Reflective Memo

MEMORANDUM

TO:	Junior Design Instructors
FROM:	Team 1123 – Connor Cole, Vinnie Khanna, Charline Truong, Danielle Zhao
DATE:	April 26, 2021
SUBJECT:	Course Reflection for CS 3311/LMC 3432

Introduction

Our team's goals this semester was to build a solid foundation for the eventual project we will develop, establish a strong relationship with our client, and learn how to cohesively work together as a team. As the semester progressed, we believe that we achieved these goals set out by our team. Through written technical documentation and revisions, we laid out a strong vision with our client for the goals of this project. Additionally, our weekly meetings with our client let us gauge our client's expectations as well as the team's expectations for this project. These weekly meetings also provided us the opportunity to build on the professional relationship we had with the client as we got to know more about the client's organization, ImaginED, and their mission. While we had some issues in the beginning, our team were able to learn how to work individually as well as together on technical documents and assignments. Our weekly team meetings helped us address issues with had with each other and set forth weekly goals to keep everybody on track. Overall, our team's goals were met this semester, and we hope to continue our progress in the next semester.

Lessons Learned

When we work on personal projects, usually the only audience is ourselves. We set our own goals and expectations. When we work on class projects, the standards are usually set by a rubric. Understanding how to manage client needs and expectations is something very unique that us students do not often deal with. Finding the balance of wanting to deliver a quality product to the client while also ensuring that we do not overpromise and fall short or even disappoint is difficult. This is especially the case in this two-semester format, seeing as the distinction is so clear between planning and implementing our project. How our team would use machine learning was our biggest example of this dilemma. From the very beginning – even in the project list description – our client made it clear they wanted the system to *learn* and tailor itself to each user. This is understandable considering that aspect of the application is the main separator between it and its competition. Of course, the reason machine learning is not often used in this industry is because it is very difficult to do so. Coming up with useful parameters and finding high quality datasets to use will be by far our biggest challenge next semester. Once we got to our prototyping and how the application would look became clearer, we finally discussed with our client how our back-end algorithm would work. In that meeting, we very honestly told them the bare minimum we could produce – an algorithm that does not use machine learning and simply scores each product by simple parameters such as price or popularity and recommends products accordingly. Mr. Chaplin seemed to remain attached to machine learning, so we also provided a reasonable expectation – that we could implement a basic clustering method or classifier to recommend products. We made

it clear that the algorithm he was envisioning did not inherently lend itself to machine learning, but that we would try our best to make something simple. While at first we avoided this out of fear of confrontation, we learned it is far better to bring up these concerns in this semester rather than push them down the line. For this reason, the demo portion at the end of the semester is a great idea, as it gives each team a sense of how much they will be able to implement in a reasonable amount of time.

Since we are students and never had the experience of teaching, our team had little to no knowledge of the issues our target audience—teachers, supervisors, school administrators —had to face. Through our user research and interview with Mr. Hajj, an individual who has held the roles of teacher and vice principal, we learned the factors that come to play in making decisions on buying educational technology as well as the bureaucracy and budget constraints that come along with it. Initially, we thought that school administrators bought all the educational software that the school was going to use. However, Mr. Hajj revealed that teachers could actually buy the software, and word of mouth was the main contributor to buying educational software. This information made us consider adding reviews for each ed-tech product to help the user get a better idea of it. Additionally, talking with our client, Martin, who has experience of teaching, made us realize that we had to make our application as accessible as possible to help ease the burden on teachers who already have packed schedules. This translated into designing a user interface that was easy to comprehend and streamlining the process of searching for new educational technology products as well as user registration. Through the user stories, we learned to think about different issues that our user could encounter like registering an already registered account, not completing all the fields in registration, and editing existing product reviews. Overall, through user research, conversation with our client, and user story mapping, we got a better understanding of our target audience and UI/UX design.

As CS majors, we do not often have to pay special attention to our specific modes of communication. Most of us have not needed to draft deliverables in anything other than essay format. This course is especially demanding in that we draft all sorts of deliverables, from professional reports (UX Report) to research findings (User Research) to other formats, such as this business memo. Adapting our tone to our deliverable and its audience is at the very least something we have had to consider. Further, we have to do all this knowing our client is always at least a primary or secondary audience. We reviewed each deliverable with our client in our weekly meetings, so they must be included in the audience. This is especially important in the later deliverables – specifically for the prototype, UX Report, and demo video. These are the items that the client is most concerned with, so they should be created with the client heavily in mind. Our demo video is a great example of when we kept the client closely in mind. In the introduction, we explained what technologies we were working with. When justifying why these were chosen and how the app worked, we made a conscious effort to simplify some of the complexities – such as how React Router creates the single page application feel. Our client also has a technical advisor who views our deliverables, so we needed to create a balance of showing that we understand what we are using while also allowing Mr. Chaplin himself to stay in the loop.

