GINA CODY School of Engineering and Computer Science
Department of Computer Science and Software Engineering
Concordia University
SOEN 342
Phase 1
Team Rocket

Abstract

In part one of the initiation phase of our project, a comparative study was done using the following online platforms: PowerKid Tutoring Academy, Khan Academy, Smart Online Tutoring, and Chegg in order to better understand the current market. The various platforms offer different features, and as such, different pros and cons which are defined in the market analysis section. The different platforms are compared against each other highlighting what the current trends are in this field.

In part two of the initiation phase, the proposed implementation of the e-academy platform StudyBuddies is laid out. It includes a deeper understanding of what the platform promises to offer, the population it caters to, as well as how it differentiates itself from the current market solutions described in part one through additional features. Our proposed platform solution is then discussed. The core features and who may access them (ie what type of user interacts with what features) are laid out in order to better understand how they add value to our platform. The different types of users and how they get value from our platform are different, so it is imperative that we define each category.

Part I: Market analysis

Market Analysis and Existing Platforms

PowerKid Tutoring Academy

- Offered Features

  - Virtual Tutoring:

    PowerKid offers virtual or in-house tutoring sessions. Each session is designed for the specific student, based on the student's needs. The tutoring sessions are 1-on-1, they can be held remotely anytime or in-house depending on the city the student lives in.

  - Result and Progress Tracking:

Parents and students can check their progress since they started tutoring with the results tab. PowerKid wants to ensure parents and students get the results they want out of the tutoring and can be better prepared for school or standard exams. Thus, parents can input their child's test scores to track progress.

- ○ Categorization of subjects:

  Students can choose the subject of their sessions such as math, english or science or for their school homework. As well as standard examination preparation courses such as the SAT, ACT and PSAT.

- ○ Parent login:

  Parents are able to create an account by contacting the administrators of PowerKid. Once they have created an account they will be able to login to the website.

- ○ Tutor application:

  There are three steps to the tutor application first inputting contact information, second submitting credibility which includes resume and background education and, choosing the grade and subject they would like to teach

- ○ Choose Pricing packages:

  Through the website parents can purchase the different PowerKid packages. As the price increases there are more hours for the students to meet with their mentors. Figure 1 below shows the different packages parents can purchase.
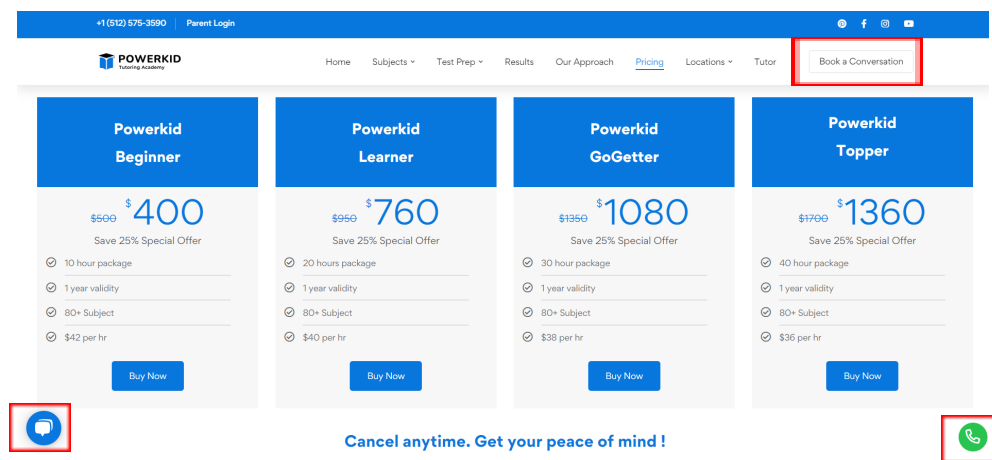
Figure 1: Pricing Package options

- ○ Whiteboard:

  During tutoring sessions tutors and students will have access to an interactive whiteboard to be able to problem solve together.

- ○ Contact forms easily available:

  To contact the administrators of PowerKid, as seen on Figure 1, there is a live chat, a cell number and a "book a conversation" button. Three buttons available at all times to get started on PowerKid are boxed in red on Figure 1.

