Community TAs Scale High-Touch Learning, Provide Student-Staff Brokering, and Build Esprit de Corps

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ABSTRACT
Massive online courses introduced Community TAs (CTAs) to help scale teaching staff support. CTAs are former top students who return as volunteer course staff. We studied CTAs in 3 classes on Coursera, including interviews and surveys from a Human-Computer Interaction (HCI) class. A key benefit of CTAs is their brokering role that mediates staff and student goals. CTAs provide greater discussion forum coverage (both in quantity and time of day) compared to instructor and Head TA (HTA) capabilities and contribute to peer assessment. As CTAs are new teachers, physically distributed, and culturally diverse, clear division of responsibilities is especially important.

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TEACHING ASSISTANTS ON-LAND AND ONLINE
Higher education instructors often enlist graduate students to serve as teaching assistants for their courses. Common TA duties include answering student questions, grading homework assignments, and leading weekly discussion sessions. TA support benefits all parties: instructors benefit from reduced workload, graduate students receive apprenticeship training as teachers, and students gain increased comfort in asking questions and admitting a lack of understanding to a fellow student [4]. More staff also allow smaller discussion sections and increased office hours.

To help make high-touch, free online education sustainable, some courses recruit former students to return as volunteer TAs. These Community TAs (or "World TAs) were first used online in Fox and Patterson's *Software as a Service* class [3]. On Coursera, more than 45 classes have CTAs. Two factors that differentiate this role from a traditional TA role is their association as a recent student of the course

(designated by the "Community" in their title) and the volunteer basis for their assistance. What motivates CTA participation, and what are their and students' experiences? We report on CTA experiences in 3 Coursera classes, focusing on the *Human-Computer Interaction (HCI)* class.

Prior work found that students perceive volunteer teachers as showing greater enjoyment, enthusiasm, and innovation than paid teachers [6]. Students in a lesson with volunteer teachers enjoyed it more, reported a more positive mood, were more interested in future learning, and showed greater exploratory activity than those in the paid condition [6]. If online students perceive CTAs as volunteer teachers, we may see similar benefits, particularly in a design course that encourages exploration.

Some university classes recruit former students to provide course assistance as an alternative or addition to graduate TAs. Roberts *et al*. report that undergraduate section leaders develop better rapport with students (from closer proximity in position), better familiarity with the curriculum than graduate students, and increase personal understanding of the course concepts, while also generating esprit de corps and valuable social networks [5]. Undergraduates can provide more 1:1 student help at less cost than graduate TAs. We hypothesize that volunteer CTAs yield similar benefits for the same reasons of having recently been in students' shoes. CTAs can play a valuable brokering role [2], using their dual student/teacher perspective and rapport.

Recruited for Performance; Motivated by Learning
For HCI's Fall 2012 session, the Head TA (HTA) recruited community assistants based on their course performance on and forum participation. The HTA was a graduate student collocated with the instructor. She assessed candidates on both quantity and quality of posts, emphasizing comments showing positive reinforcement or insightful questions/answers. The HTA invited 10 students; 5 accepted as CTAs. In Spring 2013, all former CTAs were invited back (all but one returned), 6 additional TAs were recruited, totaling 10 CTAs. Recruitment criteria were expanded to include interactions taking place beyond the course site. For example, one CTA was recruited for her work managing a Facebook group dedicated to course. The number of students invited was largely influenced by the maximum capacity of Google Hangouts, the communication channel for staff meetings. In Fall 2013, *HCI* again invited all former CTAs back while recruiting additional outstanding

students from its previous iteration, resulting in 16 CTAs. The increase allowed the HTA to distribute tasks more effectively and reduce individual workload. The total CTA pool was able to grow because meetings were divided by topic, with only the topic-relevant subset of TAs attending. All CTAs monitored forums and either graded assignment or quiz submissions. While forum posts by students decreased towards the end of the course, CTA activity decreased more. We interpret this as CTAs burning out on forum monitoring. Forum monitoring could be more efficient: we recommend that the HTA assign 3-5 CTAs entirely to forum moderation, anticipating the total number of CTAs to stay between 12 and 16. Depending on forum activity and time availability of CTAs, moderation can be divided by sub-forum, time of the day, or day of week.

Other classed used a similar number of CTAs: *Think Again: How to Reason and Argue* had 11; *Design: Creation of Artifacts in Society* had 8 CTAs. Each also had as a HTA a former graduate students who worked with the instructor.

We surveyed the Spring 2013 *HCI* CTAs about their experience. Their most popular reported motivation was to increase knowledge about the course topic, followed by a passion for helping others and giving back to the community. Two CTAs wrote they were most excited for "learning by observing student submissions and interaction" and "seeing other people's insights which inspires me a lot." These responses are consistent with the motivations of undergraduate section leaders and volunteer teachers [5, 6].

Global Distribution and 24/7 Forum Monitoring
CTAs monitor forum discussions, answer questions, and flag issues for the HTA or instructor. On the Coursera platform, CTAs have the same permissions as students, but their forum posts are labeled *Community TA*. Given the global diversity of the CTA talent pool, the resulting distributed time zones can provide nearly constant forum monitoring. Brinton *et al*. [1] surveyed 73 massive online courses and found active participation by teaching assistants on the forum increases the overall discussion volume.

HCI's end-of-class survey asked students to rate the helpfulness of instructors and CTA posts. Students rated both as highly helpful, but more than twice the number of people (189 compared to 88) reported not seeing instructor posts compared to CTA posts, which may be a result of the small number (17 posts) compared to CTAs (879) (see Figure 1). *Think Again* and *Design* exhibited similar skew:
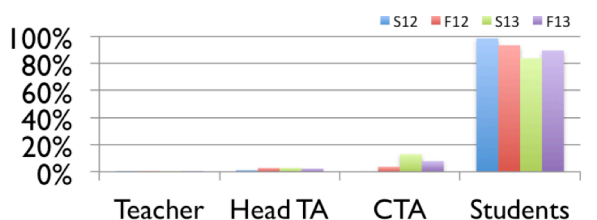

Figure 1 Student posts composed the vast majority, and CTAs provided much more coverage than staff could.

instructor posts ranged from 2 - 87; CTA posts ranged from 609 - over 885.

We broke CTA posts into six categories, including advice, assignment clarification, and logistics communication. However, what quickly emerged as a popular type of response were those that indicated their role as an intermediary for the instructor and the HTA. This brokering, often acknowledged through responses that reference "flagging for staff review," reinforces the dual-role of staff member and student. The TAs maintained a spreadsheet to track issues requiring instructor or HTA input. CTAs can identify with student issues and offer first-hand advice, but also assume a position of authority, while sometimes escalating issues to the instructor or HTA.

CTAs Can Lead Peer Learning & Improve Coursework
Some classes make more involved use of CTAs. In *Think Again*, CTAs host weekly discussions that students can sign up for. In *HCI*, which uses peer assessment, 5 CTAs assist with grading training and ground truth assignments. For each assignment, an HTA leads a calibration session in which the CTAs collectively grade 1-2 submissions. Each CTA then grades 2-3 submissions. Four other CTAs help grade free response quiz questions. CTAs also suggest improvements to the class structure and assignments based on their experiences taking assisting with the class.

CONCLUSION
We will continue to study CTA interactions in additional courses and distill best practices. We recommend:
- Recruiting globally distributed CTAs to provide 24-hour forum coverage.
- Maintaining an issue tracking spreadsheet to centralize communication between students and staff.
- Dividing CTA responsibilities, such as assigning specific subforums/hours/days for monitoring.

If you teach a course with CTAs (or plan to), let us know!

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