Project Plan for Tutor Today – a Web-Based Tutor-Student-Matching Platform modelled after Social Media Platforms and File Systems

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1 Introduction

This document presents a comprehensive plan for implementing Tutor Today, a web-based tutor-student-matching platform modelled after social media platforms and file systems. The document first introduces the *project background* with a *market study* and a *problem statement*, and clearly defines the *project objective*. Afterwards, the subsequent sections details the *project scope*, *project methodology*, *project schedule*, and lastly provides a *conclusion* for this document.

2 Project Background

Although there exist a myriad of tutor-matching services in Hong Kong, there are unnecessary financial costs and inconveniences caused by the practices of existing middleman services.

2.1 Market Study

To establish the need for and potential of Tutor Today , this section provides a detailed analysis of existing tutor-student-matching platforms.

The following table compares three popular Hong Kong tutor-student-matching platforms with the most comprehensive set of features: Hong Kong Tutor Association (HKTA) [1], Tutor Circle [2] and Looking4tutor.com [3], based on the websites of these platforms as of 25/09/2023. The pain points of these platforms are highlighted with the *x* symbol.

Comparison of Existing Tutor-student-matching Platforms

	HKTA	Tutor Circle	Looking4tutor.com
Size of platform	More than 140,000 tutors and students combined.	More than 120,00 tutors and students combined.	More than 100,000 tutors and students combined.
Middleman fee	The tutor will be charged with the entire amount of tuition fee in the first two weeks.	The tutor will be charged with the total tuition fee for the first two weeks or $700 HKD, whichever is lower.	The tutor will be charged with the entire amount of tuition fee in the first two weeks.
STANDARD FEATURES			
Process for a student to request a tutor	1) Student registers a student account and makes a request. 2) Middleman from HKTA contacts the student on WhatsApp to relay messages from both parties and confirm the match.	1) Student registers a student account and makes a request. 2) Student chooses a number of potential tutors on the website. 3) Middleman from Tutor Circle contacts the student on WhatsApp to relay messages from both parties and confirm the match.	1) Student makes a request. 2) Middleman from Looking4tutor.com contacts the student on WhatsApp to relay messages from both parties and confirm the match. *X*: Since no profile nor account is made for students, students must renter all information in subsequent requests on Looking4Tutor.com.
Process for a tutor to accept a request	1) Tutor makes a tutor account and accepts a request. 2) Middleman from the platforms contacts the tutor on WhatsApp to relay messages from both parties and confirm the match.		
Profile for tutors	Tutors can create profiles with a self-introduction and other qualifications in text. HKTA and Tutor Circle allow tutors to add a profile picture in the profile. *X*: Tutors cannot upload any files or external references to demonstrate their professionalism.		
ADVANCED FEATURES			
Integrated communication channel	*X*: The platforms do not provide an integrated communication channel on the websites. Before pairing, all messages are relayed by middlemen on WhatsApp. After pairing, all messages between tutors and students remains on WhatsApp.		
Rating system	Students can rate tutors after matching.	*X*: Students have the ability to sort tutor profiles by selecting the option "Profiles with Ratings". However, upon inspecting the	*X*: No rating system is provided.

	✗: Tutor profiles feature a rating, but they do not disclose the number of students who have provided ratings for that tutor. To confirm the number of students who rated that tutor, students need to unintuitively navigate back to the previous page (a page listing a large amount of tutors).	pages of these "rated" profiles, no ratings are displayed. This inconsistency suggests a potential malfunction or issue with Tutor Circle, as the expected ratings are not being correctly presented on the tutor profiles.	
Comment system	A comment system is provided. ✗: There is no requirement for adding a comment along with a rating, so tutors with 40+ ratings may not have any comments available, limiting the reference value for students.	✗: No comment system is provided.	✗: No comment system is provided.
File system	✗: No file system is provided, so tutors and students resort to WhatsApp for transferring notes and exercises.		
Remarks	✗: HKTA displays student requests after logging in as a student, which clusters the webpage with redundant information. ✗: HKTA sets no expiration date for student requests, so there are requests dated back to 2022.	✗: After logging in as a student, the unnecessary menu option for "Student Requests" is still present, which is only relevant to tutors. When the student clicks on this menu option, an error page is displayed, indicating a malfunction with the platform.	✗: Tutors are required to register for an account on the platform before they can view any student requests.

