

Milestone –3 (Define + Ideate)

Team Name: Problem Seekers

Team Members:

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1. Introduction

One of the biggest challenges in traditional education is keeping students engaged in a constantly changing learning environment. This is a complex problem with many facets that add to the difficulty of maintaining students' active engagement in their learning. First, it might be challenging to maintain engagement over time since modern learners, who prefer more dynamic and interactive experiences, may not connect with traditional means of material delivery. Furthermore, the demands placed on today's students have changed, with a growing demand for possibilities for personalized learning, community building, and active engagement in the classroom. Attendance and grades are two examples of the current engagement measures that often fall short of insightful information about student involvement and fail to identify students who may be disengaged and need further support. Moreover, educators face difficulties in interpreting patterns and relationships among various courses and demographic groups when analyzing engagement data. The channels of communication used in traditional education frequently support a passive learning environment, which reduces the chances of students and teachers engaging in meaningful conversation and working together. The issue at hand basically centers on reviving traditional education to produce a more dynamic and captivating learning environment that caters to the changing demands of today's students while encouraging a sense of community and belonging within the educational system.

2. Additional Need finding

a. Who you interviewed & what you found out.

To further explore the problem of enhancing student engagement in traditional education, our team conducted additional need-finding activities by interviewing two new participants: a food science student and chemistry Ph.D. student. These interviews were conducted in pairs to encourage discussion and generate deeper insights into the experiences and perspectives of both educators and students.

1. Interview with the Food Science Student:

- To understand the professor's student engagement perspectives from an academic standpoint, open-ended questions were posed.
- Effective teaching techniques, tactics for encouraging student participation, the necessity of collaborative notes, and difficulties in sustaining interest in the classroom were among the topics covered in the questions.
- The student emphasized how critical it is to establish a safe space for learning, encourage intrinsic motivation, and modify instructional strategies to meet the needs of students with different learning styles.

- The girl also talked about how her constant physical participation in laboratories and class was causing her worry. Most of their work is done in the lab and requires a lot of time on its own. They believe that sharing their lab work and working together will be made easier if there is collaborative note-making software.

2. Interview with the Chemistry PhD Student:

- Inquiries concerning the students' experiences with traditional education, including how involved they were in different subjects and activities in the classroom, were made.
- The questions centered on finding out what helps or hinders student involvement and what kinds of learning settings and teaching methods they like.
- In addition to chances for peer collaboration and individualized instruction, the student expressed a need for more interactive and hands-on learning experiences.
- The student also talked about how professors are often unavailable when needed because of conflicting research or class schedules. Sometimes they must miss work to meet with the lecturer. She believed that creating a chat box where people could post questions and get answers would help close the gap.

➤ **b. Combining the insights from these interviews with our prior data revealed several recurring themes:**

- **Conflicts in Scheduling and Accessibility:** Many participants stated that scheduling issues between office hours and class schedules made it difficult to contact teachers. Their capacity to address issues or ask questions about course announcements is impacted by this problem.
- **Reminders and deadlines are necessary:** To help them better manage their time and complete their tasks on time, some respondents stated they would want deadline notifications or reminders. This illustrates how time management and job prioritizing are frequent problems that can be solved with organizational tools.
- **Demand for Interactive Instruments and Monitoring of Engagement:** One recurrent issue was monitoring participation in class discussions and activities to gauge level of engagement, suggesting a need for tools that offer insights on their growth and participation.
- **Effective Resources for Learning and Taking Notes:** A few participants reported difficulties in taking notes during presentations, which resulted in a lack of concentration.
- **People want centralized learning materials or a course handbook** they can use to understand and clarify concepts, especially when they don't have direct access to instructors.

Additional Need Finding:

- To further synthesize the findings from all interviews, our team utilized additional need-finding methods such as expert interviews and a process mapping approach. These methods helped us understand the expert's role in the user experience and gather ideas for unique needs or perspectives that may inform the project's design or objectives. The questions are domain-specific we got to understand their view on the existing system and the improvements they needed.
- We have also utilized a process mapping approach where we have mapped different responses we have got from different people and tried to correlate their points of view. This method helped us find solutions to the problem and helped analyze the importance of the problem they are stating.

By analyzing the data this way, we identified key insights and prioritized actionable strategies for enhancing student engagement in traditional education.

3. Point of Views

a. Present the three top POVs (“We met ... We were surprised to notice ... We wonder if this means ... It would be game changing if ...”)

1) POV: Sophia

a) We met:

Sophia

b) We were surprised to notice:

She felt it was difficult to access her professors outside the classroom.

c) We wonder if this means:

The current office hours system at UGA is unreliable.

d) It would be game-changing to:

Create a scheduling feature on ELC that the students can schedule times with the professor without having to go to an outside source.

