

## Improving Sports Participation among Students through Mobile Application

Heng Zhuang Ching<sup>#</sup>, Norfaradilla Wahid<sup>#</sup>, Hanayanti Hafit<sup>#</sup>, Shahreen Kasim<sup>#</sup>

<sup>#</sup>Department of Web Technology, Faculty of Computer Science and Information Technology, University Tun Hussein Onn Malaysia, Malaysia  
E-mail: Zhuang\_ching@hotmail.com, faradila@uthm.edu.my, hanayanti@uthm.edu.my, shahreen@uthm.edu.my

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**Abstract**— Technologies are advancing at incredible speed with great purposes. Unfortunately, as technologies grow, some people have lost their motivation to keep up with their health by neglecting their physical activities like sports, outdoor games, etc. There are less people willing to step outside to do physical activities especially those which requires companions or members. We cannot deny the fact that there are still people who are willing to come out and do sports in a group. However, most of the time they do not have enough members to conduct the sport. This situation can lead to discouragement and stopping them from doing any more sports activity just because of insufficient team member. This situation can lead to discouragement and stopping them from doing any more sports activity just because of insufficient team members. The Sports Team Finder is a mobile application that helps the students in Universiti Tun Hussein Onn Malaysia (UTHM) to reach other people who has the same intention, i.e., to get team members. Students can use this application to find team members for team-oriented games such as basketball, football, netball, etc. The aim is to design an application where it motivate users to engage other people through sports and meeting new friends along the way. The application is able to function properly and successfully gather users with similar interest together. It has shown that the application has caused an improvement of sport involvement among students in UTHM.

**Keywords**— sports, team, finder, application, participation.

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### I. INTRODUCTION

Sports have become an essential part of our life, such that everyone should be encouraged to do it because of the benefits it brings. Team-oriented games are options that people could take to enjoy sports activities. It is a type of sport that requires two or more players. In other words, a team working together to achieve a particular objective which is shared by the entire team and normally competing to win. Examples are basketball, football, volleyball and more. Participating in sport helps to build strong bones, strengthen muscles, burn calories and maintain healthy weight. On top of that, team-oriented sports help players to develop all sorts of personal values such as friendship, teamwork skills, leadership, respect, self-esteem and much more. All of this helps to build up the social interaction skills and overcome shyness in the individual. In [1, 2], it has been shown that participating in collegiate intramural sports improves many positive effects include improved in happiness and subjective well-being which can be operationalized as one's positive affective state.

Hence, people are encouraged to participate in team sports for healthy lifestyle. Team sports are the answer for

individuals to grow up to be confident and well-adjusted adult as it provides not only physical benefits but also good for mental health. At academic, sport participation is positively related to academic achievement, but the relationship diverges when students are compared across sex and by parental education. These findings suggest that the relationship between sport participation and academic achievement may be influenced by socioeconomic status and is related to sex [3]. A similar study in [4] shows that cognitive performance is associated with vigorous physical activity and that academic performance is related to general physical activity especially in girls. The results of the review also indicate that type of activity and some psychological factors (i.e. self-esteem, depression) could mediate the association between physical activity and academic performance.

However, despite all the benefits obtained, there are people who still not participating because of a few different reasons. Hoekman et.al in the research [5] has been comparing sports involvement in in rural and urban area according to different levels. The result shown that weekly sport participation was more common in more rural than in urban areas. This is because, beyond socio-demographics, differences in physical environment and, more importantly, differences in cultural

and social environments (e.g. safety, neighbourhood composition) cause the differences in sport participation around the globe [6, 7].

A survey has been conducted on UTHM students [2] to find out the actual reasons of discouragement among students from doing sports activities. One of the significant reasons mentioned is because of unavailability of companion to perform the sport. This reason is ranked at number 4th among all the accumulated information. Although it may seem less critical, but it could give us a message that it is somehow giving

Therefore, we proposed to develop an application that will solve this issue and helps them to find team members. The application is expected to help people to find team players more efficiencies and allow them to meet new friends.

