	274	2.5
Others	9	1.2%	20	2.2

3.3 The Time-variation of Three Categories

As only a very small number of questions belong to the third and fifth category, we removed them from further analysis and calculated the quantity of the other three categories by course week. Figure 2 shows the relationship between course weeks and question quantity, suggesting a decreasing trend for all the types of questions. However, each type also has its specific characteristics. Course management questions existed throughout the course, because learners will generate a series of questions on

textbook, exam, and certificate from start to end. At some time, these questions increased significantly. In contrast, course content questions disappear after the lectures are over. Questions mainly emerge in certain chapters. As to the platform operation questions, the proportion is lower while students may encounter more problems in some weeks on the practice submission.

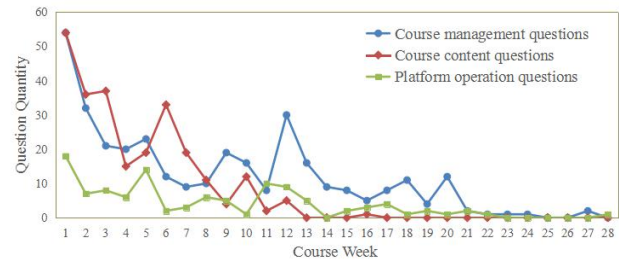


Figure 2: Question quantity of three categories in every course week

To summarize, through the analysis of students' questions in the forum, we can learn the patterns of their questioning behavior and in turn improve instructions in MOOCs. Instructors need to focus on certain kind of questions during different periods and provide appropriate guidance and answers. Course management questions and platform operation questions will influence learners' learning progress, so instructors should clearly describe details of course arrangement to avoid misunderstanding and confusion. When platform errors occur, they need to solve the problem as quickly as possible or give suggestions to learners. As to the course content questions, even without instructors' replies, learners and peers will try to discuss and find answers by themselves. So the main task of instructors are guiding their discussion and giving answers at the proper time.

The current study is part of a larger project studying the long-term impact of question asking/answering in MOOCs. We expect a significant relation between student's completion rate and the way students questioning/answering behaviors. Further study will be reported in the future.

4. REFERENCES

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