I. Project Idea

Our team project idea focuses on the idea of allowing for an enhanced user experience when it comes to various interactions between students and faculty in schools. We feel that the current methods in place may not be practical as many students don't feel engaged in the classroom and are therefore unable to learn certain topics to the best of their ability, so we plan to create a tablet application to help students become more engaged in their learning. How our application is going to be used depends on how the faculty chooses to use it. They would be able to use our tablet application for teaching, allow students to take notes and answer questions, collaborative work, and much more. One main goal of this project is to enhance the experience of students inside and outside of the classroom workspace so that they feel that they are able to efficiently learn and be able to manage their time better with the convenience of our application. As for faculty, we wish to provide an application that would allow for them to easily plan lectures, engage more with the students, and allow for them to be more easily accessible in case students wish to reach them. We believe that this technology would be used in all schools excluding post-secondary education as most students in university will possess a laptop and would most likely refrain from using this application.

II. Stakeholders & Users

A. Stakeholders

1. School Boards

We would need to get the school board to approve our application in order to integrate it into their school. They would ultimately decide if the cost of the system and training their staff would be worth the benefits of improved education.

2. Schools administration

They are looking to ensure their teachers are given what they need and are equipped with the necessary skills needed to provide optimal education to their students. They will have the background knowledge needed to create an optimal learning environment.

3. Special education coordinator

Special education coordinators are interested in the education of individuals with special needs or learning disabilities, they're concerned with how information is being taught as modifications or extra features are often needed for students with disabilities.

4. Product ownership and development group

This group is interested in creating and marketing a viable, useful product to the market. Their core interest is in maintaining and updating the system, marketing, development, and business viability.

B. Users

1. **Students**
   Our goal is to enhance the learning experience of students mainly between the ages of 6 to 11. Visual learners are widely known to be the most common form of learning style within children making up more that 65% of the population. Our product aims to exploit that fact and drastically improve the children's learning experience through visualization and interactive exercises. Our system will aim to be practical and simple so that students can use it with very little training.

2. **Teachers**
   Teachers would be another one of the primary users of the product and would require the most program knowledge. For successful use of the product in classrooms the teachers would have to be fluent in all the product's features and be able to smoothly coordinate a lecture plan revolving around the product. Some background knowledge in computers would be helpful however we plan to make the system easy to learn and be trained on how to use it.

III. User Research

A. Surveys & Questionnaires

The idea of using this method was to understand how students, both past and present felt about their experience with technology in schools as well as understanding their experience in schools when they were younger. The questions that were asked in our surveys covered overall feelings of educational technologies, technologies that they had used in the past, what helped and what didn’t, as well as other related topics. This helped us grasp how needed this technology is needed and also understand if people would have used this application in their youth or not. We also asked about the types of learners that people so that we may incorporate different types of learning methods into our application. Overall this was an efficient method as we obtained people’s opinions on certain topics related to the development of our application. Something we wished could have gone better was the small number of responses to the survey as well vague answers to some of the questions. That may have been due to users not understanding how to answer questions, which would have been our fault in not making the questions simple enough. Something we could have done differently was to get in contact with some elementary teachers and get their input on the idea and design.

B. Cognitive task analysis

For our second method card we chose cognitive task analysis as it complemented our project idea and provided insight for the flow of the application. This card was appropriate for our idea because it gave a summarization of user input as well as various decisions and actions. This allowed us to visualize our users' input and helped us understand what the needed information is for our user interface. We are able to use the cards as both users of the interfaces and find potential errors and problems as well as their perceptual needs. One thing that went well with using this method card was that we were able to relate it to our paper prototype and use it as a skeleton for creating our user interface. It also helped us come up with possible interfaces that we would need to include in our design. Some things that went poorly was not knowing the exact number of inputs our design would need. Coming up with every possible input while keeping the design simple was an exhaustive process and proved to not be as efficient. Something that we could have done differently is possibly looking at only the "must be included" user tasks and creating the cognitive task analysis based on that.

C. Paper Prototypes

The plan behind using this method was to demonstrate the viability of our project goals and to complement the findings of both of the other user research methods that were used. An explicit visual object provides an essential building block for further design and refinement in the development process. Additionally, this process is also fast and flexible enough to quickly model new designs as we consider our survey results and cognitive task analysis. We found the paper prototype gave our group a good perspective on the possible limitations we will have with this project. This went well in the sense that it really helped solidify our group's understanding of the desired app and provided a functional touchbase through which we could communicate potential additions or changes. What went poorly with this method was the challenge of assembling the materials, with each group member separate we could not have quite the same collaborative planning as might have been better. Next time we will look to hopefully develop this prototype as well as get more input from the users on how to keep the user interface simple and easy to use. Overall we believe this ideo method was extremely insightful and transitioned smoothly from the previous cognitive task analysis because we essentially attempted to map a visual representation to each cognitive task and develop the early image of our framework.