The rest of the paper is organized as follows: Section 2 will discuss about the related works. Section 3 will discuss about the proposed application which includes its system requirement analysis and design of the developed application. Then, Section 4 discuss about the implementation of the proposed application and testing and lastly, conclusion will be drawn in Section 5.

## II. RELATED WORK

As has been mentioned earlier, a pre-survey has been conducted to find out students' experiences in daily sport activities in UTHM. From the survey, one of many reasons for not participating in any sports is because of no accompany for doing the sports, regardless it is an individual sport or team-oriented sport. The result is a shown in Figure 1. The x-axis represents the number of respondent and y-axis represent the ranking of the reason, where Rank 1 is to really agree while Rank 6 is the *really disagree*.

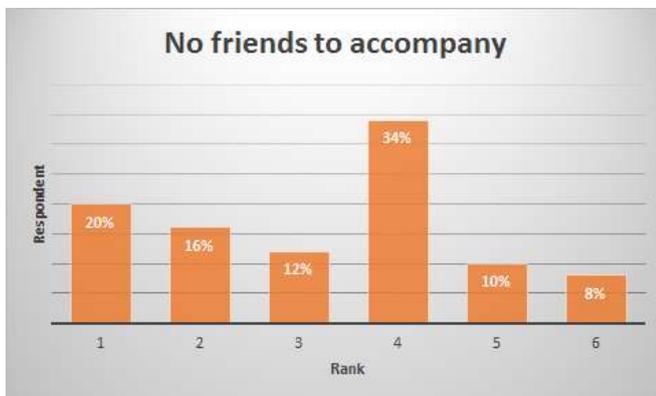


Fig. 1 UTHM students pre-survey on sports experience: No friends to accompany

As can be seen from the figure, almost half of 50 respondents chosen to rank this particular reason at the first three choices, i.e., a total of 24 respondents. For individual activities, we could assume that students feel that their safety is at stake if they go out without companion; while for the team-oriented sports, no companion means that they are unable to do the sports because of the lack of team members or no opponent to play with. This issue is similar to the issue in [4] and [5], where safety and neighbourhood composition

has become an issue in public sports or physical activity involvement.

Therefore, based on the survey's result, we believe that a proper mobile application could help local students to involve better in daily sports. It can be achieved as the application will have students to find or form their team member for a particular time and venue. To develop a better application, we analyse a few existing applications and then make a comparison to visualize its features. There are various application related to team finder are available on the Internet. Some of the applications are [8], [9], [10] and [11]. However, because of the limitation of this paper, Player Wanted [8], Running Buddies [9] and BuddyUp [10] have been selected for comparison.

### A. Player Wanted

Player Wanted [8] is a unique free service for all sports which give players the chance to find a club or team in their area in their preferred sport. This application is suitable for anyone who likes to play sports with others. Player Wanted allows players to find a team for certain sport in specific areas. There are 4 sports available to choose from, which are football, rugby, cricket and hockey. However, despite the unique free service provided, the application is only for UK area. It allows coaches to register their sports team so that other users can select and join their team. Therefore, we cannot use the application. It does not provide any solution or even improve the situation faced by the UTHM students.

### B. Running Buddies

Running Buddies [9] is a run tracking application that can find nearby joggers and run together. This application provides basic function like tracking distance, routes and duration. It also allows to choose to share their runs and statistics with those around them so that it can be seen by others. Furthermore, this application consists of the ability to add other joggers by adding their username into the Buddies list. This allows the joggers to chat with their buddies too. This finding system is simple yet useful. With this function, users can chat with their friends and invite them to join.