2) POV: Jahnavi

a) We met:

Jahnavi

b) We were surprised to notice that:

Jahnavi feels that traditional exams may not always accurately measure her engagement with the material.

c) We wonder if this means:

The current assessment system at UGA is outdated and does not always help examine the student's knowledge on the subject.

d) It would be game-changing to:

Make the test taking experience more customizable to the student's strengths because most students have different strengths when it comes to test taking.

3)POV: Ashwin

a) We met:

Ashwin

b) We were surprised to notice that:

Ashwin feels as if class activities are a great form to keep the engagement in class up, but some students are afraid to speak up in class.

c) We wonder if this means:

Some students will not get the full class engagement experience because they are introverted.

d) It would be game-changing to:

Make an anonymous way for all the students to participate in class activities.

4. How Might We

a. Present the three top HMW statements with the POVs they stem from.

1. How might we create a student-teacher scheduling system on ELC for students to make teachers more accessible to students outside the classroom?

(From Sophia's POV)

2. How might we create assessment methods that go further than traditional test questions for students in order to measure the depth of the individual student's knowledge?

(From Jahnavi's POV)

3. How might we create an online platform that helps students easily participate in class for students in order to improve student participation in class?

(From Ashwin's POV)

5. Solutions

Solution 1:

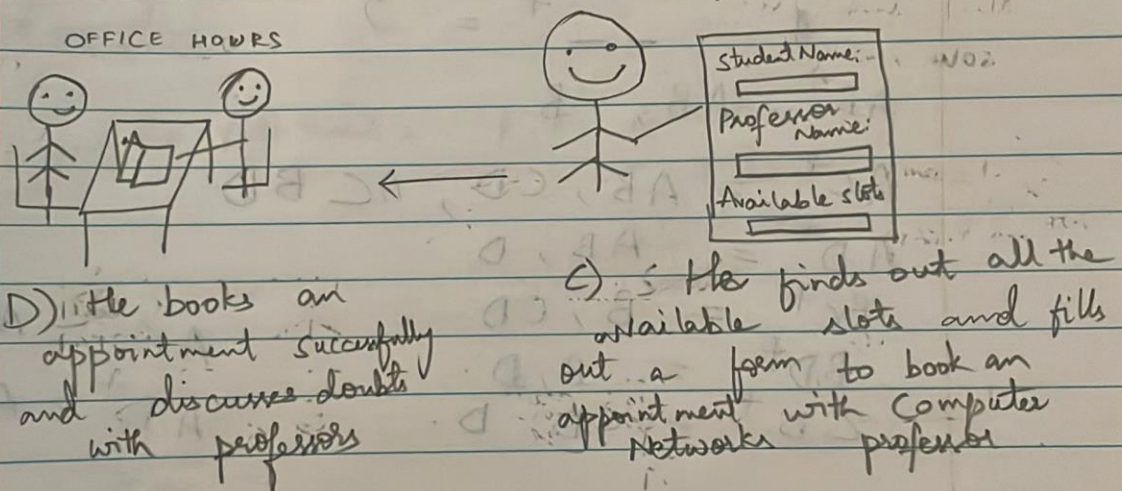
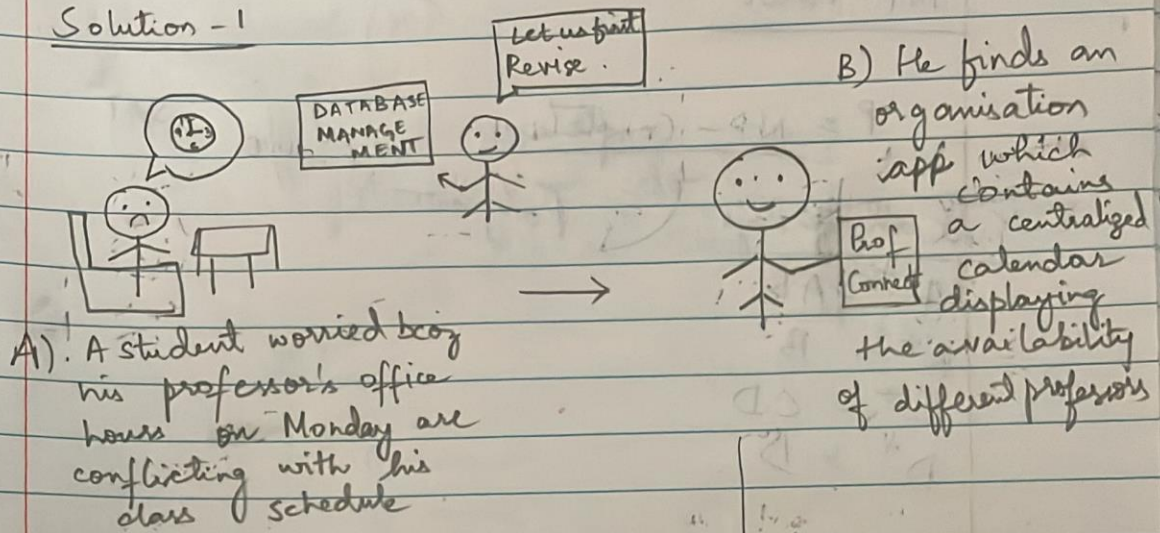
Organizational tools to schedule time slots with Professors

Many students have expressed the not so flexible office hours of the professors and difficulty in meeting the professors due to their own class timings. Students can greatly benefit through an app where appointments with professors can be scheduled for consultations, academic advising or any other doubts of students.

