How do we harness the scale and diversity of an online class?

While massive online classes present students new opportunities, they also remove opportunities for personal interaction. Students almost never interact with the instructor or TAs, and interactions with other students are limited to class forums. With such limited interaction, is it possible to teach the millions of students in an online class as well as the students in a traditional, physical classroom? Is it possible to teach them *better?*

We believe this is possible, and that the key to this answer lies in the network of peers in these courses. Staff effort is difficult (and expensive) to scale, so practices that rely heavily on teachers such as individual mentoring, feedback, and attention will not be successful online. On the other hand, students in online classrooms, with their unparalleled diversity and geographical spread, may well comprise the greatest collection of peers imaginable. Below, we describe some of our work and the questions they raise. Collectively, tens of thousands of students have used these systems so far.

Structured peer interactions provide efficient feedback, critique, and learning

Our research led to the creation of Coursera's peer-assessment platform, and enabled classes to use open-ended assignments such as essays and user interface designs. Students in a wide variety of areas, such as Human-computer Interaction (our pilot class), Fantasy and Science Fiction, and Child Nutrition have relied on this platform for feedback and critique on their work, and for inspiration and reflection [1]

Technological mediation enables allows systematic improvements that are both algorithmic and human-centered. Our follow-on work uses machine grading to scaffold and allocate peer effort while assessing. In addition, because people are good at identifying important features, such as whether an essay is well-structured, or has grammatical errors, but not at combining features into an overall assessment of goodness. Therefore, our new system combines identified features automatically. We are currently investigating other opportunities, such as providing contextual help so students can write more helpful reviews, and showing students examples of better work to inspire them, that we would like to discuss in this workshop.

Discussions with a globally distributed peer group amplify learning

Discussion and interaction among peers are central to learning in the classroom. An online classroom represents incredible diversity, and enables discussions hard to replicate in offline classrooms. Our Talkabout system (https://talkabout.stanford.edu) organizes students into video discussion groups and allows instructors to determine group composition and discussion content. Students pick a discussion time that suits their schedule. Then, the system groups them into small video discussions with gender or geographic balance. Students have used talkabout to discuss topics ranging from prejudice to organizational theory. Talkabout discussions are diverse: in one course, the median six-person discussion group had students from four different countries. Students in more geographically distributed groups also scored higher on the final, suggesting that distributed discussions have educational value.

More than 3000 students (including stay-at-home parents, rural students and students with limited physical mobility) have braved bandwidth limitations (and a research system) to connect with classmates they've never seen before. At the workshop, we'd like to discuss how we can leverage this hunger to interact with peers to create a richer (not simply enlarged) role for peer processes. If we view massive online classes as not simply an aggregation of interactions between students and teachers, but as a new socio-technical system that is defined by peer interactions, how can we create a more human and collaborative learning society?

References

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