

Studii Final Report

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ABSTRACT

Communicating and collaborating with others is an integral part of education. Many tools are used to support this collaboration, including online forums, chat rooms, and email. In the past, online communication tools tailored for a class-based educational context have often failed when introduced to students. In this paper, we investigate the factors that influence the success or failure of online educational collaboration tools and attempt to explain why previous tools have failed. Using this information, we prototype an improved tool (Studii) that facilitates classroom discussion and collaborative learning, while attempting to avoid the mistakes that have led students to reject other tools.

INTRODUCTION

In the current online market there is a notable lack of broadly accepted educational collaboration tools. Existing products, such as Coursespaces and Piazza, are usually only used when mandated by courses, and otherwise neglected. Students are forced to spread their attention across dozens of tools like Facebook, Yahoo Answers, and Skype, none of which address their unique academic needs. To find help with their coursework, students must search through hundreds of results on Google, and often the topics covered in higher level university classes are so obscure or specific that help is impossible to find online. Students need an easy way to collaborate with their classmates and bring study groups online, and Studii is our attempt to fill that need.

METHODOLOGY

The goal of our research was to explore the factors that make an online collaboration tool successful among students, as well as how to improve these tools for CSCL (Computer supported collaborative learning). Following the Runkel & McGrath graph [1], we designed our methodology to maximize generalizability, realism, and precision in our results. Our research plan consisted of three methods: a survey of 50 UVic (University of Victoria) students (for generalizability), background research on existing collaborative tools (for realism), and a 5 person focus group (for precision). The primary goal of the survey was to establish the most popular collaborative tools among students, both course-mandated and non-course-mandated. These tools were included in our tools analysis, a tactic we used to determine which factors to include and avoid in our Studii prototype. Finally, the prototype was introduced to a focus group in order to gather in-depth feedback.

Survey

We wanted to use the data from our survey to answer two main questions:

Question 1: *What tools are students currently using for group learning applications?*

Question 2: *What factors deter students from using existing tools?*

Our questions investigated which discussion format students preferred (forums, instant messaging, QA...), which types of tools they used (Real time, file sharing, image sharing...) and what specific problems prevented students from adopting a tool (difficult registration, a toxic community, non-intuitive interfaces...). We also collected demographic information, including the academic year and faculty of each respondent. Finally, respondents were given a list of common collaborative tools and asked to select which ones they had used in order to give us an idea of the relative popularity of each application. This broad survey of existing tools gave us an idea of what students look for in a collaborative tool, and which tools should influence Studii's design.

Studies on Existing Tools

The student survey produced a list of the most popular collaborative tools used by students. We wanted Studii to be competitive with existing tools, so we decided to research these applications, identify their key features and design decisions, and incorporate them into Studii. Our goal was to make Studii feel more intuitive by borrowing features from popular, well-used tools. We also analyzed CourseSpaces (the most popular course-mandated tool at UVic, according to the surveys) and Piazza (the tool we deemed most similar to Studii) to identify the strengths and weaknesses that could inform Studii's design.

Focus Group

After creating our low fidelity prototype, we used a focus group to gather specific opinions and in-depth input about Studii. The participants in our focus group were five University of Victoria students from a range of faculties. Participants were allowed to collectively express their experiences with collaborative tools and explore the Studii prototype. Participants were queried about their online collaborative study habits, exploring how and why they used certain tools. We demonstrated the prototype to the group and asked them to identify positive and negative features. The group was then asked to suggest ideas they would like to see in future implementations. This format of study allowed us to get an idea of how a group of people might use the tool, and what barriers to adoption might still exist in the prototype.

RESULTS

Survey Data

The data collected from our survey helped us answer our two main questions:

What tools are students currently using for group learning applications?

While mandatory course websites (CourseSpaces and Facebook course pages) were popular, we wanted to focus on tools which students used of their own volition. With this criteria, the top three tools used for collaboration were Facebook private messaging, Google Docs, and Yahoo Answers. These websites were used by 82%, 66%, and 44% of students, respectively. Overall, students preferred private messaging over other communication formats. It had an approval rating of 58%, while forum-based and chatroom-based discussion tools were 26%, and 10% respectively.

What factors deter students from using a tool?

The survey also revealed the importance of accessibility in our design: 64% of respondents claimed that they were deterred by difficult registration processes when using collaborative tools, with 58% of respondents citing an unintuitive interface as a deterring factor. Students mentioned (via write in answers) that they were less likely to use tools that were not broadly known, since it required members to sign up and learn the new tool. The survey also explored the social aspects of collaborative tools. Respondents

were evenly split when asked whether lack of anonymity (or shyness) was a deterrent, with many taking a neutral stance. Similarly, 72% of students were either neutral or disagreed that community toxicity would impede their use of a tool.

Studies on Existing Tools

Facebook

In our results, Facebook was the most popular tool used for collaboration between students. Facebook is the world's most popular social network, with over 1.11 billion users as of March 2013. [2] It is "designed to facilitate online communities and reinforce social ties." [2] Users create personal profiles containing identifying information, such as their name, school (past or present), and workplace (past or present). They can also include interests and hobbies, promoting social connection through similar interests. Furthermore, users are able to post status updates, videos, and photos. They can also create and moderate their own special interest pages, or create and organize events. Many students use this feature to arrange study groups.