### C. Buddy Up

Buddy Up [10] is an online system instead of application that brings people together, including runners. It provides a way to meet people through sports and activities that share the same interest. Other than that, it provides a schedule for acti-

TABLE I  
COMPARISONS BETWEEN EQUIVALENT SYSTEMS

Specification	[3]	[4]	[5]	Sports Team Finder
Platform	Android & iOS	Android	Windows/O S X	Android
Open Source	Yes	Yes	Yes	Yes
Internet Required	Yes	Yes	Yes	Yes
Secure Login	Yes	No	No	Yes
Navigation	Yes	Yes	No	Yes
Availability	UK Region	Global	Selected Region	UTHM

vity too. Buddy Up supports over 20 common sports and activities which includes running. People have to register and become a member in order to use this website. The member can use the search feature to search according to selected sport, availability, skill and distance. Members then can send invitation to the buddies listed after the search. Buddies are referring to as friends in this system. Buddy Up uses a different approach to allow people to meet and exercise together. However, Buddy Up is only available in targeted regions, which means it is not internationally available.

Table 1 shows the comparison between the existing systems with the proposed idea. It can be observed that similar systems can perform on different platforms. All the systems mentioned require Internet connections and account registration to function and they are all open source. All the systems in the table use Global Positioning System (GPS) technology in the application except Buddy Up because it does not provide the function of locating the sport location. Also, all systems are not available globally except Running Buddies which can be expanded to many regions. All the mentioned systems are focusing on finding friends or partners for sport activities. However, these systems are not suitable to be used for UTHM students not only because the systems can only cater specific region, but also it does not provide a proper security measure for students. Buddy Up, for example, will expose students to insecurity as fake users may request to make friends, and such. Focusing on only sports that involves a team which consists of more than one player will reduce the

risk of exploitation. Therefore, we propose a safer application for UTHM students for all sports activities conducted within university area. Furthermore, since the users are registered students, it is unlikely that they will exploit this application and commit illegal crime.

### III. SPORTS TEAM FINDER

The Sports Team Finder is the proposed mobile application where it allows users to look for any available sports team and play the game at a designated place and time. Sports Team Finder requires user to login with their student ID and password used throughout the UTHM system. User can view list of teams from the selected sport which will be displayed on the home page of the application and request to join the selected team. Sports Team Finder main function is to gather people that want to play team based sport but do not have enough players. Once the user has joined the team, users will be directed to a page that shows the location of the sport conducted. This will provide a unique experience to the users as playing with someone that has similar interest will improve users overall characteristics while maintaining healthy lifestyle.

The methodology that has been chosen to develop this application is Object Oriented Software Development [12]. Meanwhile, Java programming language is chosen as the programming language for the application development on the Android Studio platform and freebies is as the back-end server.