- ○ PowerKid Blog:

  Administrators have a blog and they post tips and tricks to help parents and students reach their goal.

- Pros
  - ○ Parents can track the progress of their student:

    During the tutoring sessions the student and tutor will do problems together and then the student will do them on their own. The parents can upload their childs in class grades after the sessions to track the progress and ensure the tutoring is working.

  - ○ Live Tutoring sessions created for a students needs:

    The tutoring sessions are catered to the specific student's need to be successful in the subject they want. Tutors make the lesson plan related to the students course curriculum so that they can do well in school or on their standardized exams.

- Cons
  - ○ Mainly designed for US curriculum:

    PowerKids is mainly for students in the US and designed for the American school curriculum therefore, it may not be suitable for students around the world or tutors in different countries.

  - ○ Not much information without registering:

    The subject pages on the website do not have much description, and the website in general constantly leads to contact forms. Which makes it difficult to learn more about PowerKids without contacting an administrator.

- ○ <u>No recordings of the classes:</u>

  The live tutoring sessions are not recorded or posted anywhere. This is a challenge as students cannot go back and listen to what the tutor said during their session. In addition, parents will not be able to review the session in case they want to check what the tutor and student worked on.

- ○ <u>Can only purchase packages:</u>

  Parents cannot just have one session to try out PowerKids; they have to purchase entire packages. This is expensive and may not be convenient if their child only requires a few sessions to boost their grade.

Khan Academy

- ● Offered Features

  - ○ <u>Prerecorded video classes:</u>

    Academic material is available as a combination of prerecorded video classes and readings which together cover the chosen subject. It is convenient because the student can rewatch and reread these materials as much as they want to better understand.

  - ○ <u>Exercises with solutions:</u>

    After watching or reading through some lectures, the student has the possibility to do some exercises about the covered subjects. This gives them some feedback on how well they understood the material.

  - ○ <u>Material categorized by subject and grade:</u>

    The academic material that is accessible on this platform is categorized by subject and grade. This simplifies the task for whoever is looking to learn something specific.

  - ○ <u>Search bar for material:</u>

    In addition to the category menu, the website offers its users a search bar to help them find what they are looking for. Users can enter keywords and phrases there, and Khan Academy will output the material relevant to the search.

  - ○ <u>Authentication:</u>

    This platform supports registering for three different types of accounts (student, parent, teacher). Different functionalities are available to the different types of users. This authentication process allows keeping track of what the user does on the website.

  - ○ <u>Parent control:</u>

For a student account of somebody under the age of 12, there has to be a parent's account associated. First, if there is no parent's account that approves this student's account within a week, the student's account is automatically deleted. This feature also allows the parent's account to be their child's administrator (features like limiting some content, verifying the progress…).

- ○ Class creation:

  A teacher's account has the ability to create classrooms and add students (student accounts) in their classroom. After that, teachers can assign watching/reading specific content and doing exercises to their students with a deadline. Teachers also have access to their student's activity on the platform (everybody's grades, missed homework).

- ○ Badges (milestones):

  By listening/reading through the material and by completing the exercises, students can earn badges. This marks the milestones that they achieve and shows them their progress.

- Pros

  - ○ Clear minimalist (professional) layout:

    The general layout of the website is clean and a neutral color palette was chosen (blue and white). It is also easy to find the different tools offered on the website. The aesthetic of the website is professional which is a good thing because the users are still there to learn.

  - ○ Combination of content presentation and practice exercises:

    It is a good thing that the students can not only learn some material, but can also practice their newly acquired knowledge. This is extremely useful to the learning process and makes it more interesting to the user. The student will be less likely to fall asleep if he has some exercises to do than if he only had to read and listen through the big chunks of information.

  - ○ Gamification of the learning process:

    While doing exercises, students have visual and auditory feedback on whether their answers are right or wrong. They also earn badges the more they go through the different lessons. This is a great thing for an e-learning platform as it motivates students to learn.

- Cons

  - ○ Overwhelming content menu:

    Even if the academic content is categorized by subject and grade on the website, the menu showing these categories is difficult to look at. As shown in Figure 1, the menu

looks overwhelming. An improvement would be to show only parts of this menu in which users are interested in. This could be achieved by hovering effects or more general category selection.