According to a study on student use of Facebook in classrooms, Facebook is "becoming a ubiquitous component to classroom learning".[3] Due to the nature of the site, real-world and online identities are closely related, lending accountability to online interactions. [2] This characteristic establishes a more honest environment and discourages toxic behavior, which are both important factors in the creation of a community-of-practice.

In regards to Facebook private messaging (PM), it is an "increasingly popular form of synchronous communication over the Internet". [4] It allows one-on-one or group chats, and features a message history in which all past messages can be seen (deletion is not permitted). If a new user is added to the chat, they also have access to past messages. To maintain synchronicity, a signal appears on the bottom of the chat when a user is typing.

Google Docs

In our study, 66% of participants used Google Docs for collaboration. Researchers at the University of Southern Queensland identified the following valuable features when collaborating on research papers with Google Docs:

- It uses a Google account, which most people already have, making adoption easy.
- The documents can easily be shared with a single link.
- The creator can control who is able to read the documents and who is able to edit them.
- The interface is similar to existing word processors, making it intuitive for first-time users.
- Changes are automatically transmitted to the server.
- Conflicts are highlighted and both versions are displayed, which allows conflicts to be easily resolved.
- There is a complete revision history identifying who made which changes.
- The document can be easily restored to an earlier version. [5]

Ina Blau and Avner Caspi, from the department of Education and Psychology at the Open University of Israel, conducted a study on the outcome quality of collaboration when using Google Docs. 118 undergraduate students participated in the study, none of whom had prior experience using Google Docs. The study found that the quality of a revised document was higher after collaboration than after peer editing. The researchers found that giving suggestions and working collectively created a more positive work environment than editing, and that subjects were more satisfied with their work when they collaborated. [6]

Yahoo Answers

The third most popular collaborative tool identified by the survey was Yahoo Answers. Yahoo Answers uses a level point system that encourages answering questions, while discouraging question spam. In the level point system, users start at level 1, with 100 free points, and gains more points for their activity on the site. Yahoo Answers avoids question spam by requiring a user to have at least 5 points to ask a question and by enforcing a question and answer limit on all users.

Unlike the other tools from our data, Yahoo Answers has a question and answer (Q&A) format. Each question thread has an asker, who asks an explicit question, looking for either factual information, or general knowledge. Once people answer the question, the asker chooses the best answer from the collected responses, which always appears at the top of the stack of responses. Generally, questions are resolved by a single expert who answers questions, rather than a collaborative approach with multiple people working together to solve a problem. Researchers from the University of Michigan found that once someone had answered a question correctly, there was no need for further responses, and other experts would usually decline to respond. In addition, it was found that askers preferred longer answers, and that a long answer would have a higher chance of being chosen as the best answer. [7]

Although Yahoo Answers has a somewhat unusual structure for a collaborative tool, it has some advantages. The search function is useful for finding specific and relevant questions, allowing users to quickly check if their question has already been answered. The level point system discourages question spamming, and limits users with a daily action limit. Since the validity of the best answer can be questionable, users are able to vote an answer up or down to provide some group consensus on the correctness of a response. There are a number of disadvantages with the structure of Yahoo Answers, the most obvious one being that it has a tendency to produce shallow discussions. Nicole Casal Moore from the University of Michigan found that answers on the site usually displayed only surface level knowledge. [8] In 2008, Yandong Liu and Eugene Agichtein from Emory University found that more users using the service did not correlate to better answers, but rather the opposite: more users resulted in a decreased answer quality.[9] As noted above, the original poster who asks the question has the power to choose a best answer, but this does not guarantee that the answer is correct.

Piazza

Piazza is an educational collaboration tool that uses the Q&A format. We were unable to find existing literature on Piazza, so we limited our analysis to the interface. Piazza is used at universities throughout the US and Canada to foster course discussions and collaboratively answer homework questions. Piazza class pages are formatted as a long list of questions along the left hand side of the screen, with the center occupied by the contents of the current question thread. Similar to Yahoo Answers, each thread is organized with the answer at the top, but in Piazza, there are two top answers: the one provided by students, and the one provided by the instructor.

The screenshot shows the Piazza web interface for a MATH 1B class. The top navigation bar includes the Piazza logo, course name, and a sign-up prompt. A sidebar on the left lists various homework questions (hw1, hw2, etc.) and a 'New Post' button. The main content area displays a question thread titled 'why we always break the bound to 0 -1, 1-infinity?'. The thread includes a question by a user, a student answer with mathematical derivations, and an instructor answer. The interface also shows a 'Question History' bar at the top and a '192 views' indicator.

Fig. 1: Piazza's sample class page

When first viewing Piazza, it is immediately apparent that the homepage is too cluttered. The UI mostly takes the form of scrollable lists organized by date (with a few “pinned” topics). The format of the Q&A system is also confusing, with no room for discussion or even multiple answers. The students work together on one single answer that the entire class can edit, and the instructor provides a second answer. There is a space for “follow-up discussions” but the only way to contribute to answering the thread’s question is by editing the student’s answer text box. There is no system of voting to attain a student consensus like in Yahoo Answers. This format has obvious shortcomings. The reduction of student discussion into the single editable student’s answer discourages discussion, and instead lends itself to a single authoritative student answering the question. This design encourages a situation where the majority of the class doesn’t participate, with only a few answering students and the instructor answering questions. This defeats the entire purpose of having a tool for educational collaboration, since effectively the site becomes a venue for the professor to answer student questions. No discussion or collaborative learning takes place, and it effectively duplicates the functionality of emailing the professor, with the only added advantage being that the entire class can see the professor’s answer.