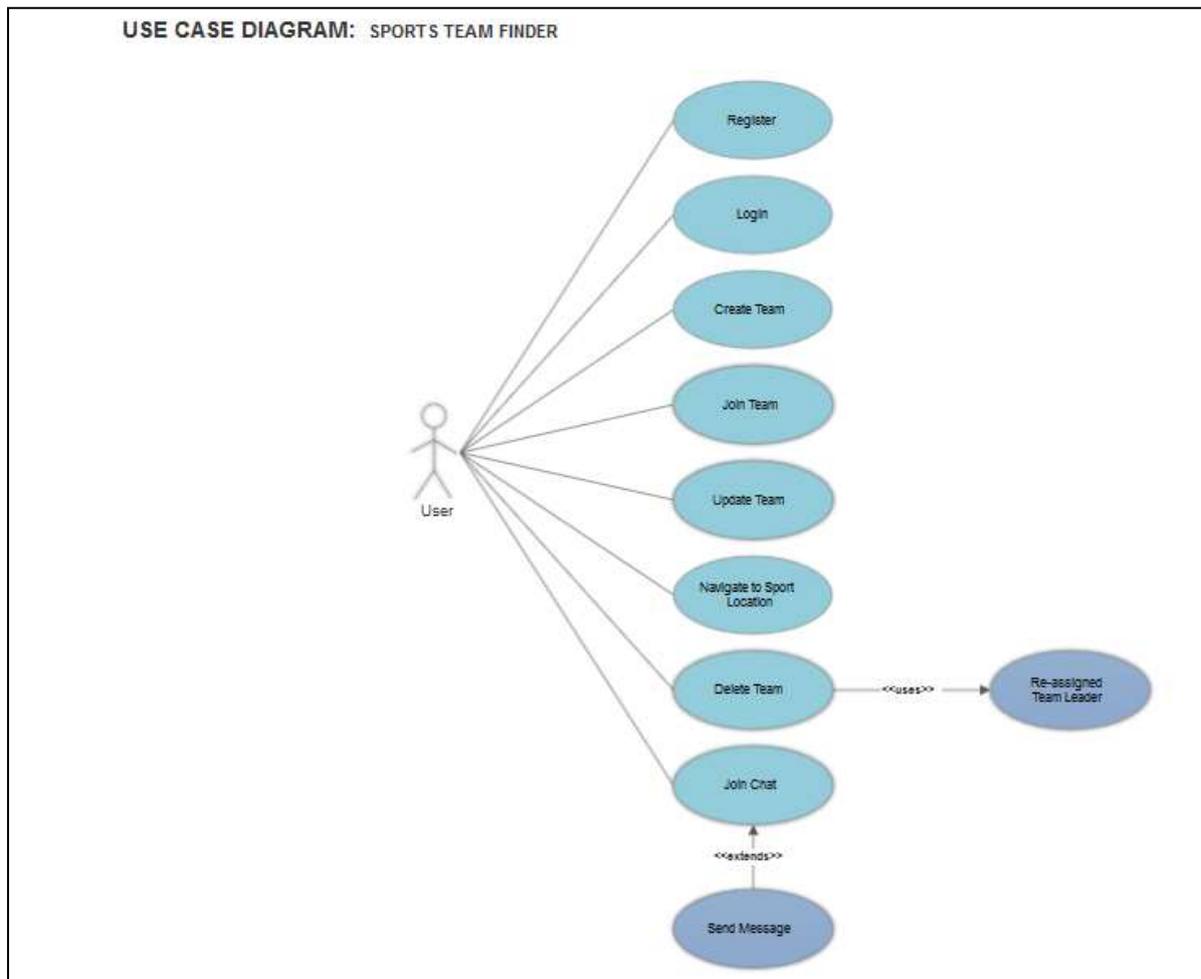


Fig. 2 Use Case Diagram: Sports Team Finder

### A. Analysis and Design

An analysis phase involves the process of observing the existing systems and also getting important input from expected users, i.e., the students. This information will become the requirements for the proposed application.

Furthermore, in the system design phase, it involves the use of many levels of abstraction to decompose the problem into manageable components, identify classes and interfaces, and establish relationships among the classes and interfaces. This phase emphasizes on designing interfaces, database and classes. The result from the requirement specification will be used to design the classes of the Sports Team Finder.

Figure 2 shows the use case diagram for the proposed application. A user is an actor who interacts with the application. The use cases identified are registered account, login, create a team, join teams, update team, view location, and send chat message.

After logging in, the user may choose one of the team in the list and choose to join one. Users can also create a team and allow other users to join instead. The user will be brought to a chat room after they joined the team where users can discuss about the sports. Besides that, user can view the sports location that will be conducted by the team.

### B. Implementation

Based on the analysis and design, we code and develop the application into real interfaces. The interfaces include Home interface and interfaces that involve main functionalities of the Sports Team Finder. The interface is designed to be simple so that it does not complicate things for users.

Figure 3 shows samples of the application user interfaces. A simple registration using student ID is required before a user can use the application. Once the registration succeeds, the user can log into the application and will be directed to the homepage as shown in Figure 3 (a). On this page, user's joined team will be displayed.

In order to set a new game or sport, user may create a new Team and set the details about the team, which include its name of team, type of sports, date and time of the game as well as the number of persons required for the game. A sample of the interface is as can be seen in Figure 3 (b). Further, users will be able to set the venue for the game once the team has been created. Once created, the team leader may be able to update the detail of the game as can be seen in Figure 3 (c). Accordingly, another user will be able to see the location of the game as can be seen in Figure 3 (d). People may also be able to see a previous history of their participation, and be able to join other future games.