Figure 2: Categorized content menu of Khan Academy

○ <u>No live classes:</u>

There is no tool on Khan Academy's website to conduct or even schedule live classes. This is a feature that is important to a lot of people and it was demonstrated during the Covid-19 pandemic.

○ <u>No Q&A of any sort:</u>

Even though some concepts covered by the academic material found on this platform are complicated, there is no way for the students to ask questions. It is not always clear what a prerecorded video tries to explain and listening to it again and again does not always help. This is why students should have a way to ask questions that they might have, and their teachers or tutors approved by the e-learning platform could answer them.

Smart Online Tutoring

● Offered Features

○ <u>Live video classes:</u>

When selecting a course (free or priced), a specific coach will be assigned per course. A meeting will then be confirmed for the coaching call where the discussion will occur for 1 hour.

○ <u>Cancellation Policy:</u>

A 24 hour cancellation policy is allowed for coaching calls. A re-arrangement would occur for another meeting date with the coach. If a coach were to cancel in less than 24 hours, then the user will get refunded.

- ○ Linked Accounts:

You can link your account with the teachable website to have your info saved as well as relate to what you want to be coached at specifically from your 1 on 1 coach.

- ○ Client Reviews:

Clients can review their coaching sessions and the pre-recorded video lectures. Reviews can aid other clients with validation on coaches.

- ○ Pre-recorded Video Courses:

The platform has classes offered for tutoring tactics. A free beginner course is offered. The others require payments. Once paid, the user can revisit the courses whenever.
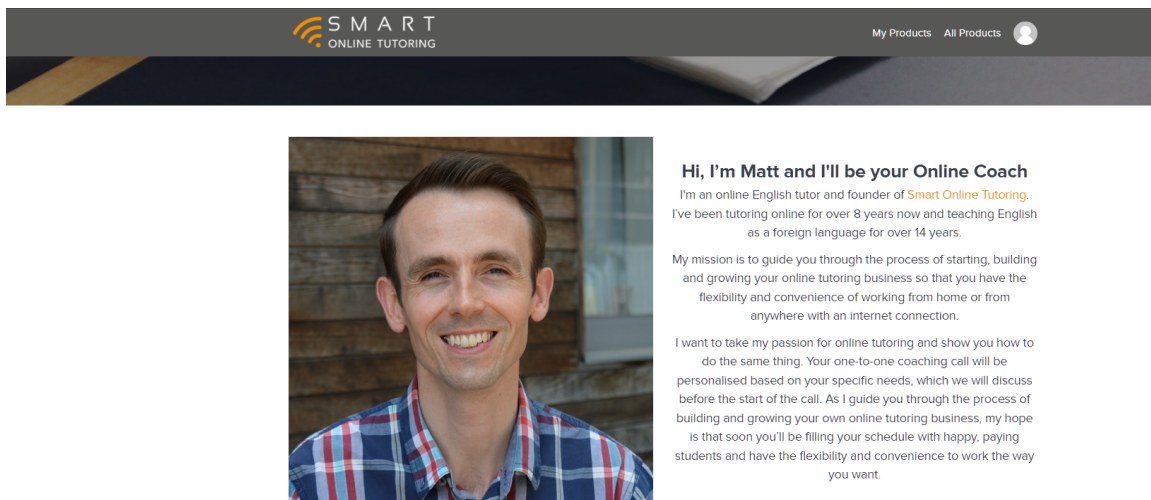
Figure 3: Background Check on Coach/Tutor

- ● Pros
  - ○ Tutor information:

The platform gives a complete background on the coach that is preparing you for the tutoring experience to eliminate any uncertainty and misinformation. There are instances where a coach/tutor can falsely advertise himself/herself to the client and scam them out of money.

- ○ Combination of both live classes and pre-recorded:

The platform allows users to have both live sessions with the coach of the course himself/herself as well as the pre-recorded lectures taught by the coach. Difference between the two, for live lectures the user can ask questions and have them answered immediately compared to the pre-recorded where he/she cannot.