Key features of the application:

- **Automated Appointment booking:** Students should be able to access a centralized calendar, displaying all the available times of the professors. Students can schedule a meeting with the professors according to their class schedule and receive instant confirmations for meeting requests. This app would eliminate manual scheduling efforts through email.
- **Customizable availability settings:** Faculty can set their availability preferences by specifying their preferred timings and the location of their availability. This app should be able to accommodate the availability and schedule of professors across departments.
- **Automated Reminders and Notifications:** This app will be able to automatically send email reminders and calendar invitations to remind and notify both professors and students about potential changes in appointments. This app will aid both the professors and students to organize their time efficiently and avoid scheduling conflicts
- **Waitlist Management:** In cases where there is limited availability of professors, or the slots are fully booked, students can join the waitlist queue. Urgent or high-priority requests can be taken up first. If an unavailable slot gets open due to cancellation, the students who expressed interest with that time slot should be notified.
- **Feedback and Evaluation:** After each appointment, the students can grade how their doubts got clarified with the professors and rate each professor according to their experience.

Solution - 1



Solution - 1

Welcome to Prof Connect

Enter ur Name:

Enter Professor's name:

Available slots: Monday
☐ 11:00 AM - 12:00 AM ☐ 3:00 PM - 5:00 PM Tuesday

☐ select slot

Email Confirmation:

You have successfully scheduled slot on Monday 11:00 AM with Dr. Jin Sun

Solution 2:

Collaborative Note-Making Software

The collaborative note making software is designed to increase student active participation and engagement in the class. This tool is helpful for the students to actively keep making notes and contribute to a centralized learning repository.

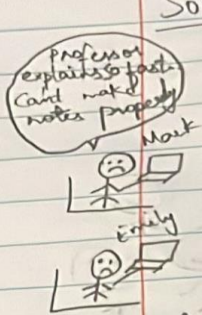
Key features:

- Real-time collaboration: The students can contribute to the notes while attending classes. They can also form virtual study groups, join discussions, collectively take notes, review their peers' work, and provide feedback.
- Multimedia integration: The software supports multimedia integration. The students can embed audio files, video files, images, and external file sources into the notes. This

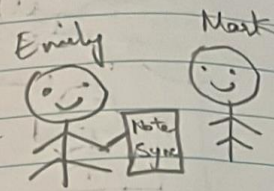
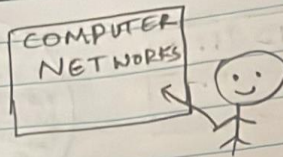
incorporation enhances the depth and context of course materials, facilitating the usage of different learning styles.

- Annotation and Mark-up tools: This software provides annotation tools that enable users to annotate lecture slides, textbooks or any other course material. Students can highlight important material, add comments or attach diagrams wherever necessary
- Version Control and History tracking: Students can revert the collaborative notes to previous versions. This will increase accountability and transparency, preventing accidental deletions or modifications
- Discussion forums: This software includes built-in discussion forums and Q&A sessions. Students can ask their questions regarding courses in this forum. Educators can provide clarifications and additional course material through this forum.
- Personalized Note Organization: This software provides personalized tools where notes can be organized by topic, relevance or date. This feature is to help students manage large volumes of data.
- Integration with Learning Management system: This application can seamlessly integrate with the existing Learning management system of the university.

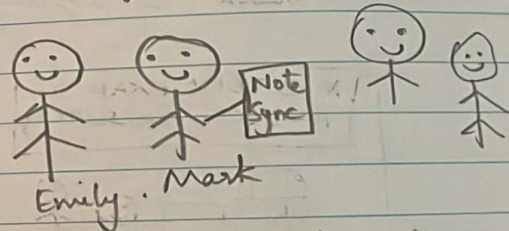
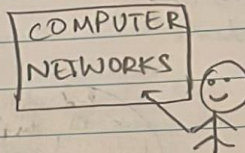
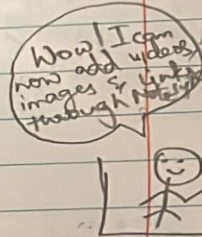
Solution - 2



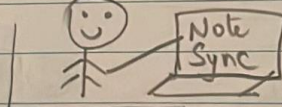
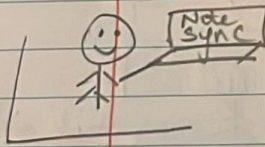
- A) Few students are not able to take notes completely because of the fast pace of lecture. Mark and Emily, think of solutions for this problem.