Coursespaces

Coursespaces is a tool used frequently at the University of Victoria as a space to host course related materials and have online class discussions. It is most often used as a virtual dropbox for assignments and an online course calendar, giving students a unified place to find course information such as due dates, assignments, news, and grades. It also features a forum where students can collaborate on coursework and hold discussions.

The screenshot shows the UVic Coursespaces interface for the course "201505 Work Term CSC/MATH/WKEX W01 X". The top navigation bar includes "Menu", "Courses", and "Help". Below the header, the breadcrumb "My home > 201505 Work Term CSC/MATH/WKEX W01 X" is visible. The main content area is titled "201505 Work Term CSC/MATH/WKEX W01 X" and "Computer Science / Math Co-op Work Term Course". It lists the instructor as Pamela Welgan (Contact: pwelgan@uvic.ca) and the teaching assistant as Shelley Taje (Contact: stjaje@uvic.ca). The interface is divided into several sections: "ACTIVITIES" (Assignments, Forums, Resources), "ADMINISTRATION" (My profile settings), "NAVIGATION" (My home, All courses, Site pages, Site badges, Calendar, My profile, View profile, Forum posts, Posts, Discussions, Messages, My badges, Current course, 201505 Work Term CSC/MATH/WKEX W01 X, Participants, Badges, Course badges, My courses), "General" (News forum, News Forum, Course Announcements, Social forum, UG Work Term Registration Form, Work Term Expectations, UVSS Services, Fees and Student Loans), "Unit 1 Introduction" (Welcome to Summer 2015!, Course Objectives), "SEARCH FORUMS" (Search bar, Go, Advanced search), "LATEST NEWS" (Summer 2015 Marker List and Marker Contact Information, Reminder - Topic Submission Forms Due July 24/15, Work Site Visitor List Posted in Unit 1 - Summer 2015, Are you planning to do a co-op in the Spring 2016?, Welcome to Summer 2015!), and "UPCOMING EVENTS" (There are no upcoming events, Go to calendar..., New event...).

Fig. 2: UVic Coursespaces sample page

As a place where professors can upload course information and accept assignments, Coursespaces is fairly serviceable, but it completely fails as a collaborative workspace, mostly due to interface design mistakes. One of the largest problems with Coursespaces is the overuse of drop down menus, which makes the UI feel increasingly cluttered as each new menu is opened. Additionally, since all features are contained in drop down menus, of which many are hidden by default, there is little incentive to explore the tool, and to discover the features it offers. The sidebar shows a listing of units/week entries for a course, which correspond to entries on the main page. Intuitively, clicking on the sidebar entries would bring up the corresponding entry in the main page; but the list has no links in it. Also, this complete list of units/week entries only appears under the “My Courses” drop down, and is not present in the “Current Course” drop down. Many features of the tool are underutilized, such as Badges, Quizzes, Wikis, and Forums. In the case of the Badges and Quizzes, since few if any classes use them, they end up cluttering the interface

unnecessarily. While Quizzes and Wikis do not appear in the UI if a class does not have them, the Badges feature still remains when there are no Badges for a class. In most classes, Coursespaces functions only as a repository for readings and assignments posted by the professor, while the other functions of the tool, such as discussion forums and quizzes, are left unused.

Focus Group Data

The focus group provided detailed feedback on Studii and other CSCL tools. The following are the most important points from the 2 hour discussion:

Take extra measures to encourage interaction with the website.

There was unanimous agreement among the members of the focus group that the popularity of a tool affects its usefulness, especially for a collaborative tool that focuses on user-to-user interaction. Firstly, the focus group decided that the downvote buttons discouraged posting and should be removed. The thought that their answers could be reviewed negatively made the focus group members uncomfortable. Secondly, the students wanted a low-responsibility moderating system, stating that the potential responsibility of having to moderate a group page would deter them from creating groups for their classes.

Provide higher level means of expression.

The focus group felt a text-only chat was too restrictive. This was especially important to the science faculty students, who often have complicated theories, ideas, and symbols to portray. The group suggested that an in-chat drawing tool could be useful.

Change up the organization scheme.

The focus group agreed that the current organization scheme, where groups correspond to schools, topics correspond to courses and convos correspond to courses (group < topic < convo), was counterintuitive. The focus group agreed that a better organization would have groups correspond to classes, with topics as assignments in each class, and a convo for each question in an assignment.

Add notifications.

The focus group wanted an easy means of monitoring activity on Studii. While they didn't want to be spammed with messages, they valued avoiding constantly checking up on their prioritized conversations. They also expressed an interest in providing sharing links (similar to Google Docs) that would allow the members of a group to share links to the group or a specific conversation, making it easier for new users to be introduced to Studii.

Non-science faculties have less need for Studii.

In comparison to science faculty students, non-science faculty students often have personal research projects and essays, affording less peer-to-peer collaboration. While they showed interest in potentially using it for group projects, they found that class discussion was not generally useful for the work they did in their courses.

Having both Facebook/Google account login and standalone accounts is desirable.