Individual Lessons

Charline:

When the semester first started, I was uneasy at the thought of trying to find a balance between client and team meetings, schoolwork, and personal time. At first, I thought that it would be

impossible to find a cohesive flow to my schedule. However, throughout the semester, I learned how to manage my time, so I could find a work-life balance. As an individual who generally leaves assignments to the last minute, being on a team made me accountable to the tasks I had to accomplish in a timely manner. In addition, being on a team helped me learn how to motivate myself to complete the task I was given. With weekly team meetings, this gave me motivation to finish the task I was given because I did not want to let my other team members down by giving them uncompleted, mediocre work. Teamwork also helped me be more flexible in how I approached tasks and situations. For example, a team member's unexpected illness taught me how the importance of being able to adapt at a moment's notice to do some of their work in order to submit the assignment on time. Additionally, I learned how to differentiate between my individual work and group work. Beforehand, the lines blurred between what I could consider work I done myself compared to work done together as a team. However, throughout the semester, I learned the importance of the individual work I done to contribute to the team's overall goals, and the work the team did together to contribute to our overall success. For example, while the technical documentation was a group effort, I learned how to assess and consider the individual section I was assigned to complete.

Over the course of the semester, I learned that importance of drafting up technical documentation before getting into the implementation of the project. For example, I thought the Vision Statement was an unnecessary, lengthy document that could be shorten to a few paragraphs. However, as my team and I drafted the Vision Statement document, I realized how each section was important and necessary. It allowed us to provide our vision for the project as well as incorporate the client's vision for the project, ensuring we were on the same page. I quickly learned that technical documentation helped build the foundation for which would base our project on. It allowed us to ensure that our vision aligned with our clients as well as the expectations for the project. Consequently, the technical documentation helped temper my vision for the project. While I wanted to include many functionalities for the project, the technical documentation showcased what would be feasible in the amount of time we had to work on the project. It helped me learn how to adjust my goals for myself and the project in accordance to the time constraints. While our clients, Martin and Zach, afforded an easygoing atmosphere in our client meetings, these client meetings taught me how to draw the line between professional and personal communication. These meetings also helped me learn how to communicate effectively with the clients with our concerns and questions to what they wanted out of the project. For example, I was able to clarify privacy concerns to our clients and how they wanted to deal student data. By the end of the semester, I felt like I had a good grasp of what the next goals of our project will be and how to effectively communicate with my team.

Connor:

I had a unique semester, and had a lot of lessons I learned along the way. First, I learned to be more careful with my load management. I promised my internship 20 hours of work a week, and doing this with 15 hours of classes quickly proved to be impossible, leading to me dropping a class. This will be important in the summer and over the fall, when I'll continue working and taking classes. I also learned how to manage my time between my commitments between the two. Sometimes, our group or Martin wanted to meet while I was busy at work, so I'd have to plan in advance and schedule meetings around our client and group meetings. My overall time management became much better when I bought a planner and planned my weeks out in advance- this resulted in less conflict between work and school.

I also learned a lot about communication skills and conflict resolution within my groups. One big difference between this group and all other major projects I've worked on in my life is that I did not know anyone personally coming in. It was the first project where I had to learn everyone's interests and skills, and then immediately start working with them. I learned how to get to know a group of people professionally and for us to figure out where our group would be strong or weak without actually knowing them personally. I was worried about this before, as I was unsure about people I hadn't met before being honest about their skills. However, from the start, we all became very good at professional and respectful communication, and we were able to choose a project we all enjoyed. We also learned how to communicate respectfully with our client, and resolve a conflict involving how often we needed to meet. This was a great learning point as well.

Professionally, I had worked on a lot of coding projects at my company, but never was forced to create documentation for them. As a result, after working on some of the assignments, such as the low-fidelity prototype in Balsamiq and the user stories, I started drafting condensed versions for some of my bigger projects at work, like basic user goals and doing basic user research in similar manners we did in class. Learning these skills was huge, as one of the biggest hurdles in tech can sometimes be figuring out what the client wants. I think that these skills we learned to get that information from them and accurately portray the goals and make sure we are all on the same page have been huge.