The table above compares three popular Hong Kong tutor-student-matching platforms, offering a side-by-side comparison and insights on the shortcomings of the features and service of existing platforms. With other platforms offering fewer features than the three, the issues mentioned in the table are not exclusive to the three platforms, but common among Hong Kong tutor-student-matching platforms.

2.2 Problem Statement
Building upon the insights from *Market Study*, *Problem Statement* highlights the negative impacts of the pain points experienced by tutors and students on existing platforms.

2.2.1 Insufficient Communication before Matching
Communication on existing platforms between a tutor and a student must be sent through a middleman, utilizing external communication channels such as WhatsApp. This arrangement ensures that payment is received by the platform before the two parties exchange contact information. However, this reliance on middlemen leads to delays, even for simply inquires such as asking the student about their current grade. The process of waiting for the middleman to relay messages may take hours, significantly restricting the interaction between the two parties. Insufficient communication before matching diminishes the opportunity for both the tutor and student to confirm their compatibility.

2.2.2 Insufficient Communication after Matching
Another pain point for tutors and students is the absence of a dedicated communication channel for academic discussions and a centralized location for study materials. In the post-pandemic era, as the use of softcopies for exercises and notes becomes more prevalent, tutors have increasingly relied on platforms such as WhatsApp to share study materials with students. However, this approach presents challenges as messages and materials can become scattered, making it difficult for both tutors and students to locate past materials or organize new ones effectively.

2.2.3 Lack of References

Academic achievements are not directly proportional to teaching abilities. Existing platforms primarily rely on textual introductions and qualifications provided by tutors themselves, lacking reference materials or constructive past references for students to gauge the teaching quality without an initial class. Even for HKTA, the sole platform with a functional rating and comment system, its limitations (refer to *Market Study*) still restrict its reference value provided to students. Therefore, students cannot know whether tutors possess the capability to provide quality lessons.

2.2.4 Outdated Student Requests

On platforms such as HKTA, outdated student requests persist and cluster pages. This occurs because students often post the same request on multiple matching platforms. Once students find a suitable tutor, there is generally no incentive for them to remove their requests from other platforms. Consequently, these months-old open cases continue to exist, cluttering the pages and making it challenging for tutors to navigate and find relevant requests.

2.2.5 Middleman Fee

Top matching websites imposes a substantial middleman fee on tutors. This practice raises concerns about the fairness of the fee structure considering the value brought to tutors. A free platform would obviously align with the interests of tutors, offering a fair and effective solution to connect with student without financial charges.

2.3 Project Objective

Tutor Today aims to tackle the problems with existing platforms and enhance the tutoring experience through facilitating communication pre- and post-matching. This is to be accomplished by providing advanced features modelled after social media platforms and file systems, in addition to the conventional matching function offered by current tutor-student-matching platforms.

3 Project Scope

To accomplish said project objective, including the standard features on existing platforms (mentioned in *Market Study*), Tutor Today aims to implement a comprehensive set of planned features as follows:

3.1 Basic Platform Features

Tutor Today is to be implemented in a web-based format, accessible through web browsers. Users will be categorized into two main groups: – "tutors" and "students". It is mandatory for users to create an account in order to fully utilize the platform, with browsing being the only available action for non-registered users.

Users are required to provide a phone number during the sign-up process. It is assumed that acquiring a phone number in Hong Kong involves registering the real name of the person. Therefore, by linking accounts to verified phone numbers, the platform can have a higher level of confidence in the authenticity of user identities, ensuring a trusted and secure environment.

Students are recommended profiles of tutors by an algorithm on their homepages. They can then proceed to request specific tutors based on their preferences. Additionally, students have the option to make a general request for a tutor in a particular subject or category, such as requesting tutoring in all subjects.

