

Project Proposal

The current set of available online support tools for education leave a lot to be desired. Fora like Piazza often devolve into mini-StackOverflows, and doesn't everyone love LTIs like Blackboard. The basic problem with these tools is that they focus on making the bare minimum possible and do not help either the student or the instructor in gaining deeper insights about a class. For our project, we intend to launch an online platform (name-to-be-decided) that is focused around building healthy models of student engagement, mostly targeted at large programming courses.

Our platform will support multiple courses throughout multiple semesters. Registered instructors will be able to create and manage their courses while students will be able register for courses. Students will be able to post questions and students and instructors will be able to collectively construct their own answers, build wikis or scribes per lecture, and quiz each other. Posts will have tuneable viewership rules (public / private / restricted to a group).

To prevent stagnation in the answering process we will implement a notification system where users will be "assigned" to answer certain questions, and these assignments will notify the designated users (imagine a ticket-management system for dealing with all pending course issues-- bugs, regrading, exceptions). We will implement tools that will allow instructors or students to be pushed to answer certain questions, effectively distributing the workload of answering questions across the staff adequately. A dashboard/home page informs users of pending actions and deadlines. Instructors can use a calendar frame on the dashboard to inform students about office hours, deadlines and expected resolution dates.

To prevent duplicate and low quality posts from students, we intend to implement a pluggable language analyzer that checks if variants of a post already exists, or if a post is not well constructed (e.g. a error log dump). We will start with a naive word-similarity-based-module, but we want the design to allow individual courses to specify their own module.

Other features include:

- dealing with concurrent edits
- text search within all posts (Piazza, for one, struggles with this)
- ... (suggestions welcome from the experienced professor)

Several studies have suggested social mechanisms to improve student engagement. We plan to allow students to "follow" posts by friends, build a profile, award them with badges and achievements, to encourage answering and reading. Posts can be ranked, tagged, liked and pinned. Another requirement is to not only facilitate the discussion of team formation, but to also actually allow students to collaborative form teams for projects (and re-form teams when students drop / fight).

Finally to help instructors monitor a course, we plan to graph online activity (reading, posting, number of active users ...). We also plan to build directed graphs tracking students across courses (directed based on conversations). Remember, students in one course can be staff in another.

We hope to be able to incorporate this platform to support the <https://theproject.zone> , a project management system.

Technologies: Django, Bootstrap, (possibly a cache (Redis?)), (possibly a real-time searching mechanism (ElasticSearch?)), a graphing/charting JS library (D3.js)

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