The group was split on whether they would be willing to attach their Facebook or Google account to Studii, citing worries that Studii would post things on their facebook feeds or otherwise do unsavory things with their information. It was decided that the best solution would be to include standalone accounts specific to Studii, while also allowing users to register using their existing Facebook/Google accounts for convenience if they so wished.

Current CSCL tools aren't sufficient.

Each of the students had only used Coursespaces and/or Piazza due to course obligation. They negatively reviewed them both, stating they would never use them on their own volition.

DATA ANALYSIS

Our research has revealed that the most commonly used educational collaboration applications at UVic both have little resemblance to popular non-educational collaborative tools, both in terms of their interface conventions and core design principles. Results from our surveys and focus group indicate that the majority of students using Piazza and Coursespaces only use these tools because they are course-mandated. In fact, the students in the focus group displayed an active disdain and dismissive attitude towards the collaborative features of Coursespaces, finding them to be confusingly implemented and backwards in terms of design. We believe that the reason students reject these tools is because the tools were not designed with student collaboration as their top priority. What both Piazza and Coursespaces have in common is that while they integrate student collaboration and “social” features into their design, they are ultimately built for professors and administrations. These tools are designed to provide value to professors and universities, with students as a secondary concern.

This basic design flaw is exacerbated by the archaic design sensibilities that plague them. Both Piazza and Coursespaces use a forum based structure, which was identified in our surveys as being one of the communication formats least accepted by students. They rely on outdated organizational structures (most notably drop down lists) which are clunky and unintuitive for students who have grown up using Facebook and other modern web applications. The layout of both sites is messy and confusing, with navigational elements in unexpected places, unclear conceptual models, and inefficient informational organization. The collaborative elements themselves (“follow-up discussions” in Piazza and forums in Coursespaces) often discourage engagement, with discussion formats that are alien to students and stifle conversation. Considering the fact that these tools are not built to address the needs of students, and are plagued by unintuitive, unfamiliar design choices, it is not surprising that they are rejected by students.

What we can learn from this data is that choosing the correct format in which to frame online conversations is essential to fostering a productive online community. Also, utilizing modern design practices will make a tool more appealing to students, while also increasing its efficiency and usability. We can also surmise that if a tool is going to be useful to students, it must be designed to meet their needs, not the needs of an administration. To that end, Studii should not directly associate itself with Universities nor seek official approval from professors, it should only attempt to gain acceptance from the students themselves. It is important to note that none of the major problems with Piazza or Coursespaces are explicitly pedagogical, they are all based on their interface design and business model. If an educational collaboration tool is to succeed among students, it needs to be able to compete with the collaborative tools that students already use, outside of the “walled garden” of academia.

PROTOTYPE DESIGN

Studii's design was based around two key design principles: accessibility and simplicity. The idea was to create a tool that could be picked up as quickly as possible, and would not get in the way of class discussions. To service these goals, it was decided that Studii should be reminiscent of tools that were identified by our student survey: Facebook, Google Docs, and Yahoo Answers. It was also decided that the feature set of the tool should be kept as minimal as possible, focusing entirely on the communication between classmates. One of the problems we identified with Coursespaces was that it tried to do too many things at once, and we wanted to avoid that mistake.

To enhance accessibility, Studii was designed to have no moderators, and only minimally empowered administrators. The discussions would be self moderated, with tools allowing users to flag problematic posters, so that the system could hide their posts or ban them from the community. Other than that, Studii groups would be open entirely to anonymous users, with the only caveat being that a Studii account would be required in order to ask questions, vote on posts, and create topics or convos in a group. We chose to include the option to use a Facebook or Google account to log in, in order to reduce the barrier to entry. Since Studii planned to compete with broadly accepted public tools, it was important to keep entry barriers as low as possible so that a critical mass of users could be reached.

One of the earliest discussions our team had about the design of Studii was about the format the discussions would take. Several existing formats were discussed, and the pros and cons of each option were weighed. Forums favor long, deliberate responses that would theoretically be ideal for an academic discussion, but they are not a particularly popular format. The same deliberation that often leads to long, thoughtful posts can also be an impediment to free discussion. By contrast, Instant Messaging (IM) has the lowest barrier to entry, and as our survey results showed, IM is by far the most popular format, especially in the context of private messaging. The main advantage of IM is that it encourages participation, much like face-to-face communication. Responses are not expected to be edited, and the tempo is much more rapid than in a forum. The problem with IM is that multiple conversations can be running concurrently, making the thread of discussion difficult to follow, and increasing the risk that the group will get off topic. The final format that the team considered was Q&A. This format had the advantage of being very directed: it naturally centers any discussion around finding an answer for the question at hand. Where Q&A falls short, especially in Yahoo answers, is how it throttles conversation. In a Q&A format, the only discussion that takes place is between the person asking the question and the users who attempt to answer them. Conversation between answering users is difficult, if not impossible.

Due to the results of the students survey, we rejected a forum structure, and ultimately we decided on a synthesis between IM and Q&A. When the user opens a convo on Studii, they see a conventional chat log with an option at the bottom to enter a reply, but looking closely, they will see upvote and downvote buttons on each individual message in the chat. In addition, along the right side of the chat, there is a search box with a list of results. These results can be sorted by popularity (upvote count), time posted, relevance (a combination of time posted and popularity), or author. By default, the search box shows the most popular responses in the convo, mimicking the functionality of Yahoo answers, where the top response floats to the top.