## IV. RESULT AND DISCUSSION

Testing is an important part of any software development. In this study, the testing phase is done in two parts, i.e., (i) the usability of the application, (ii) the significant of the application towards student's involvement in daily sports. The testing was conducted among 30 UTHM students aged between 20 to 35 years old.

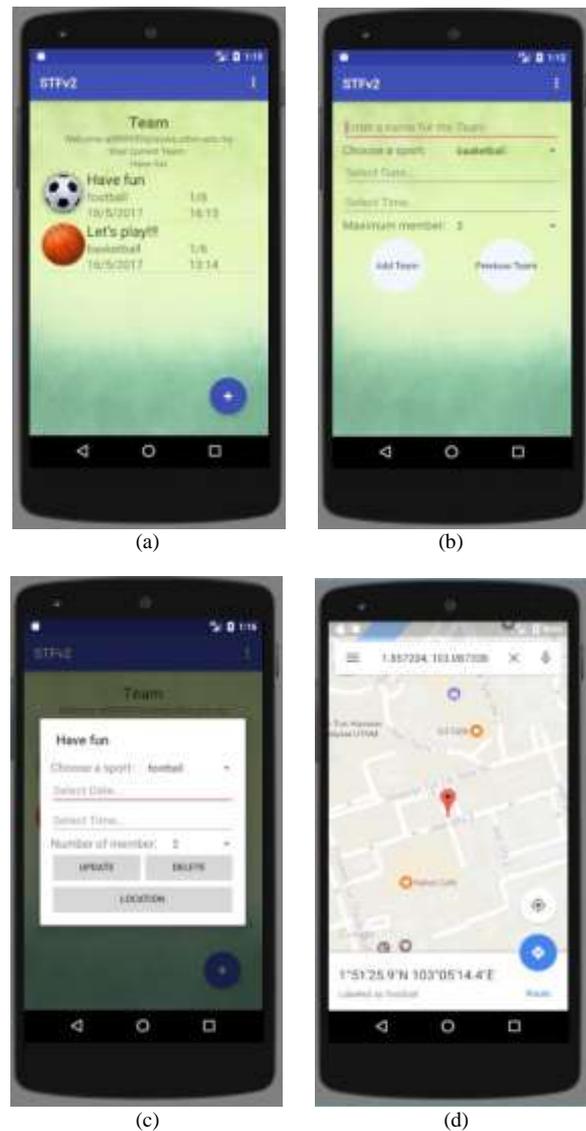


Fig. 3 Sports Team Finder Interfaces

Additionally, Figure 4 shows the result of users' acceptance towards the overall features of the Sports Team Finder. With the features provided, 29 out of 30 users are satisfied with all the features provided. However, most of the features still rank at 3. This is because there are rooms to be improved for each of the functions provided in the application.

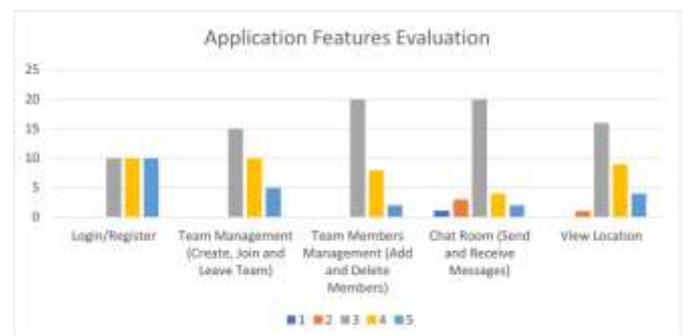


Fig. 4 User response on application functionality

In overall Figure 5 depicts the overall application features satisfaction of the users. The response are set between rank 1 to 5, i.e., to represents *very bad* to *very good*. In average, most of the respondents give the user interface design rank 3 because of the insufficient design, whereas few respondents felt satisfied and chose to rank it at 4 and 5. The application features have received a good response even though there are more features that have yet been added.