- Cons

  - Not Enough Courses & Coaches:

    As the platform stands presently, there are only two available courses to the user and one available coach for a live session. This cannot attract new users due to the possibility of not having the specific course needed as well as the coach being unavailable due to being fully booked in appointments.

  - Weak Interface:

    Not many navigation bar options, there are no filters for specific courses, and there are no separate pages for the live classes and pre-recorded. The colors used on the website are very plain which makes it seem amateur.

Chegg

Chegg works differently than other tutoring services on the market. While it does not offer direct tutoring services with a one on one tutor, it offers a large catalog of homework help and services, aimed to assist students in direct work related problems rather than teaching specific topics. Chegg offers one of the largest catalog of step by step solutions to problems in every field of study along with practice exams to hone your skill in a specific topic. The main attraction to using Chegg is its wide variety of services it offers such as expert answers, proofreading and grammar reviews, exam prep problems, topic reviews and quick Q&A with an expert in the field. Chegg is offered on every general web browser as well as their app available on android and IOS.

- General Features offered by Chegg for Students

  With a standard membership of 18.95/mo, students are able to create an account and have access to a main hub where all the features are clearly and easily displayed/accessed. Chegg offers the ability to add your specific courses for the semester so its algorithm can make a tailor generated search for information and course-specific resources that are relevant to you.

  - Proofreading services

    Students have the ability to submit a text and get an expert proofreading with notes and suggestions within 48 hours

- Textbook Solutions (including user submitted problems)

  Students can upload a problem to the website and get an expert step by step solution within minutes. These solutions are saved in the Chegg depository and are thus accessible for all students creating an increasingly large catalog of solutions.

- Math Solver (integrated math calculator)

  A general math expression solver ranging from pre-algebra to calculus with step by step solutions.

- Citation generation
- Plagiarism Checker
- Grammar Checker
- General Homework assist

  Students have access to a Q&A service with an expert tutor, however this is NOT a live chat service thus students may have to wait for a reply.

- Exam preparation/Simulated quizzes

  A wide range of mock exams are available as a service where students may attempt an exam made by instructors. Additionally, students have access to a wide variety of expert-made flashcards and practice problems.

- Topic reviews

  Expert written explanations and reviews of many subjects.

- A wide catalog of free E-Books with the ability to buy/rent/sell books

  The ability to buy/rent/sell eTextbooks for a semester. This service is quite unique as many of the popular textbooks come with direct expert solutions to the textbook problems.
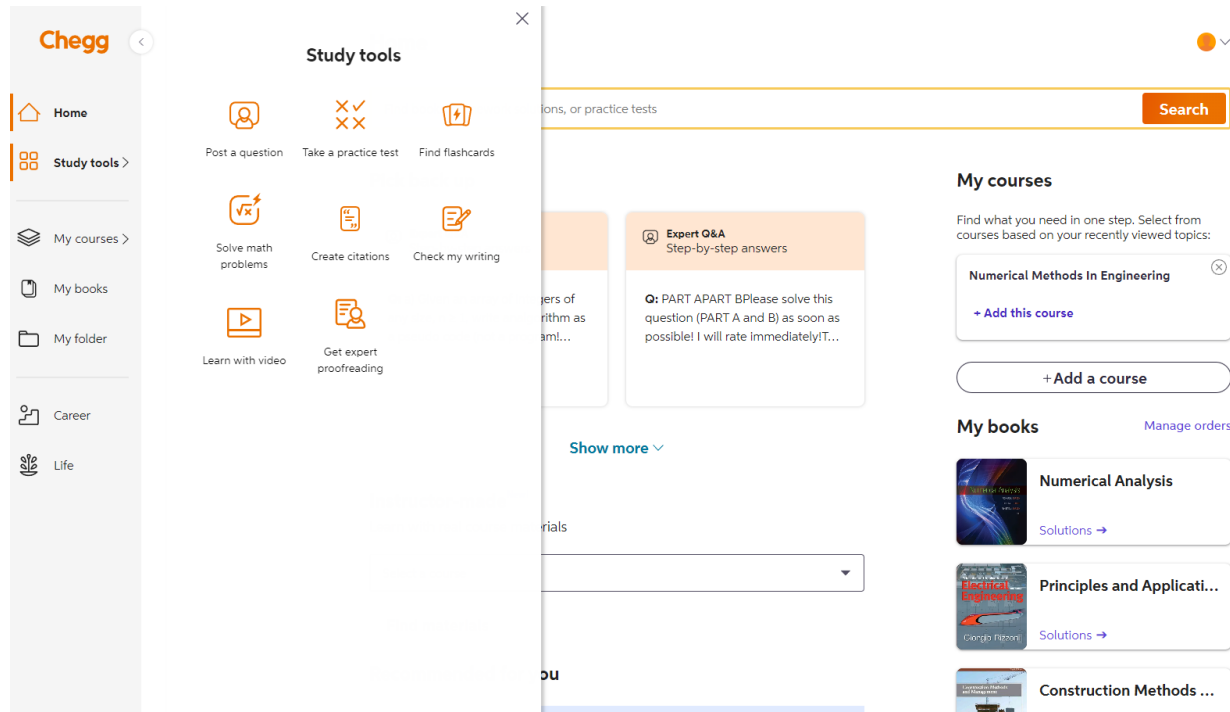
Figure 4: Chegg Student Dashboard