With the ubiquity of Google, searching has become second nature to most internet users. The team decided that a robust search feature would be essential to Studii, since as an educational tool, users would often be coming to the site for information on a specific topic or to answer a specific question. To that end, the design included a search bar prominently placed in the top navigation bar, visible on every page of the website. Typing text into this bar and pressing enter brings up the universal search screen, which returns relevant results from the entire site. By default, the search returns groups, but users can also search topics, convos, and users. The search results can then be sorted by date, popularity, name, and other metrics that are specific to each category.

Another concern that informed the design choices of the Studii prototype was navigational efficiency. When users are first learning to use a new interface, they may have trouble finding their way through it if they are given too many options at once. Conversely, experienced users generally appreciate having shortcuts built into the interface, that allow them to quickly navigate to their intended destination with as few clicks as possible. Both of these somewhat contradictory goals were taken into account with the design of Studii, and this is most apparent in the design of the home page.

The home page is designed to adapt to the way each user interacts with Studii. The 'My Courses' section provides a dashboard of all of the user's most frequently visited courses. In the bottom left, there is a short history of recently visited convos, allowing returning users to quickly get back to where they left off. A final UI shortcut that assists navigation are the "breadcrumbs" placed throughout the site. In almost every place where convo and course titles are listed, links to their parent groups or courses are also provided.



Fig. 3: The 'convo' screen

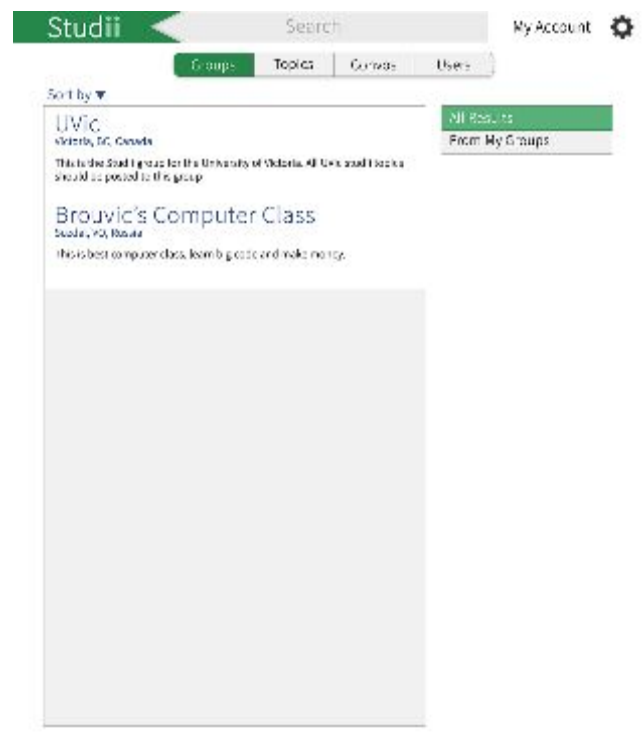


Fig. 4: The search screen

This makes it much easier for users to find their way back through the interface.

These UI decisions are a response to the shortcomings of Coursespaces' and Piazza's interfaces that were identified in our preliminary interface. The excessive use of drop down menus in Coursespaces means that as the user gets further into the interface, the screen gets more cluttered and confusing, discouraging exploration and making regular use cumbersome and unwieldy. Piazza has similar problems, overwhelming the user with long drop down lists. By emphasizing simplicity and accessibility, Studii puts the focus on the content. Ideally, users wouldn't have to think about the layout of the website at all, allowing them to expend all of their focus and effort on the task at hand. This is a key consideration due to the academic nature of Studii: students require all of their attention to complete their coursework, and when the interface is constantly interrupting their train of thought, they quickly become averse to using it.

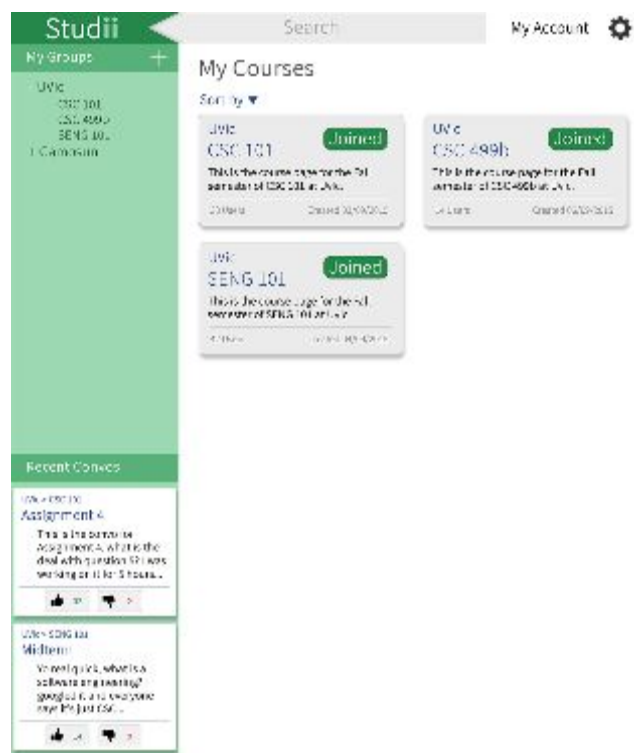


Fig. 5: The home screen

We constructed our low-fi prototype [10] using a free tool called Invision. The prototype had minimal interactivity, consisting of static images with hyperlinks between them, so that a rough idea of the interface's functionality could be demonstrated. It was mostly used as a visualization tool for the focus group, allowing us to illustrate the function of the proposed tool to the group.