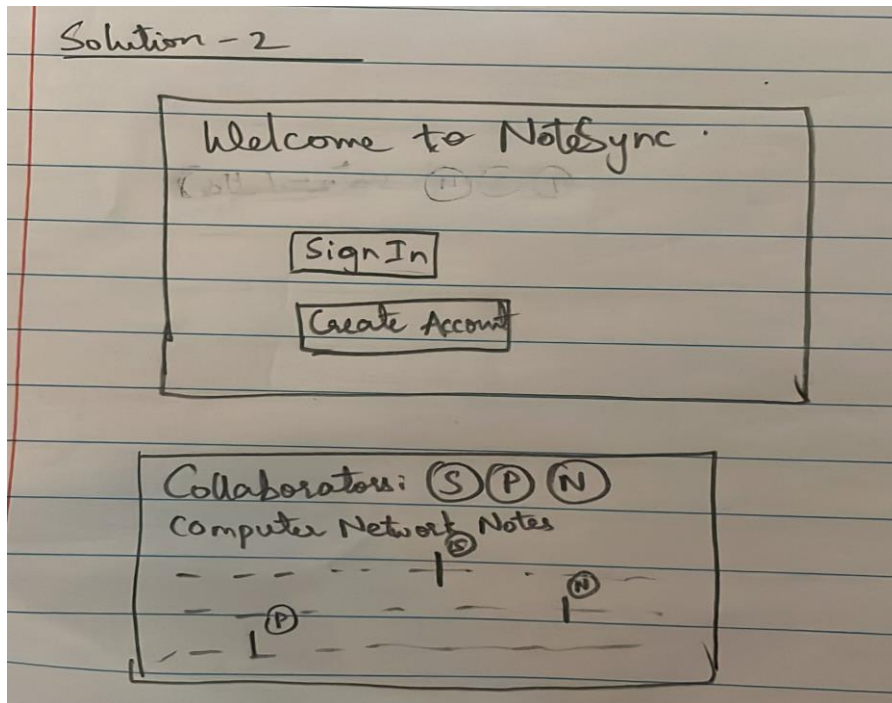
- B) Emily discovers NoteSync, an application which facilitates collaborative note-making and discusses it with Mark.



- C) Mark and Emily discuss about NoteSync with their classmates and come up with a plan to join a virtual class group & collaborate on note-making.



- D) All the students in the class using NoteSync to collaborate and make notes.



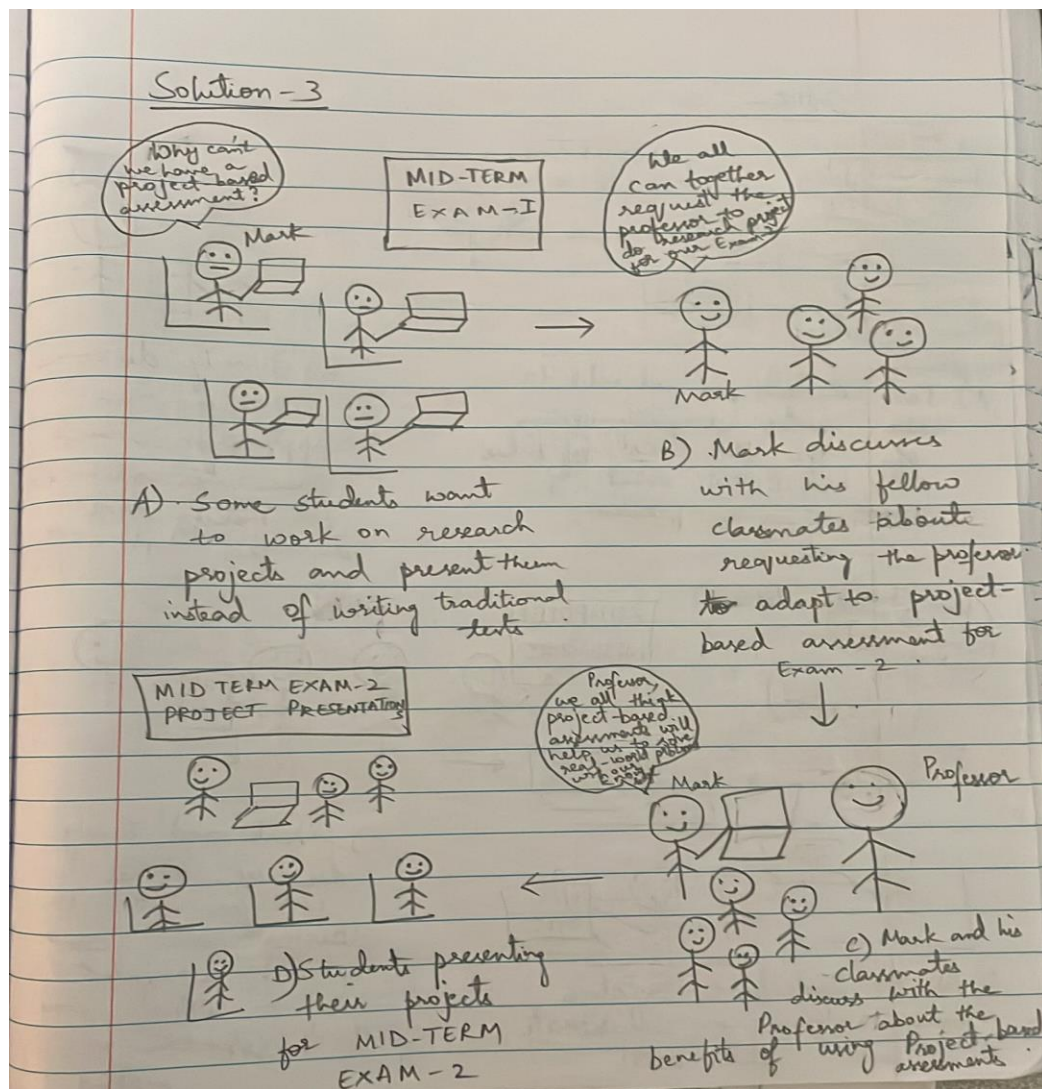
Solution 3:

Diversifying Assessment Methods: This strategy promotes the use of a variety of assessment techniques in addition to standard tests and quizzes, considering the diverse learning styles, interests, and skill levels of students.

Key features:

- **Project based Assessments:** The use of project-based examinations necessitates that students apply their theoretical knowledge to real-world circumstances. These assignments could include case studies, creative multimedia projects, research articles, or group presentations. Through practical, experiential learning exercises, students can enhance their critical thinking, creativity, and problem-solving skills.
- **Peer Assessment:** Outlining procedures for peer evaluation in which students comment on and assess each other's work. Peer evaluation fosters in pupils a sense of accountability and responsibility in addition to encouraging active engagement and teamwork. It creates a welcoming learning environment where students can benefit from one another's viewpoints and experiences.
- **Self-Assessment Resources:** Giving students access to self-assessment resources and reflection exercises allows them to track their own development, pinpoint areas for growth, and establish learning objectives. Self-assessment empowers students to take charge of their academic journey and cultivate lifetime learning skills by promoting metacognition and self-regulated learning.

- Authentic assessments: Creating tests that mimic real-world problems and tasks related to students' future academic or professional goals is known as authentic assessment design. Workplace projects, internships, case-based scenarios, and simulations are a few examples of authentic evaluations. Students can close the knowledge gap between theory and practice by participating in real-world learning opportunities. This allows them to acquire real-world skills and insights that they can use in their future careers.
- Gamified assessments: Gamified evaluations aim to improve motivation, engagement, and enjoyment by incorporating gamified features. Interactive tests, instructive games, role-playing activities, and gamified learning environments are examples of gamified assessments. Through the utilisation of game features like points, levels, badges, and leaderboards, educators may construct immersive learning environments that pique students' curiosity and encourage proactive engagement.



6. Summary and Reflection

a. Describe your brainstorming and collaborative process. Reflect on the strengths and weaknesses of your approach.

Our brainstorming and collaborative process involved individual ideation by exploring all viable solutions, later discussing them together.

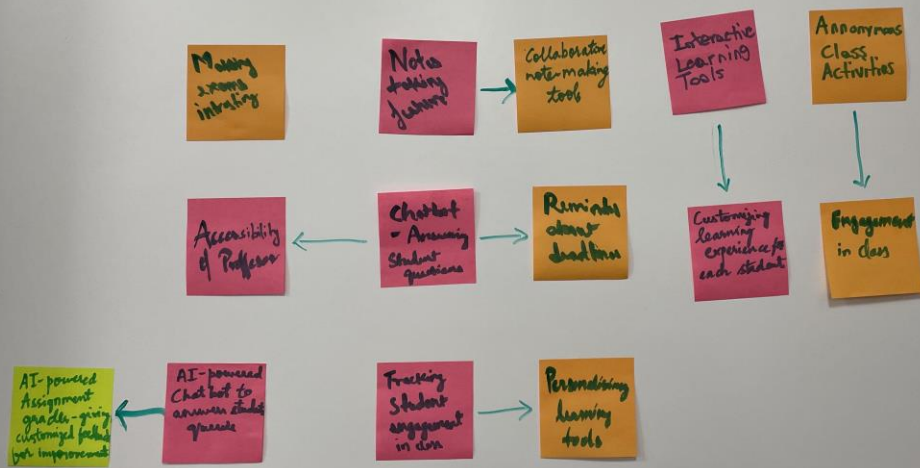
Individual Idea Generation: Every team member studied the issue of student engagement in education on their own and introspectively. After that, each of us came up with a list of possible solutions while considering various viewpoints and getting ideas from our own educational experiences.