- General Features offered by Chegg for Educators

    University professors can create verified accounts and post lecture notes, practice exams, assignments and general homework help. Each educator is payed for the material and content they upload, thus as an educator you can make a profitable amount of money for posting old quizzes and general resources all while helping millions of students lean beyond the classroom.

    Tutors can create a verified account for specific fields and are responsible for helping students with Q&A questions and answering posted homework solutions. Each tutor is responsible for their answers' correctness as students may upvote correct solutions resulting in better tutor reviews. Chegg tutors are paid on an hourly wage directly correlated to the number of questions answered by student submitted questions. Higher quality answers and correctness of answers will result in better rates.

- Pros

    ○ General features offered for students

While chegg does not offer direct tutoring one on one services it does offer a great deal of general features that a student may use to assist them in their studies. These features are quick and easily accessible and reliable. The layout of the site and app is very clean and simple. A grand catalog of step by step solutions to homework problems in every field of study are available.

- General features offered for Educators

Educators such as teachers or university professors have the ability to share useful assignments, notes and general teaching techniques through Chegg allowing students the ability to view and access material for extra knowledge in a specific field of study. Professors thus have the ability to share knowledge without necessarily having to teach the material to a live audience. Tutors have the ability to work on their own time and get a paycheck based on the number of answers to questions submitted by students. The non-live format additionally gives the tutors a chance to review material to properly answer a question they might not be familiar with.

- Cons

Chegg's non-live platform does not allow a student to have a personal one on one session with a tutor in a subject they are struggling on. While the Q&A format can work, it may be far less efficient as a learning strategy. Solutions to students submitted questions are not checked by anyone past the tutor submitting his answer, thus answers may not always be correct. There is no way to avoid bad tutors as tutors do not have a review, but rather gain credibility by students upvoting correct answers in which that tutor has previously submitted. It is typical to find multiple different solutions to the same homework problem, and additionally tutors' standards are not necessarily high thus, step by step solutions are not always given.

Comparative study

The key sites we took a look at are PowerKid Tutoring Academy, Khan Academy, SMART Online Tutoring and Chegg 24/7 Course Help. These sites offer services for further education and development of students. However, these sites approach this task in different ways with PowerKid Tutoring offering virtual in-house tutoring sessions which allow parents to keep track and monitor their child's progress. While Khan Academy does offer similar parental control and tracking of progress as PowerKid, Khan Academy focuses on using pre recorded lectures and follow up exercises with solutions to monitor and provide feedback to students. SMART Online Tutoring approaches this in a very different

way as they train others on how to become tutors and how to better teach courses. The last one is Chegg which is also fundamentally different in that as it allows users to post questions and receive answers from other users and professionals along with offers for proofreading and other services.