IV. User Tasks

A. Teachers can plan/create their lectures/assessments using the application
1. System will have a create-lesson slide show feature as well as a “chalkboard” feature for lessons
2. Will also allow for assessments to be created for grades just as is done in D2L

B. Teachers can mirror lessons from tablet to a smartboard or display
1. Teachers will be able to screen mirror from the application to a display board so that students can follow along with the lesson
2. Teacher will also be able to mirror lesson onto student’s tablets

C. Notebook feature
1. Students can use for notes, questions, homework
2. Teachers can use for in-lecture notes or personal notes

D. Students can answer questions during lecture from their tablets

E. Teachers can monitor students' screens with a view feature.
1. Teachers will have access to view what students are working on when using the tablet application. This feature will ensure that teachers are able to make sure the students are actually working on school instead of being distracted

F. Planner/calendar
1. Allow for users to plan events or jot down notes in a calendar-based interface

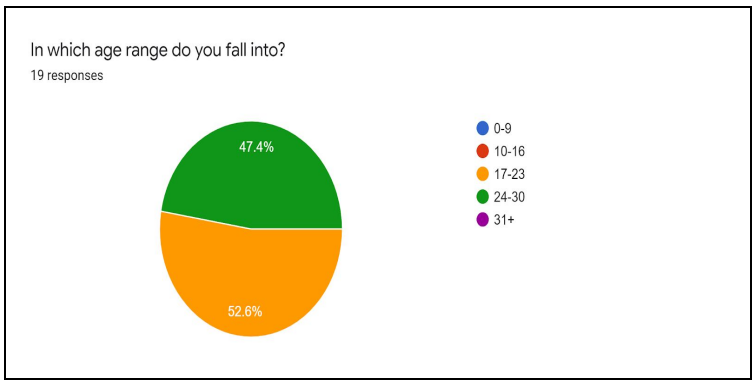
G. Direct Access between student and teacher
1. During certain hours, student can contact teacher if they have any questions or concerns
2. This can be done through voice or direct message

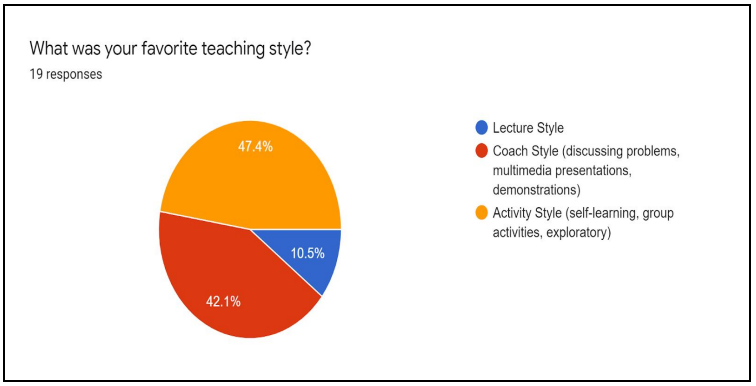
H. Can upload homework, assignment and projects to the application
1. Teachers can grade everything in one place
2. Students can complete tasks/homework and save their work

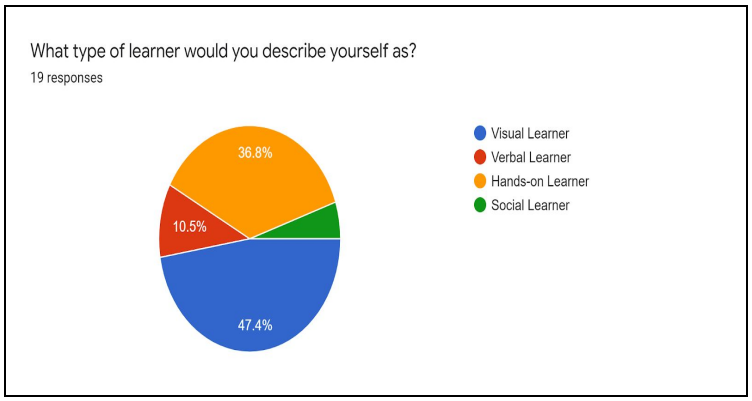
Must be Included	Important	Could be Included
A B	C D E	F G H

