COMP4801

Project Plan

A Smart Phone Application to support Peer Learning (Group 2)

Chiu Chin Yan (UID: 3035323695)
Poon Tsz Ho Cedric (UID: 3035326075)

Supervisor:
Dr. Chim Tat Wing
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1 Introduction

Peer learning is a way to facilitate timely knowledge flow among student fellows. David shared that peer-to-peer learning is a responsive yet prompt method to perform knowledge exchange [1]. With the rationale that fellows are sharing analogous circumstances like studying / studied in certain courses, understandable and down to earth approaches as solutions to academic problems are likely to be shared. Thus, peer learning is crucial in studying.

In the University of Hong Kong (HKU), students, namely postgraduates and undergraduates, are required to consign different types of deliverables during their study, including assignments, papers and projects. Academic problems may arise during their work. To ease those difficulties encountered, HKU provides different platforms for teaching staff support, as well as supporting peer learning, like HKU Online Learning and HKU Moodle. HKU Online Learning and HKU Moodle mainly focus on providing course materials with enabling forum-like feature for students to ask questions towards peers and teaching staffs.

However, only students registered in the course can access the regarding forums. It stopped other senior students who had studied in that subject to answer the question of junior students. To encourage the peer learning, our group decided to develop a smart phone application which supports students to learn effectively.

The application will be shown as a forum form. Unlike the Moodle forum, all users are anonymous and able to post in any subjects. Users are allowed to raise questions to peers and also share experience or knowledge to new learners. In this project, a smart phone application with complete functionality will be built and some user opinions would like to be collected. Hopefully, it can be a useful tool for university students to study.

2 Objectives

Based on the existing tools using in the study, the goal of this project is to provide a better platform to support peer learning and effectively help students to learn. By definition in [1], peer learning is constructive and a way of sharing knowledge, ideas and experience between the students. It is known as a kind of interdependent or mutual learning. Through the discussion between participants, they can clear up the concept and meet with their study needs. They could solve some specific questions and get the relevant answer. With this smart phone application, students could be helped to easily solve problems when doing assignments. The target is bringing convenient to students and let them have immediate help. So, it is a new platform for those students to help each other.
3 Scope

3.1 Users
Main users of team CK’s (the Team) application (the Application) should be defined as students, as our solution is designed for facilitating peer learning. Students can be further classified as those who are studying in The University of Hong Kong (HKU), including undergraduates and postgraduates.

3.1.1 Undergraduates
The Team is formed with members of purely undergraduate. According to QuickStats (Statistics on student profiles in HKU) released by HKU for academic year 2016/17, undergraduates are the majority of students studying in the school (which is 58.5%). Following Fig. 1 shows the pie chart of enrollment status in HKU on 2016/17.

Although the percentage difference among undergraduates and postgraduates is only 17%, which is under 20%, its numerical meaning represents 4886 (round-down) students, which is significant [2]. In addition, the Team will be more familiar to undergraduate system in HKU as being part of it. Thus, the Application will focus but not limited on serving undergraduates in HKU among other types of students (i.e. postgraduates).
3.1.2 Postgraduates
As postgraduates are also determined to be students studying in HKU, as known as taught postgraduates and research postgraduates, they will be included as targeted users. However, as mentioned in section “Undergraduates”, we will be more concentrated on undergraduates in our Application because of its preponderance. User-based specific functionalities may not be provided to postgraduates, nonetheless, elementary supportability will be maintained.

3.2 Major Usability
The Application can be essentially characterized to support 2 major aspects, namely Question and Answer (Q&A) approach, which enables users (students) to rise academic questions about their studying courses and interested aspects, and also Experience Sharing (Exp) approach, which allows senior students to share what they have learnt from previous or current courses to others, in order to encourage peer learning.

3.2.1 Question and Answer Approach (Q&A approach)
Within this Q&A approach, students are able to put questions in forum-like structure, waiting other peers for answering. For example, on Stack Overflow, an online website platform for programmers and developers to rise questions related to programming and Computer Science, users are able to answer others’ questions freely [3].

![Figure 2 Question on Stack Overflow](image-url)
In the above screenshots about Stack Overflow, a simple question and answer flow is shown. Other students’ answer can be seen publicly for referencing. The Application can emphasize more on openness of conversation (opposite to single answering to end topics / questions). Moreover, the Team will put effort on designing an intuitive user interface, so as to maximize the usability for first time users.

3.2.2 Experience Sharing Approach (Exp approach)
Currently in HKU Moodle, an online HKU internal platform for course information, as well as forum for coursemates to do question and answering, lack of motivation for peers to share what they have learnt from their courses / major / minor. Furthermore, systemic support for senior students who had finished their courses to share their experience and past resources is inadequate. Exp approach serves as a mobile platform to work it out. Rating system and systemic favorable factors will be perked to those who have shared their thoughts.