The tracking for education resources are also very good with Khan Academy offering fully organized maps and plans that have a wide array of subjects categorized. PowerKid on the other hand allows for a couple of subjects only (Specifically Math, English, Science) for which tutors are available. Smart Online tutoring however does not teach traditional material, but instead trains coaches and how to use software in order to become tutors and only teaches 3 courses (courses on Zoom, Bitpaper Boss and how to Coach). Finally with Chegg allowing users to post whatever question they have no fixed topic or category and allow for anyone to ask questions for any class.

Another key difference is how the pricing model for each service is very different with Powerkid using a fixed package system that allows parents to pay for more hours for the students to meet with their tutors. Khan Academy on the other hand is free and only asks for donations if the user would like to donate. SMART Online Tutoring on the other hand has fixed prices for all three of their courses that the user can purchase. Then with Chegg we have a monthly subscription service to allow users to access courses and post/read questions and answers that other users have posted.

Part II: E-Academy presentation

Types of the Users

Students

Students represent a user which will be using features provided by the platform such as registration in order to store personal information and contact info about him/herself, scheduling of the tutors, 24/7 live help or anything else. They are the half of the cornerstone of the project since without users there would be no one offering service to. Students will be able to register starting from the age of 12 by themselves without parent supervision. Students are seeking help and will want the service to be easily usable and intuitive to search for whatever help they require at the moment's notice.

Parents

As students can include any level, there are certain situations when parents of the student would like to monitor the progress of their studies. Therefore, if a student is younger than 12, they are required to have a supervisor from the family side in order to schedule and overlook the progress of the student. Parents are granted all access as a student would have.

Tutors

Tutors are the essential part of the user base which we are providing the service of tutoring whether it is a live session or helping students with a solution through notes. They are able to create virtual classrooms, give assignments and quizzes, create Q&A sessions and interact with students/parents. It is crucial for the system to be intuitive for the tutor to use as from this will depend how good of a service they will be able to provide for the customers i.e. students.

Administrators/managers

As any user base there should be some moderative part of the system whether automatically or by a person. In our case the best case scenario would be a human interaction with an administrator because if there are any issues with the communication between student tutor or questions from parents concerning any side of the process human touch would be unexchangeable and really helpful. Administrators and managers would be able to control all aspects of the students, tutor and parent accounts in order to resolve any issues arising during and between the sessions. They will also make sure the content of the website is compliant with community guidelines.

Proposed features

StudyBuddies will have a variety of features which will be useful to all users, based on their roles and needs. In addition to core features which are a must for an e-learning platform, some additional features only found on StudyBuddies will be implemented. Below are the lists of these two categories of features.

Core features

- For all users

  - **Account creation for each type of user** - this feature will enable users to pick up where they left instead of starting from scratch every time

  - **Search bar** - type in what you are looking for on the website and get a list of the most relevant finds

  - **View the list of available topics and overview of the subject** - a list of available topics will be available by category; once a subject is selected, a brief overview of what will be covered in the tutorials for that topic will be displayed

  - **Background and specialization of every tutor** - every tutor will have a description of their field of expertise on their profile page

- ○ **Electronic books catalog** - access to a variety of textbooks online (free and paid)

- ○ **Free trial** - to allow students and parents to figure out if online tutoring is for them and what are their specific needs

- For students/parents

    - ○ **Paid monthly subscription or hourly rate with tutors** - monthly subscription gives access to all resources on the website including 3 one-on-one meetings with a tutor and unlimited group lectures; hourly rate with tutors only gives access to individual sessions and is paid by hour

    - ○ **Pick a random or specific tutor** - see the list of tutors available for a subject and pick one yourself or first available one

    - ○ **Online live/pre-recorded, group/individual lectures based on student need**

    - ○ **Q&A sessions with tutors** - available for both students and parents

    - ○ **Solo registration only after the age of 12** - to prevent payment incidents

    - ○ **Access to particular tutor's notes** - tutors will save their notes and will share them with current and future students

    - ○ **Parent has the access to the same features as student** - students before the age of 12 must use parent's account, therefore, both accounts should have access to the same features

    - ○ **Request a one-on-one with a tutor** - request a meeting at a specific day and time with a specific or any tutor for the subject

    - ○ **Upload and download documents** - to or from the tutor or classroom in case of group classes

- For tutors

    - ○ **Create a page for your topic** - create a virtual classroom and add any relevant information regarding the topic that you tutor to it; it will be available to all students that join your class

    - ○ **Make your own schedule** - tutors can see if a request for a one-on-one has been placed by a parent or a student and either accept it or propose an alternative time

    - ○ **Student appreciation reward** - accumulate positive feedback from students and get a bonus with your next pay;

- ○ **Paid per content** - in addition to hourly one-on-one, tutors will be paid for the content that they post such as quizzes, notes, practice exams, etc.