DISCUSSION

The focus group data showed that Studii could be further improved to make it more accessible, and gave insight into how useful the tool would be, including its successes and failures. This data has also given us ideas for future work on Studii.

How would the results influence our prototype design?

The focus group sometimes felt restricted by Studii's limited features (most notably, the text-only chat option). On the other hand, our tool analysis and focus group data have shown that tools attempting to include too many features become unfocused, rendering the tool inefficient and difficult to learn. For example, Coursespaces has several extraneous features that are rarely used but confuse and distract users. These results influence potential future research, making it a priority to find the best compromise between simplicity and a full feature set.

Another contradictory relationship is the freedom of a public platform and the order of a private platform. We want the accessibility of a publicly available tool (the public tools are massively more successful than the course-mandated, private tools), but we also want to maintain a structured, focused area for

collaborative learning. The need for a high participation rate has been made clear, so eliminating downvoting and limiting moderator responsibilities, both deterrents to posting, are a priority. To keep order on the site, a spam-flagging option will be kept available. Disruptive users can be temporarily banned using this option.

How useful was our prototype?

Between surveys and the focus group, it was unanimously agreed that current CSCL tools are not meeting students' needs. Instead, students are relying on a repertoire of public collaboration tools to bridge the gap. Our student-based focus group verified the need for a tool that could compete with Facebook, Google Docs, and Yahoo Answers. Existing CSCL applications don't view these tools as competition since they were not designed for that purpose, but there is clearly a niche in the marketplace that is not currently being filled. This emphasizes the potential impact a tool like Studii could have on the student experience.

Success and failures of this project.

This project successfully proved the need for a new CSCL tool. It also demonstrated the potential of Studii's design to positively impact the student learning experience. It would, however, have been beneficial to have more time to dedicate solely to research. Performing the research and development process simultaneously left little time for prototype development. As a result, our low fidelity prototype leaves some unanswered questions about the utility of our design.

How does our work contribute to CSCL?

Our work on Studii has contributed to the field of CSCL by demonstrating how and why existing educational tools are failing to meet the needs and expectations of students, and by providing an example that can inform the design of future tools.

Future work for Studii.

Future work on Studii would entail implementing the suggestions presented in the focus group, while ensuring that the design does not become bloated. After the creation of a high-fidelity functional prototype, we would like to run collaborative experiments in a classroom setting to evaluate the utility of our design in a more representative setting.

CONCLUSION

Current CSCL tools are being underutilized, suggesting they are not meeting students' standards and needs. There is a need for an improved CSCL tool, and we believe that a tool like Studii could fill that need. We tried to make Studii as simple, intuitive, and accessible as possible because we believe that educational tools should not take their users for granted. Existing CSCL tools are designed to appeal to instructors and institutions, not students, and for tools intended to improve student learning outcomes, this is a grave design error. While the pedagogical perspective is essential for designing effective educational tools, it is important to remember that any CSCL tool relies on engagement and participation in order to succeed. When users are required by a higher authority to work with an application that they don't find useful, they will use it exactly as much as they are required to, and no more. Educational tools do not exist in a vacuum, and they are not exempt from the rules that govern systems design in other contexts. If a CSCL tool is to succeed in the online marketplace, it must be competitive with publically available tools, and it must be designed for students, not universities.

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9. Liu, Yandong; Agichtein, Eugene, "On the Evolution of the Yahoo! Answers QA Community," (Emory University, 2008), <http://www.mathcs.emory.edu/~eugene/papers/sigir2008p-cqa-evolution.pdf>
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APPENDIX

Member Contribution

The entire group worked on the planning and proposal of the project. We also all worked together on the preliminary design and report drafting.

Jonathan Mak:

- Created original high fidelity prototype using HTML and CSS
- Researched prototype functionality using PHP/mysql/Apache
- Conducted literature review and investigation of other CSCL tools
- Analyzed data from the study and focus group

MacKay McGillivray:

- Created original high fidelity prototype using HTML and CSS
- Conducted literature review and investigation of other CSCL tools
- Analyzed data from the study and focus group

Sydney Nicholson-Mieras:

- Conducted and wrote student surveys
- Presented to the class
- Conducted the focus group
- Conducted literature review and investigation of other CSCL tools
- Analyzed data from the study and focus group

Ian Sutton:

- Conducted student surveys
- Presented to the class
- Created low-fi prototype
- Conducted the focus group
- Conducted literature review
- Analyzed data from the study and focus group
- Acted as project manager

Student Survey

Collaborative Learning Tools among UVic Students

Please do NOT include any personal/private information (name, student ID, etc). You have the right to withdraw at any time during the survey-taking process. Thank you for your participation!