For tutors, they have the flexibility to accept either specific or general tutoring requests. Once a tutor accepts a request, the tutor and student are paired.

This approach ensures that students have the opportunity to select tutors based on their preferences and requirements, while also allowing tutors to accept requests that align with their expertise and availability. By allowing both specific and general requests, Tutor Today aims to increase the likelihood of successfully connecting tutors and students and optimize the matching process.

3.2 Profiles

On top of listing qualifications and textual self-introductions, tutors on Tutor Today can build detailed profiles showcasing their qualifications, teaching history, and sample exercises. They can upload materials in different file formats, such as in PDF and Word document, as a preview of the learning materials that students can expect in tutorial lessons. This enables students to make informed decisions when selecting a tutor, as they can assess the expertise and teaching approach of tutors based on the information provided.

Tutor Today understands the importance of an aesthetically pleasing user experience. The tutor profiles on the platform are designed to be visually appealing and to resemble social media profiles. This approach aims to captivate the interest of students, and encourage them to browse through tutor profiles continuously, finding the perfect match.

3.3 Rating System

Tutor Today implements a rating system in which each tutor receives a rating out of 5 stars, solely influenced by reviews from matched students. Students can leave comments on tutor profiles, providing valuable insight to future potential students. This allows students to share their experiences, helping tutors find specific groups of students and enabling other students to avoid poorly performing tutors. Tutors are recommended to students based on their rating.

Additionally, tutors can leave comments on student profiles, helping other tutors identify and avoid troll accounts. This creates a more secure environment.

The rating system and profile comments contribute to transparent feedback, enhancing the credibility of the platform and facilitating informed choices for both tutors and students.

3.4 Chat System

Similar to social media platforms such as LinkedIn and Instagram, Tutor Today integrates a chat system, enabling students and tutors to communicate instantly within the platform without the delay from a middleman relaying messages. This also eliminates the need for exchanging contact information, ensuring security and privacy, as all communication stays within Tutor Today. The chat system facilitates seamless and efficient communication, encouraging users to discuss tutoring needs and share materials, thus improving the tutoring experience.

3.5 File System

In the Tutor Today chat system, when a file is shared within the chat room, it is automatically stored in a dedicated virtual folder for that chat room. This folder serves as a centralized file system accessible to both students and tutors. By clicking inside the chat room, both have the ability to organize the files shared by creating sub-folders and relocating files within the file system, streamlining the process of accessing files later on.

The integration of a chat system and file system provides a centralised location for communication and storing study materials, promoting focus during work and separation from work after leaving the website.

3.6 Up-to-date Requests

Tutor Today implements a system where student requests are periodically updated based on user activity. If a student has not logged in for a specific number of days, a reminder is sent, and if there is no response, their request is automatically deleted. This approach ensures that the website remains organized and clutter-free, providing an improved experience for tutors by enabling them to focus on active and relevant cases while avoiding outdated ones.

3.7 Materials for Sale [optional feature]

In addition to providing materials to draw the interests of students, tutors on Tutor Today have the option to offer notes or exercises for sale on their profiles. These resources are initially blurred out and can only be accessed after payment is made. This feature allows tutors to monetize their educational resources and provides students with the opportunity to access valuable study materials for a fee.

In the scope of this project, this feature does not cover the actual payment authentication process. It is assumed that all payments made through the system are fulfilled and authenticated accordingly.

3.8 Sister Mobile Application [optional feature]

To enhance accessibility and user engagement, Tutor Today can benefit from a companion mobile application, facilitating seamless communication between tutors and students. It can offer convenience by allowing users to access platform features on their smartphones. With a mobile application, users are more likely to incorporate Tutor Today into their daily routines, as it provides an easily accessible platform. On top of enhancing user experience, the mobile application for Tutor Today aims to encourage regular usage and continuous engagement between tutors and students.