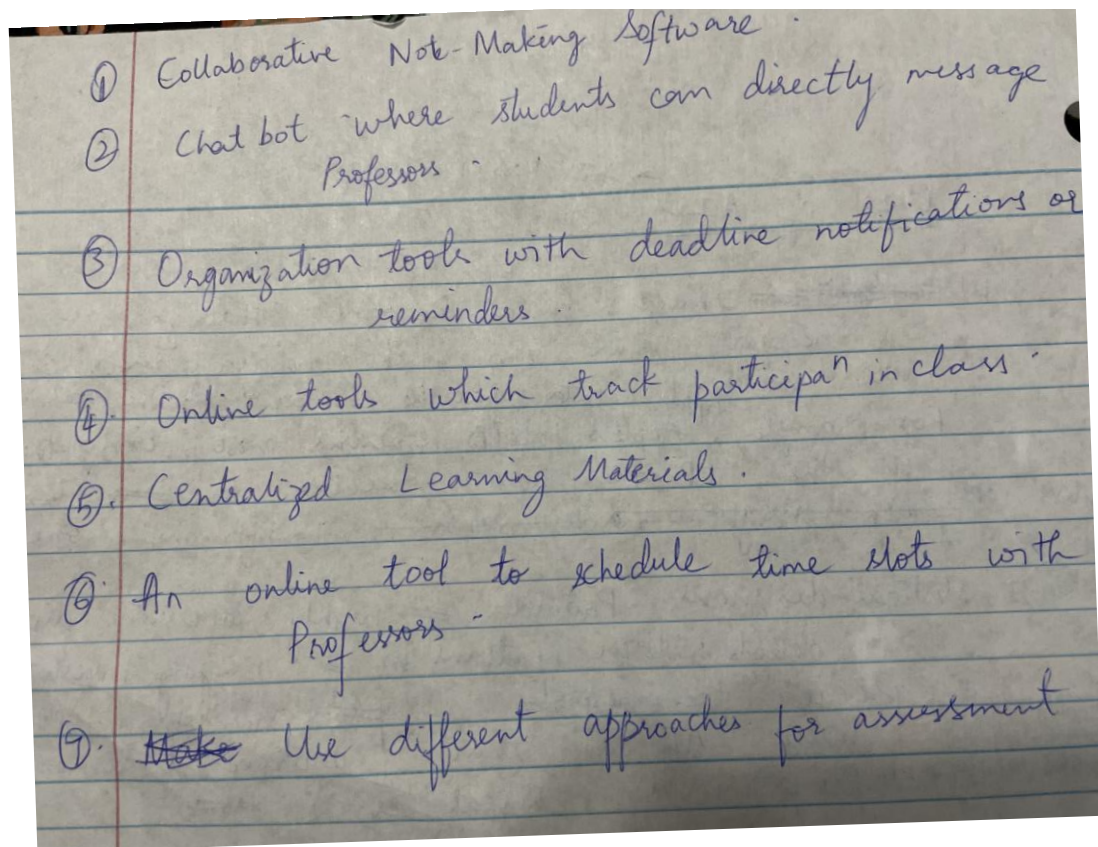
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Shriya

Kranavi

Evan



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- ① Collaborative Note-Making Software
 - ② Chat bot where students can directly message Professors
 - ③ Organization tools with deadline notifications or reminders
 - ④ Online tools which track participation in class
 - ⑤ Centralized Learning Materials
 - ⑥ An online tool to schedule time slots with Professors
 - ⑦ ~~Make~~ Use different approaches for assessment

Group discussion and idea sharing:

We used to discuss our ideas during our scheduled meetings. This facilitated exchange of perspectives and sparked brainstorming where we built up on our ideas together.

Idea Prioritisation: Following the generation of a pool of viable solutions, we assessed and ranked the ideas in order of potential impact, feasibility, and alignment with the problem statement. We had thoughtful conversations to focus and narrow down the number of possibilities.

Iterative refinement: We discussed all our ideas together iteratively and took feedback from each other at every iteration. We wanted our solutions to be refined and robust.

Strengths:

- Diversity of backgrounds: Each of the team members were engaged in individual brainstorming process before we discussed our ideas together. The ideas came from people with diverse backgrounds and perspectives. This helped us to get wide range of solutions and anticipate the requirements of various users.
- Open and collaborative environment: Our team maintained an open and collaborative environment where everyone is given equal importance, and all ideas are equally encouraged for discussion.

- Iterative approach: We have used iterative approach from idea generation to narrowing down the solutions to refine our solutions repeatedly by considering feedback from different perspectives.