1. Please rate the following:

Statement	Never	Rarely	Sometimes	Often	Always
Computer Supported Collaborative Learning (CSCL) is group-based learning using computers (ex. An online study group). How often do you use the following CSCL tools to help your understanding of course materials?					
Discussion-Based tools					
Private messaging (ex. Facebook messaging)					
Forum-based tools (ex. Reddit)					
Chatroom-based tools (ex. Connex chat, Slack)					
Question-and-Answer tools					
General Q&A tools (ex. Yahoo Answers, Answers.com)					
Academic-focused Q&A tools (ex. Stackoverflow, Chegg, Experts-Exchange)					
Collaborative tools					
Real-time tools (users can edit and work at the same time, ex. Google Docs)					
Flexible, file-sharing tools (users can upload documents, photos, and other files and can manage tasks, ex. Stixy)					
Image-based tools (users can draw and create charts and diagrams, ex. Dabbleboard)					

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
What deters you from using certain collaborative tools?					
The Registration Process					
A non-intuitive interface (requires time to learn)					
Shyness (Lack of anonymity on group-based websites, ex. Many UVic course websites will show your real name)					
A toxic community (users tend to “troll” or harass other members, ex. Many social sites where users can be anonymous)					
Other (please specify):					

2. Please circle the faculty/division in which you’re registered.

- a. Business
- b. Continuing Studies
- c. Education
- d. Engineering
- e. Fine Arts
- f. Graduate Studies
- g. Human and Social Development
- h. Humanities
- i. Law
- j. Medical Sciences
- k. Science
- l. Social Sciences

3. What year are you in at UVic? _____

4. Please circle the tools you have used to collaborate with others over course material.

a. Facebook private messaging

b. A facebook page for the course

c. Course websites

i. Please specify (connex, coursespaces, etc)

d. Slack

e. Chegg

f. Answers.com

g. Yahoo Answers

h. Google Docs

i. Stixy

j. Dabbleboard

k. Other (please specify): _____

Survey Results

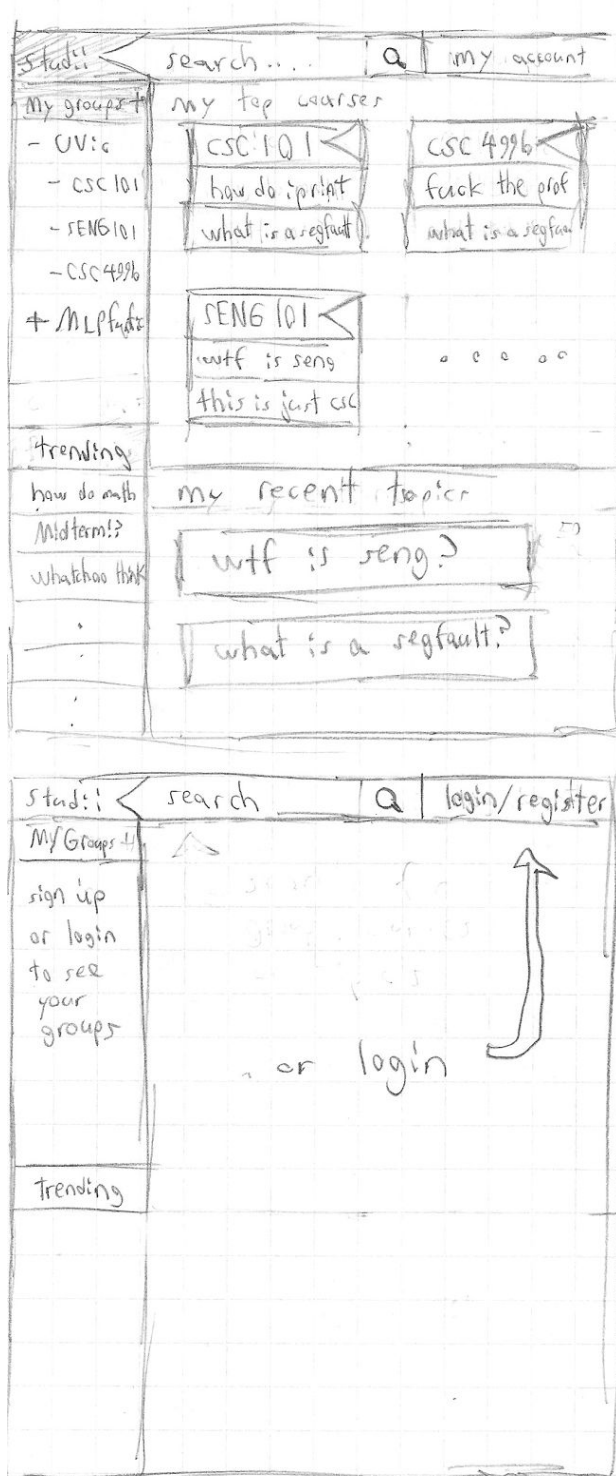
Statement	Never	Rarely	Sometimes	Often	Always
Discussion based tools:					
Private Messaging	5	4	13	20	8
Forum-based	24	14	6	4	2
Chatroom Based	34	11	4	1	0
QA Tools					
General	9	5	15	15	6
Academic	15	12	12	8	3
Collaborative tools					
Real-time	5	5	13	16	11
Flexible file sharing	16	10	11	9	4
Image based	24	15	5	4	2
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Registration Process	1	1	15	28	4
Non-intuitive Interface	3	5	13	23	6
Shyness	8	17	11	19	4
Toxic Community	5	13	18	9	4
Other1 - Tools aren't universal (takes time to get everyone registered and organized)					2
Other2 - Costly					1
Other3 - Lack of knowledge					2

