

# Recommendation of New Questions in Online Student Communities

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Community question answering (CQA) systems are successfully used on the open Web and in enterprise environments. There is an opportunity for the CQA systems to help students in the online learning communities as well. Boom in MOOCs in recent years have caused that quality education is now easily accessible online for everybody with an internet connection. The idea of MOOCs is to provide university-like education with open access via the web. For every online course within MOOCs domain, thousands of people all around the world are associated into huge and diverse online learning communities. Every online courses provides built-in or external social tools for collaboration of the student's, e.g. discussion board, chat or social network groups.

Question routing represents one type of approach that gain an interest in the CQA systems research in the recent years. Question routing refers to recommendation of new questions to best potential answerers in order to prevent new question of being unanswered for a long time. Previous research in question routing in CQA systems indicates promising results in increasing number of questions answered in a shorter time and in an engagement of larger part of the community in the question answering process.

In contrast to traditional CQA systems, students in educational community are learning about the particular topic throughout the course and therefore they are not experts in the particular field yet. It is essential in educational domain to support whole community of students to ask, answer and discuss about the problems and thus support their learning. While the traditional CQA systems stressed the importance of the question and answer quality, it is not critical part for CQA systems in educational domain. Vital issue of educational domain is limited students' time for contribution. Matching of students' interest and expertise also plays an important role. Existing collaboration support mechanism in MOOCs shows that they are productive for learning and they gain promising results in decreasing dropout rate in MOOCs. Based on the success of question routing in CQA systems, we are going to apply it as a collaboration support tool to the educational domain.

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From the analysis of question routing in CQA systems, we are inspired by work of [1] as they applied question routing in another specific domain – enterprise environment. Moreover, they engage both experts and inactive users and try to involve whole community in question answering. The paper of [2] represents a unique framework that takes into account constraints that appear naturally in education domain.

Our goal is to propose question routing focused on answerers' preferences and to effectively utilize the knowledge of student community in question answering. Our contribution is question routing specifically designed for educational domain, which consider specifics and constraints of the domain. First constraint is students limited work capacity, their restricted time for participation in question answering. Second constraint is various level of expertise of students, because they are continuously learning throughout the time about related topics of the course. Our main objective is by effective utilization of community knowledge increase the number of questions answered.

Our proposed method is focused on the answerers, so it will be recommending questions that match their interest and level of expertise. Furthermore, open questions will be routed to students capable of answering them while majority of the community will be involved in question answering based on the question difficulty. We plan to use so called knowledge gap phenomenon [3] (i.e. expert users tend to ask more difficult questions while the opposite is true for less experienced users) for question difficulty estimation.

As our baseline, we are going to use asker oriented question routing based on user expertise which is very popular for CQA system. Our goal is to evaluate the method offline, fine tune the parameters and validate our method. Next step, which is the vital part of our work, is to conduct an online experiment in the EdX platform, one of the most well-known MOOCs provider.

## References

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