Danielle:

Throughout this semester, I have learned a lot about professional development and the design process that happens before the actual coding and testing of a product. During the first few weeks, I experienced writing bids and pitches for the projects that I was interested in. By doing this, I learned that bids are almost like applications in that we must describe our skills and explain how they align with the client's goals. After being assigned a client, we were to draft an initial email to our client before editing and sending a final draft of the email. I thought that this was unnecessary since it was merely an email, but it proved to be useful to connect with our client and introduce them to our expectations of the project. Writing the client charter and vision statement and reviewing them with our client helped us clarify the client's expectations and our plans to meet them. These initial steps showed me that the planning done before a project is extremely important and makes the next steps much easier. Researching our users and creating user stories also helped me better understand our consumer base and think from the perspective of the customers. The story mapping that came after greatly facilitated the design of our Balsamic paper prototype. Our heuristic evaluations of our user experience and the peer review heuristic evaluations also made web development easier since we knew what functions we should add and/or fix.

Besides professional development, I also learned a lot of interpersonal and organizational skills while taking this course. The living schedule and weekly agenda announcements were very helpful for letting me know what is coming up ahead of time. It helped me plan my assignments and allowed me to better manage my time for other classes. Being pushed to work closely with the rest of the team improved my communication skills and teamwork. We had to constantly check up on each other to arrange and conduct meetings and to make sure everyone was doing their part for the assignments. The team-oriented outlook of the class also improved my planning skills since we not only had to schedule meetings at times when every member is free but also divide up work fairly and evenly. As a result of our good relations and chemistry, our team rarely had conflicts, but any conflict that arose was quickly resolved through respectful communication and mutual understanding.

Vinnie:

The most tangible lessons I learned this semester had to do with the technical aspects of prototyping and web development. When assigning roles at the beginning of the semester, one of my biggest weaknesses was a lack of UI/UX and web-dev experience. At first, the prospect of using Balsamiq seemed unnecessary as it felt *very* low fidelity; however, it provided more structure than expected when we made our first attempt at transitioning to our coding demo. At the request of our client, we used React to speed up the development process, which was very new to me – in fact, I purposefully had avoided using any component libraries. Helping code the simple demo showed me the value in a component library more than someone else explaining it could, as in just a couple days we were able to create an interface our client was satisfied with. Also, the fact that other developers will be taking over our work in the future provided a unique coding atmosphere – the usual bad practices and convoluted variable names are not acceptable if someone else has to continue our work.

At the beginning of the semester, I was unsure how we would manage all the demands of our client and the course itself. Along with our regular biweekly meetings to work on our course deliverables, our client initially wanted to have two-hour biweekly sessions. Thankfully, we were able to bring this up and reduce our client meetings to once a week. This was a little uncomfortable and required a little delicacy – of course we did not want it to come across as valuing our time over the client's – but it was a good example of when we needed to be honest and professional. However, this was still a lot to manage, as our client wanted us to casually research datasets and APIs throughout the semester. Consistently having three meetings a week when all other courses were asynchronous made meetings feel almost job-like. It also provided some time management in that deadlines for tasks or deliverables were centered around meetings so that we could finalize them, meaning we almost always had our work completed before submission deadlines. On a lighter note, we were lucky to have very lighthearted clients in Mr. Chaplin and Zach, who realized we had our fair share of work to do and mostly let us be as the semester went on.

Expo Reflection

Though we were unable to participate in the Junior Design Part 2 Expo all together or in person, we each learned a lot about our upperclassmen's projects and the expectations for the second semester of Junior Design. All members of our team had varying schedules for the day, so we split up to explore the expo and complete our judging individually. Since the expo was online, most of the booths had tables, posters, or brochures set up. In Danielle's expo experience, each group gave an informative and convincing elevator pitch, evidently well-planned and rehearsed. Afterwards, the groups showed impressive demos of their app or website before accepting questions from the viewers. All members of the groups seemed engaged in the presentation and knowledgeable about their project. Charline learned from the expo that, when it is our turn to present, we should make our deliverables sharable as she had to request access to the project of one of the teams she judged. Vinnie learned from the expo that we should debug our project and ensure that everything is working before the expo since one of the teams he judged did not have a functioning MVP. Connor learned to start early and make the goals for our project clear, as some projects looked less like year long works and more thrown together with no clear purpose. He also learned to make sure we create a clean UI, as this is very important for presenting a project to clients. Overall, our team

was able to gain insight for what will happen during our own expo next semester and what we should prepare in order to present our project successfully.