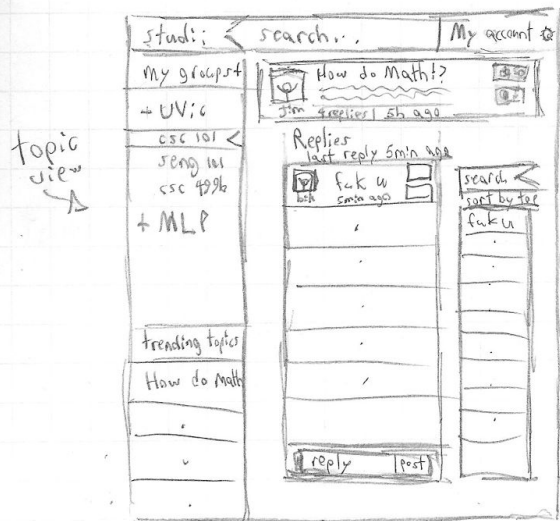
and awareness					
Other4 Easier person	- in				1
Faculty	total				
Business	2				
Continuing studies	0				
Education	1				
Engineering	10				
Fine Arts	2				
Graduate Studies	1				
Human and Social Development	2				
Humanities	10				
Law	0				
Medical Sciences	0				
Science	16				
Social Sciences	9				
	3 students had combined degrees (Science&SocialSciences, Humanities&SocialSciences, and Engineering&GraduateStudies)				
Year	total				
1st	10				
2nd	16				
3rd	16				
4th	5				
<4th	2				

Tools used	total				
Facebook messaging	42				
Facebook page	24				
Coursewebsite1 - CourseSpaces	33				
Coursewebsite2 - Connex	4				
Coursewebsite3 - Wileyplus	1				
Coursewebsite4 - Youtube	1				
Coursewebsite5- Moodle	2				
Coursewebsite6 - Wordpress	1				
Slack	3				
Chegg	1	*Someone commented "I wish" next to this...presumably due to the cost*			
Answers	7				
Yahoo answers	22				
Google Docs	33				
Stixy	0				
Dabbleboard	0				
Other1 - Text Messaging	1				
Other2 - Group chats (ex. Google Hangouts)	2				
Other3 - Google	1				

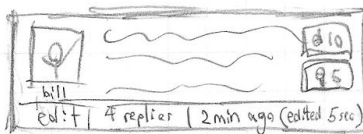
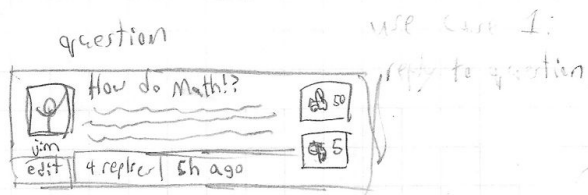
Other4 - Email	1				
Other 4 - Dropbox	2				
Other5 - Mathlab	1				
Other6 - Pearson's Mastering Physics	1				
Other7 - Doodlepolls	1				
Other8 - Khan Academy	1				

Early Prototype Design

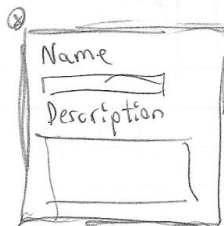




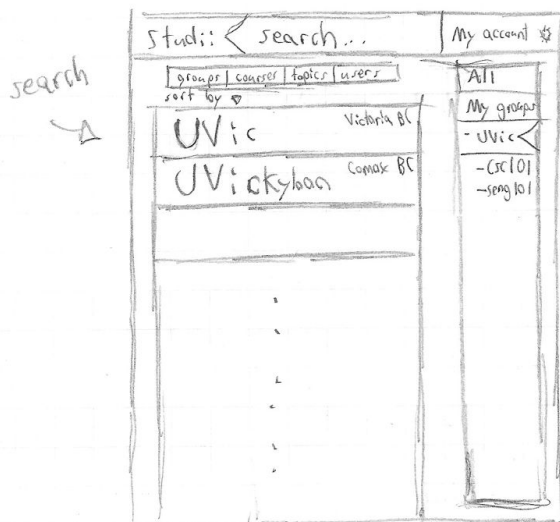
topic view



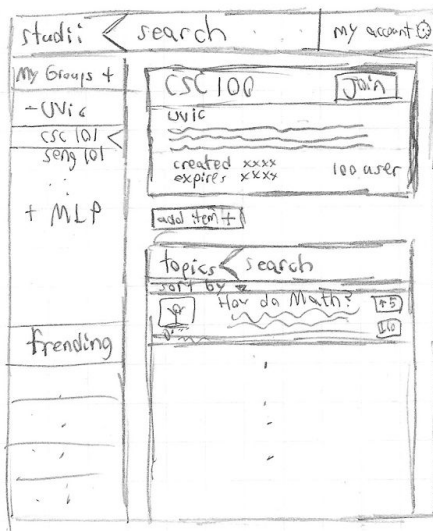
comment



overlays for making stuff



search



course

Milestones

October 16th: Project Proposal

October 21st: Website up

October 30th: Student Survey

November 13th: Interim Project Report

November 15th: Prototype Conceptual Design/Existing Tool Investigation Begins

November 20th: Low Fidelity Prototype complete

November 21st: Focus Group

November 23rd: Focus Group Analysis

November 24th: Report Drafting Begins

December 2nd: Project Presentation

December 5th: Project Delivery