Weaknesses:

- Time constraints: We all have our individual schedules. Due to that, we had to sometimes restrict the depth of our brainstorming sessions. We might have missed a potential solution due to this constraint.
- Over-Reliance on Similar viewpoints: Despite our best attempts to promote a range of viewpoints, there were times when we noticed that we were overlapping in our perspectives or approaches. This might narrow the scope of solutions investigated and ignore different points of view.
- Groupthink: Groupthink is the result of team members prioritising harmony and consensus over critical concept examination. This suppresses alternative perspectives and leads to the formation of less-than-ideal solutions. There may have been times during our team meetings when people were afraid to speak up against the dominant opinion or present other viewpoints because they wanted to keep the peace.

b. Compare and contrast three solutions. What are the strengths and weaknesses of each solution?

Strengths

Solution One:

- The strengths of the organization tools to schedule time slots with professors consist of helping to strongly improve the accessibility of the professor to the student outside the classroom.
- This will help the professor and student prepare for individual one-on-one where the professor can use this to improve the course knowledge for that student.
- The waitlist feature gives students a chance to get an appointment with their professor even if the professor is fully booked.
- With the professors being able to provide the time preferences that they have available, the students can pick a time that to meet that is both convenient for them and the professor to meet.
- The notifications sent by the tools will also help both students and professors to not forget about their scheduled meetings.

Solution Two:

- The strengths of the collaborative note taking tool caters to all types of note-taking styles as multiple people will be taking notes for this class.

- The tool is beneficial to students that must miss a class because of an emergency because they can just look at the notes taken by their classmates.
- The ability to revert to previous versions of the notes can influence students to experiment with their note taking methods because if they do not like it, they can just go back to the old version.
- The built in discussion feature can help students seek clarification on course material that they do not fully understand.
- The annotation and mark-up tools will help students highlight key information to remember it better.

Solution Three:

- By diversifying assessment methods, student engagement will be increased tremendously which would most likely increase test scores.
- The self-assessment resources would help students track their own knowledge of a certain course and benefit their studying.
- Project based assessments would help students be better suited for workforce situations as they will be doing projects in the real world rather than traditional tests.
- The diverse methods would help encourage students to use and develop their critical thinking skills.
- Students who struggle with traditional test taking will benefit from the diverse assessment methods.

Weaknesses

Solution One:

- A weakness of the organization tools to schedule time slots with professors could be that some professors are not very good with technology, so they might have a hard time learning to use the system instead of just having open office hours.
- The feedback system could be biased from the students as they will have personal opinions on the professor that might be harsh and unfair if the student is struggling in the class.
- Some students could take advantage of the scheduling system and overbook professor's timeslots, not allowing other students to have a chance to meet with them.
- Students that do not have access to high level technology might be at a disadvantage when it comes to getting meeting time with the professors.

Solution Two:

- A weakness of the collaborative notes tool would be students relying on other students to take their notes and feeling as if they do not need to attend class.

- Students could become too reliant on technology when it comes to learning and will not be able to use traditional note taking methods such as pen and paper if needed.
- Notes could easily be shared outside of class and valuable information that students pay tuition for could be stolen online for free.
- Students with limited access to technology would be at a disadvantage because they could not use the tool efficiently.

Solution Three:

- A weakness of diversifying assessment methods would be that the installation of these new assessment methods would be very time consuming for each of the professors.
- In the peer assessment, some students may become too reliant on other students to do the work, so they might not know as much but still get a good grade.
- A lot of old fashion professors would probably prefer the traditional assessment methods and would be resistant to change.
- The project-based assessments might require additional resources that the school or students may not have.

c. What did you learn from this phase? Was it what you expected?

We have learnt many valuable lessons from this phase.

- Importance of diverse perspectives: During our group discussions, each team member brought in unique ideas. Each of us comes from diverse backgrounds, with our own strengths and weaknesses. Our diverse backgrounds enriched the quality and depth of our discussions and reaffirmed our belief in collaboration and diversification.
- Iterative process: We understood the iterative nature of the design process. In our very first discussion, there were a lot of ideas. We continuously brainstormed to refine and bring out the best ideas. The iterative approach gave us the opportunity to narrow down the solutions and finalize the best solutions at each level.
- Value of Flexibility: Throughout the ideation process, we discovered how crucial it is to maintain our adaptability and flexibility. We had to be willing to change our minds about our initial assumptions and modify our strategy as we investigated other solution ideas and got input from team members. This adaptability gave us the freedom to change course as needed and look into different ways to solve the current issue.
- Challenges of group dynamics: We faced few situations related to groupthink. We learnt to be open to new ideas and make sure that everyone's voice is heard during the discussions. These challenges fostered the importance of building an open and inclusive team environment.