3.3 Possible Features
To summarize all the to-be functionalities that the Application should deliver, a list of features is showcased.

3.3.1 Push Notification
Present HKU Moodle Forum has a sole way to notify students and teaching staff for incoming new feeds including new posts and new replies, which is via HKU email. It is considered to be passive as email protocol and relative applications are required for users to receive instant circulars. Thus, a customizable push notification will work as an instant way to notify users.
3.3.2 HKU Moodle Forum Crawler
To affiliate existing mode of peer learning in HKU Moodle, the Application provides seamless adoption to current HKU Moodle Forum for fundamental integration. Web crawling approach will be employed to view and create posts on HKU Moodle Forum via in-app actions, while providing similar user experience as the Application native posts.

3.3.3 Anonymity
According to a conclusion drawn from a study of anonymity and promoting connection in internal University online forums [4, pp.204], discussions on forums are encouraged with introduction of incognito among University students, allowing them to be less focused on self-manifestation. Therefore, providing anonymity as a choice in the Application will be beneficial for facilitating peer learning.

3.3.4 Post Rating
To boost the motivation among students on answering others and sharing own thoughts and experience, rating system similar to Stack Overflow will be introduced to serve as systemic bonus.

![Figure 4 Votes on Stack Overflow](image)

3.3.5 Post Similarity Detection
A hypothetical situation of multiple students asking similar or same questions may arise. This will create unwanted duplications of posts and downgrade user experience in the Application. In order to minimize the occurrence of above-mentioned scenario, post similarity detection will be presented.
4 Methodology

The Application is going to be delivered as mobile application. According to StatCounter’s statistics on mobile operating system market share in Hong Kong in August 2018 [5], Android and iOS dominated mobile market with over 99% together. Therefore, the Application will focus on Android and iOS. In order to support the above-mentioned platforms, cross platform development tools will increase coding efficiency. With this reason, React Native will be adopted. It is a framework for building native application by using JavaScript, and compiled to runnable in cross operating system manner. Popular mobile application including Facebook, Instagram and Pinterest endorse with using React Native.

4.1 Comparison

In the current mobile cross platform market, Xamarin is another common choice of framework. The rationale for us to choose React Native is that the Team is more familiar to JavaScript and React related frameworks. Although React Native has doubtlessly shorter history than Xamarin, which means it is somehow less developed in terms of components and maturation, this framework is trendy with progressive develop community for the Team to work with. Many up-to-date Javascript libraries available for web development can also be adopted in React Native, which makes the Application diversified by extensibility. Yet, the components built by React Native is hot plugged, which makes the compilation time and runnable export faster than Xamarin.
## 5 Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Deliverable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>September 30</strong></td>
<td><strong>Deliverables of Phase 1</strong></td>
</tr>
<tr>
<td></td>
<td>(Inception)</td>
</tr>
<tr>
<td></td>
<td>• Detailed project plan</td>
</tr>
<tr>
<td></td>
<td>• Project web page</td>
</tr>
<tr>
<td><strong>October 31</strong></td>
<td>Design and implement user interface</td>
</tr>
<tr>
<td></td>
<td>Set up database</td>
</tr>
<tr>
<td><strong>November 30</strong></td>
<td>Implement the forum structure</td>
</tr>
<tr>
<td><strong>December 31</strong></td>
<td>Complete major functions of the application</td>
</tr>
<tr>
<td></td>
<td>(Post and reply on the forum)</td>
</tr>
<tr>
<td><strong>January 7-11</strong></td>
<td><strong>First presentation</strong></td>
</tr>
<tr>
<td><strong>January 17</strong></td>
<td>Improvement on the application after presentation</td>
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<tr>
<td><strong>January 20</strong></td>
<td><strong>Deliverables of Phase 2</strong></td>
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<tr>
<td></td>
<td>(Elaboration)</td>
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<tr>
<td></td>
<td>• Preliminary implementation</td>
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<td></td>
<td>• Detailed interim report</td>
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<tr>
<td><strong>March 31</strong></td>
<td>Implement addition function</td>
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<tr>
<td><strong>April 14</strong></td>
<td><strong>Deliverables of Phase 3</strong></td>
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<tr>
<td></td>
<td>(Construction)</td>
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<tr>
<td></td>
<td>• Finalized tested implementation</td>
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<tr>
<td></td>
<td>• Final report</td>
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<tr>
<td><strong>April 15-19</strong></td>
<td><strong>Final presentation</strong></td>
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<tr>
<td><strong>April 29</strong></td>
<td><strong>Project exhibition</strong></td>
</tr>
</tbody>
</table>
6 Reference