- ● For admins

  - ○ **Delete/add any public information on the website** - any information which does not meet the guidelines can be removed by the administrator if flagged

  - ○ **Delete/deactivate any user's account** - in case a user does not comply with website guidelines, admin has the ability to temporarily deactivate or permanently delete user's account

  - ○ **Feedback review** - in case a parent, student or tutor encounter an issue with another user and feedback can be presented as a proof

  - ○ **Manage users' accounts -** admin can manage user's account if there is an issue with account information, payment, upload/download of documents or leaving a review

Additional features:

To adopt additional features, maily two elicitation techniques such as data collection from online sources and knowledge reuse were applied. After brainstorming and sharing personal and general experience of team members with similar platforms, some core and additional features were implemented. For example, recorded one-on-one sessions was one of the features that the team thought would be helpful to students based on the team's personal experience with recorded lectures during COVID. Similarly, by searching the web for some useful data on online tutoring, it was found motivating students and discipline are one of the major problems with online tutoring. Therefore, getting feedback and once again being able to learn at your own pace with recordings of the sessions is crucial. In addition, to keep the tutors motivated, they need to be rewarded too, which prompted the tutor of the month feature. (TUTORROOM | ONLINE TEACHING SOFTWARE)

- ● **Review system for students, parents and tutors** - this feature will enable parents and students to leave feedback for tutors; similarly, tutors will be able to leave feedback for students which will also be available to parents.
- ● **Tutor of the month** - tutor who gets the highest number of positive feedback in one month will receive a bonus and will be featured at the front page of the website
- ● **Recorded one-on-one** - to allow students and parents to review what was discussed with a tutor; this will allow students to study at their own pace and go back to the meeting if they forgot or missed something

Project value

On top of the essential features in StudyBuddies' e-learning platform, adding some additional and unique features that will greatly add value to the website.

First off, the review system will allow the parents and students to leave their feedback for tutors. An overall rating would also be available for the public, which will help choose the better tutor for the job. On the other hand, tutors will also be able to leave feedback for the parents regarding their students. This way, it creates an open environment (on top of Q&A and group sessions) where both sides are aware of each others' strengths and weaknesses, which allows a better understanding on what to improve, what to stop doing and what to continue doing. An engagement from both sides will ultimately promote a greater and faster learning experience.

Next, the tutor of the month feature is a helpful feature that is focused on tutors specifically. The tutor with the most positive feedback in the month will have the honor to be on the front page of the website and will receive a bonus for their hard work. This strategy will incentivize tutors to perform better, and it will push them to improve on different aspects of their courses. Not only tutors would give their best, but students would benefit from a better tutoring service.

Lastly, the option to record one-on-one tutoring sessions will also be available to all. However, it is to note that both parties must agree to the use of this feature to respect the privacy of everyone using the platform. The recorded sessions are a great way for students and parents to go back and consult all the material previously discussed. Students can go back through the sessions to study at their own pace, or to find a notion that they did not fully understand or missed completely. Moreover, parents will benefit from this feature by being able to evaluate a tutor based on the sessions. This will help them decide on whether the tutor satisfies their expectations or not. Again, this feature will allow for a greater learning experience, but will also help build trust between parents and tutors.

Work Cited

TUTORROOM | ONLINE TEACHING SOFTWARE. "The Biggest Problems With Online

Tutoring (Software)." *TutorRoom*, TUTORROOM | ONLINE TEACHING SOFTWARE,

3 January 2019,

https://tutorroom.net/en/online-tutoring-software/biggest-problems-online-tutoring-softw

are/. Accessed 30 September 2022.