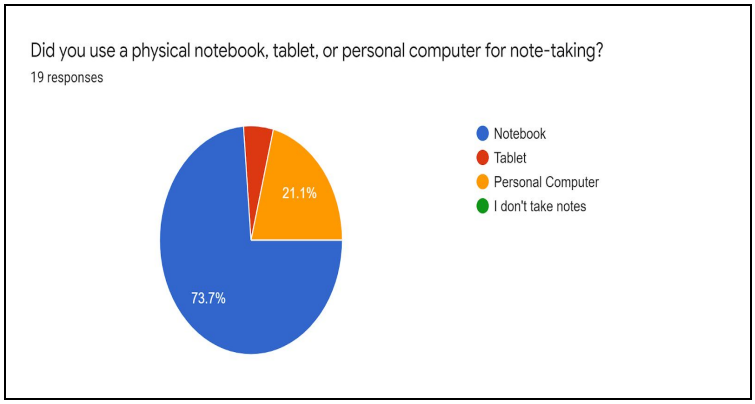
V. Appendix

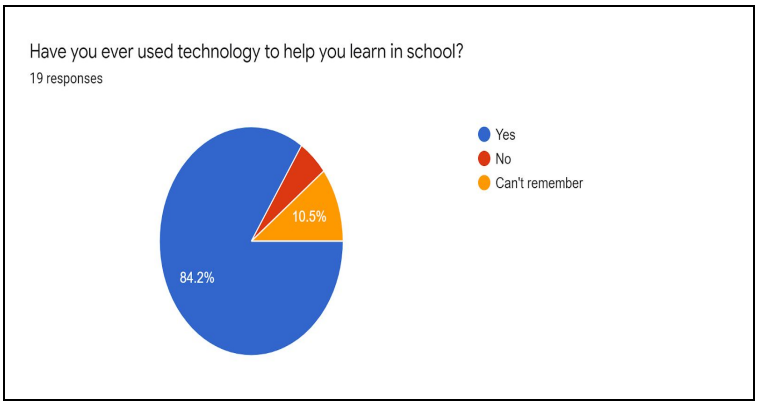
A. Surveys and Questionnaires

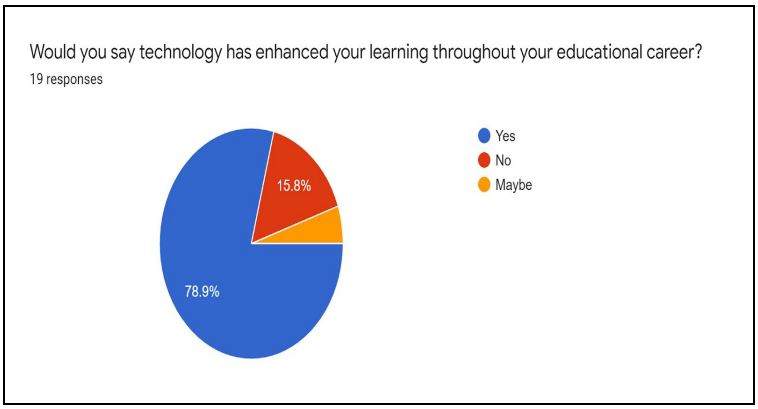


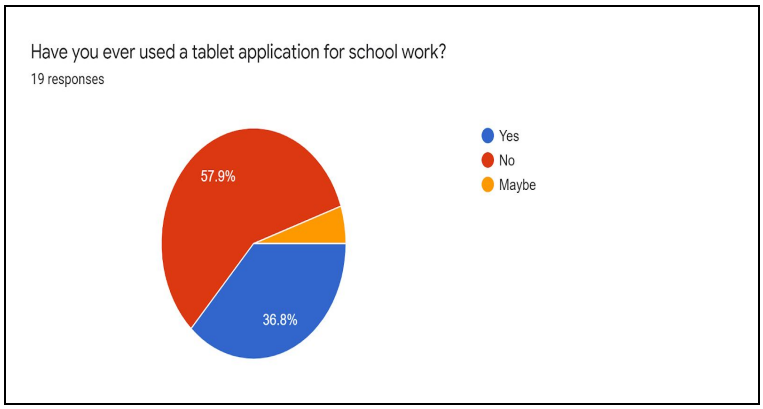


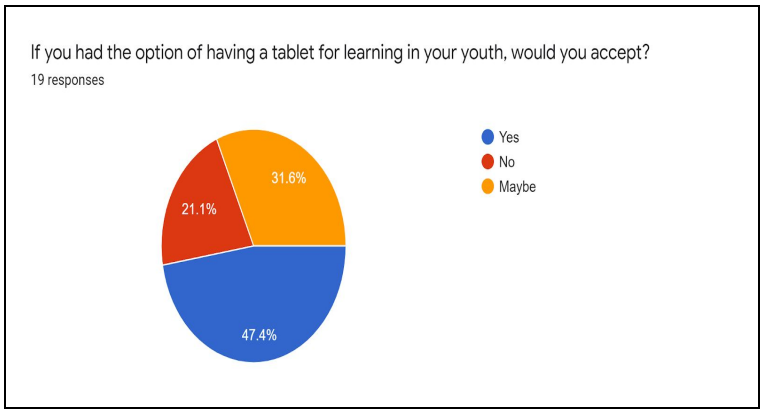












B. Cognitive Task Analysis

Teacher Interface

DP: planner/ scheduler

DP: Personal calendar

Action: add/delete/modify events

- Schedule
  - Lessons
  - Tasks
  - Meetings

Action: Can attach lesson plan & questions to event

Action: Schedule time for quiz, assignment, test to become available to students

DP: Student calendar

Action: Can add/ delete to student calendars

DP: Specific Individuals or all students

DP: Notebook

- Notes made in present tab are saved here

Action: Create new notes

Action: delete/ modify option

DP: Create new

Action: Question/ problem

- For use of present function.
- Simple question relating to topic.
- Math problem
  - Can use stylus to write out steps & answer on tablet
- Questions can be interactive
  - Ie. separate these icons into 4 equal groups

Action: Quiz

Action: Assignment

Action: Test

Action: Lesson plan

DP: Templates or blank

DP: can Attach powerpoint, video, word dic,

DP: Present

- Can switch between what is being presented without stopping presentation

DP: Can view list of students that are present but haven't joined presentation

DP: view questions asked by students

Action: Lesson plan
Action: Question/ problem
- Displays question or problem to students
  DP: Can view all students responses
    Action: Can display a students response to rest of class
  - All responses are saved and can be viewed again later under student tab

DP: Discussion board
- Teacher has control over responses to questions asked by students
  Action: enable/ disable responses from other students
  - Ie. a student asks questions for everyone to see but the teacher has control over who can answer it.
  Action: Teacher can post questions for everyone to see
    Action: enable / disable private vs public responses from students

DP: Student viewer
- Can view the screen of student with attendance on
  DP: View as grid of all students screens
  DP: view an individual students screen

DP: Students & grading
DP: list of all student enrolled in class
-Displays students attendance status
DP: Question answers
- view students answers submitted from questions asked during presentation
  Action: Can delete answers after viewing
DP: quizzes, tests & assignments
DP: list of all quizzes, test & assignments
- Each marked as either Completed or incomplete
  If complete
    quiz/test/assignment.

DP: quizzes to be marked
Action: mark
Action: Add comments
Action: make available for students to view graded