A survey also have been conducted to evaluate how the application help to improve students' involvement is daily sports. Figure 6 shows students' response on their involvement in sports, particularly in team oriented ones in UTHM before and after having the application. It can be seen that, for all the elements, significant increments are gained where the application has successfully encouraged them to involve more into daily sports. Additionally, the application also manages to improve students living quality in terms of their time management, safety, especially during sports, healthier mental and physical, as well as sports management. Meanwhile, Figure 7 denotes that other improvement in lifestyle could also be recognized upon the increased of participation in sports at university. The survey shows that more participation in activities increased physical health to more than 70%. Also, with more new university friends around, their safety have been increased to more than 60%. However, the helps of the application has only help up to 40% in terms of time management.

Overall Interface (30 responses)

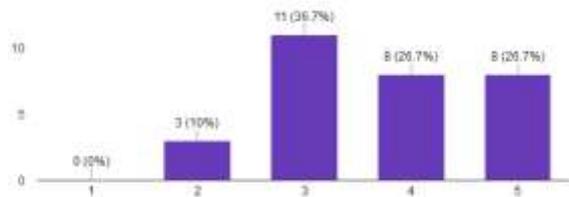


Fig.5 Overall user satisfaction response on application design and functionality

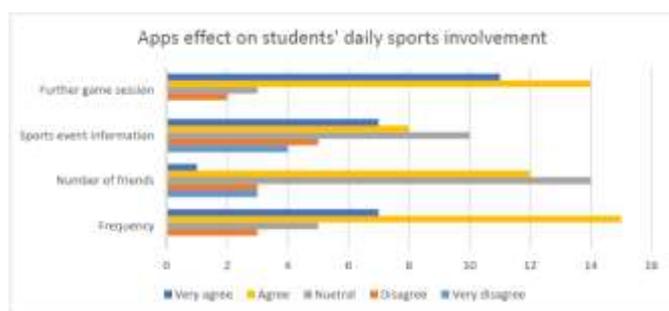


Fig. 6 Effects on daily sports involvement

## V. CONCLUSIONS

UTHM Sports Team Finder is an application which helps students to find team players for the specific sports to fill in the minimum requirement to play that sport. Other than that, this application also provides the function to view the location of the sport conducted.

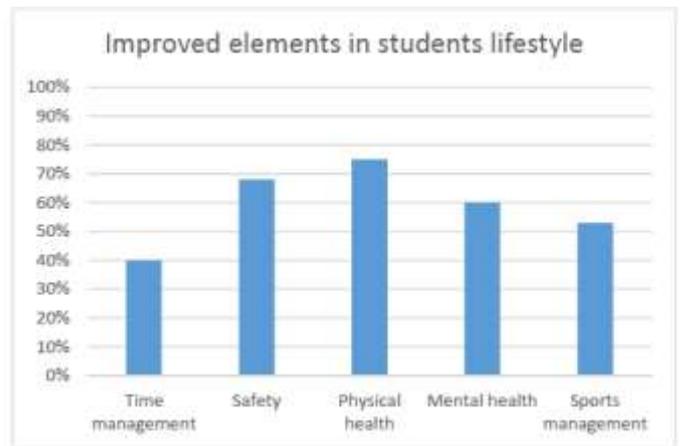


Fig.7 Improved elements in student lifestyle

UTHM Sports Team Finder is only available for all mobile devices and it is free of charge. The Sports Team Finder is used to help the users to gather enough members to play sports and to provide an opportunity to meet new faces. There is no doubt that this application will surely provide some benefits to the users of UTHM.

Analysis that has been performed shows that students really appreciate mobile technology in helping them socialize with other university members. This is especially important in forming new members or groups for sports. Surveys show that the application has improved their frequencies in sports and also encourage them to create more game session after each session has ended.

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