4 Project Methodology

To implement the features above, Tutor Today employs the following methodologies:

4.1 Web-based Application – Frontend

The frontend of the Tutor Today application will be developed using React, a JavaScript library for building user interfaces. The development process utilizes website development languages such as JavaScript, HTML, and CSS. The client-side scripts will interact with the backend database by making API (Application Programming Interface) calls to retrieve and display data.

Separate web pages will be developed for tutors and students, each providing distinct interfaces tailored to their specific needs. The tutor interface will include functionalities such as profile management, availability settings, material listing, and communication channels to connect with students. On the other hand, the student interface will provide features such as browsing tutor profiles, requesting tutors, accessing study materials, and engaging in real-time communication with tutors. By designing dedicated web pages for tutors and students, the platform ensures an intuitive user experience, enabling both parties to utilize the full range of features available.

4.2 Web-based Application – Backend

The backend of the Tutor Today application will be developed using Express, a web application framework for Node.js. Node.js will serve as the runtime environment for the backend code. MongoDB will be used as the database for storing application data, providing a scalable and flexible solution for Tutor Today.

To enable communication between the frontend webpages and the backend server, a RESTful API will be implemented. This API will define the endpoints and methods for clients to interact with the server, allowing data to be passed back and forth. The API will handle requests from the frontend, retrieve and modify data in the MongoDB database, and respond with the appropriate data or status codes.

This architecture ensures a decoupled and efficient communication flow between the client-side and server-side components of the application.

4.3 Algorithm

An algorithm will be developed to provide personalized tutor profile recommendations to students. This algorithm will take into account various factors, including the specific needs and preferences of students, the qualification and preferences of tutors, as well as the ratings given by previous students to tutors. The recommendation algorithm will suggest tutor profiles which are most likely to meet the individual requirements of students, helping them find the most suitable tutors.

5 Project Schedule

The following table contains the project milestones, its tangible deliverables, estimated hours required to reach each milestone. The dates either indicate a timeframe within which the work is expected to be completed for reaching the milestone, or a specific date when specific deliverables related to the COMP4801 course are required (highlighted in yellow).

Project Schedule for Tutor Today

Date	Project Milestones	Deliverables	Estimated learning hours
PHASE 1 (01/09/2023 – 01/10/2023)			
01/09/2023 - 1/10/2023	Initial contact with supervisor & Project planning	N/A	10
01/10/2023	Inception	-Detailed project plan -Project web page	20
PHASE 2 (02/10/2023 – 21/01/2024)			

02/10/2023 - 30/11/2023	Research on relevant web-based technology & Implementation of "Basic Platform Features" (including client and server side), "Profiles"	-Basic website for both tutors and students -Basic server handling API calls with database management system implemented	100
01/12/2023 - 21/01/2024	Implementation of "Rating System", "Chat System"	-Rating system and chat system implemented on the website	100
08/01/2024	First presentation	-First presentation	10
21/01/2024	Elaboration	-Preliminary implementation -Detailed interim report	10 (hours for code implementation not included)
PHASE 3 (22/01/2024 – 23/04/2024)			
22/01/2024 – 30/02/2024	Implementation of "File System", "Up-to-date Requests" and other relevant features	-File system and request-update features implemented on the website	100
01/03/2024 – 14/04/2024	Debugging & Optimization and Testing of prior features & Implementation of optional features	-Data used in testing -Optional features (skipped if previous features are not implemented or optimized)	120
15/04/2024	Final presentation	-Final presentation	5
23/04/2024	Construction	-Finalized tested implementation -Final report	10 (hours for code implementation not included)
OTHER EVENTS			
26/04/23	Project exhibition	-Project exhibition	10

6 Conclusion

This project plan provides a comprehensive plan for implementing Tutor Today. It includes an introduction that outlines the project background and objective. The project scope is defined, specifying the work to be implemented. The project methodology describes the technology to be used during implementation. Lastly, the project schedule highlights the timeline and project milestones for completing the project and deliverables. Together, these sections illustrate a comprehensive plan for the successful implementation of Tutor Today.

7 References

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