DP: testes to be marked
Action: mark
Action: Add comments

Action: make available for students to view graded

DP: assignments to be marked

Action: mark

Action: Add comments

Action: make available for students to view graded

DP: Responses to questions asked during present

Action: add / delete students from class

Student Interface

DP: Attendance on/off

- Student needs to turn ON attendance to gain control of application functions
- If a student leaves application with attendance ON, application will have access to screen of tablet -> allows for teachers to monitor tablet use.
- Students turn OFF attendance when they are not on the tablet or at teachers request.

Actions: turn off & turn off

DP: Calendar

- Displays events that the teacher has added
  - Students can not modify these

Actions: add/ delete/ modify events

DP: Join

- Displays whatever the teacher is presenting on the tablet screen
- If teacher is not presenting anything blank screen
- Teacher will know if student hasn't joined
- If question is being presented student will be asked to submit answer

Action: answer teachers question

Action: send question to teacher

Action: add a note sidebar to what teacher is displaying to take notes.

- Notes are automatically saved to notebook and can be viewed & edited there

DP: Quizzes, assignments & tests

DP: Quizzes to complete

Action: select quiz to complete

DP: Tests To complete

Action: select test to complete

DP: Assignments to complete

Action: select assignment to complete

- Can upload file

Action: view Graded tests
Action: view Graded quizzes
Action: view graded assignments

DP: Notebook

- Notes made in join tab are saved here

Action: Create new notes
Action: delete/ modify option

DP: Discussion board

Action: post questions for everyone to see

- Teacher can enable/ disable responses from students
- Teacher can answer

DP: Opinion to be anonymous to everyone except teacher

- Ie. students don't know who asked the question but can see the question. Teacher can see the question and who asked it.

C. Paper prototypes

This link will show our paper prototype sorted into a slideshow

https://docs.google.com/presentation/d/1w1P_mBFtAeEb24O4vJjevG9Jpb418s6GzDliQEfkSqU/edit?usp=sharing

VI. Links

P. (n.d.). Understanding Different Types of Learning Styles - Parker LHS LC 9-12. Retrieved October 13, 2020, from https://sites.google.com/a/litchfieldschools.org/parker-lhs-lc-9-12/home/understanding-different-types-of-learning-styles

Online portfolio

LINK: https://dribbble.com/teamC_cpsc481/about
Username: teamC_cpsc481
Password: teamCisgreat!

Online repository-

LINK: https://github.com/teddy-kalp/CPSC481-TEAM-C