This phase met our expectations in many areas, such the value of iteration and cooperation, but it also gave us fresh perspectives on the difficulties associated with group dynamics and the necessity of flexibility in the design process. These insights will guide our strategy in later project phases, assisting us in creating original and significant solutions to the current issue.

Appendix: Other POVs and HMW statements

a. The Three Other POVs

POV 1: Harsha

We met:

Harsha

We were surprised to notice that:

Harsha feels as if it is somewhat difficult to take notes and maintain the pace of class because some professors speak quickly.

We wonder if this means:

Some students will miss key information important to the class because the professors must maintain a fast pace because there is not enough time in class.

It would be game-changing to:

Install cameras connected to the computers in every classroom that the professors can easily access and record lectures, and have those lectures be automatically uploaded on elc.

POV 2: Mahidar Reddy

We met:

Mahidar Reddy

We were surprised to notice that:

Mahidar felt burdened by traditional methods of homework to help students practice with the material.

We wonder if this means:

Some students will have a better understanding of the material than others because of how the homework caters to their learning strengths.

It would be game-changing to:

Create personalized homework assignments that cater to the strengths of the student taking the test. The students could take a survey that would put them into one of three learning categories. The three categories would each have assignments playing to the students' learning strengths.

POV 3: Casey

We met:

Casey

We were surprised to notice that:

Casey felt as if it was difficult to keep up with his grades in some of his classes because some of his professors were behind on entering grades.

We wonder if this means:

Some students will have a misunderstanding of what their grade in some of their classes causing them to withdraw or fail to withdraw from a course if the action is needed.

It would be game-changing to:

Create an AI grading system that does not give the students the official grade, but it will give the students an estimate of what the grade will be based off the AI grading system.

HMW Statements

Statements for POV Sophia

1. How might we create a student-teacher scheduling system on ELC for students in order to make teachers more accessible to students outside of the classroom?
2. How might we create a preference meeting time system on ELC for students in order to have students put down their availability for meeting with professors?
3. How might we create an open-slot notification system on ELC for students in order to send students emails whenever a last-minute opening within a student's preference time becomes available for student professor meetings?
4. How might we create a meeting cancel feature on ELC for students and professors in order to be able to cancel a meeting at the last minute if an emergency comes up?

5. How might we create a group meeting feature on ELC for students and professors in order to be able to have meetings outside of class between students and professors that are not one on one?
6. How might we create an instant messaging feature on ELC for students and professors in order to communicate in a professional but more efficient manner than email?
7. How might we create an online meeting feature on ELC for students and professors in order to meet virtually if meeting in-person is not an option?
8. How might we improve the email feature on ELC for students and professors in order to have students feel like they can access their professors on ELC?
9. How might we add a feature on ELC for students that shows the students that the professors are currently in active office hours in order to let students know that they can go to office hours
10. How might we add a campus map on ELC for students in order to highlight the office of the professors in context to where the student is?

Statements for POV Jahnavi

1. How might we make the tests more customizable for students in order to improve the test taking experience for students?
2. How might we update the UGA tests and assessments for students in order to make the tests and assessments not feel outdated?
3. How might we create assessment methods that go further than traditional test questions for students in order to measure the depth of the individual student's knowledge?
4. How might we implement changes to the test taking environment for students in order to help improve concentration on the exams?
5. How might we create exams that accommodate a variety of learning styles for students in order to improve the test taking experience for students who do not have traditional learning styles?
6. How might we improve exam grading at UGA for students in order to have more leniency for students who approach questions with a different learning mindset?
7. How might we implement a partner style assessment for students in order to make the test taking experience more enjoyable?
8. How might we change the question style of exams to implement knowledge of the topic for students in order to replace exams that focus on pure memorization?
9. How might we implement student-teacher feedback for students and professors in order to help the professors make exams that cater to student's needs?

10. How might we implement different assessments given to different kinds of students to let them choose which assessment will show the depth of their knowledge?

Statements for POV Ashwin

1. How might we create an online platform that helps students easily participate in class for students in order to improve student participation in class?

2. How might we implement an anonymous class participation program for introverted students in order to encourage them to participate in class?

3. How might we implement an in-class feedback system for students in order to let the students give feedback on in-class activities to the professor?

4. How might we implement an anonymous grading system for professors in order to let students be graded and receive their grades while remaining anonymous to the professors?

5. How might we create a partner style in class activity for students in order to improve student engagement within the classroom?

6. How might we create a filtering system based on the question answers for students in order to protect students who are afraid of sharing their answers with the entire class?

7. How might we create participation based graded activities for students in order to give students motivation to participate in class?

8. How might we create a system that accommodates nonverbal forms of communication in the classroom for students in order to encourage introverted students to participate?

9. How might we encourage professors to change their teaching methods for students in order to improve classroom engagement?

10. How might we implement technology in the classroom for students in order to make students more interested in the classroom discussion?