THE DEDICATED SOCIAL NETWORKING APPLICATION CONCEPT FOR CONTEXTUAL LEARNING

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Abstract

As a result of the changes brought about by COVID-19, students are readjusting to the new learning situation. They are employing various means and methods to accommodate the new constraints. Teachers and learners alike have gained new pedagogical experience as the context for teaching and learning has been changed by the pandemic. Technological advancement has empowered various pedagogical approaches to ease the learning process. In this study, we applied a user-centered design principle to design a dedicated social media application for educational purposes. Social media and other digital channels have become essential mediums for digital native students. These tools, e.g., email, chat, search engines, etc., are often scattered and not embedded in a single platform. Tools such as Microsoft Teams, Zoom and Moodle are appropriate mediums for teaching and learning, but they are not suitable for students on the move to perform their tasks or teamwork activities. The results of our study indicate that students need a social media based learning platform for efficiency and effectiveness in their learning process. The application concept also appealed to the target users.

Keywords: Contextual Learning, Social Networking Application, User-centered Design.

1 INTRODUCTION

A feasibility study revealed that we currently lack dedicated tools for online learning. Students often use messaging software such as WhatsApp, Telegram, and Discord. These tools are designed and developed for general purposes and are not specifically suited for educational purposes or teamwork. Therefore, there was an identified need for a lightweight tool that enables students to manage their school-related activities, especially those that involve teamwork. Through this application, students will be able to share knowledge, perform teamwork activities, assist each other with their study path selection, and provide feedback on assignments. The results indicate that the application fully supports students enrolled in various courses, such as user experience design and digital service prototyping.

Traditional learning has emerged in classrooms as a process between teacher and learners. As such, the learning environment has proven to be one factor affecting learning outcomes [1]. Technological and societal developments in recent years have also led to the emergence of new proposals and approaches to learning environments. There are many varieties of learning environments and educational offerings, besides traditional classroom education or learning. Any learning environment can be seen as an affective factor in learning. Several technological solutions and architectures have been proposed as alternatives for traditional learning environments in recent years [2, 3].

The role of social media in different fields of contemporary human life is significant. Several industries utilize social media due to their need to connect with social networks. Marketing is the major field that has adopted social media for business purposes and reaching customers [4]. Also, different non-commercial institutions use social media as a tool for their daily activities in marketing and communications. Another field that has been using social media for different purposes is politics [5]. Also, journalists have been reaching their audiences with the help of social media [6]. Social media is a significant tool to create social contacts for humans, who are typically social creatures. However, social media usage has both positive and negative results [6, 7]. Different age groups are also using social media differently [8]. Overall, people with a wide range of ages are using social media in different fields of their personal and professional lives, since different social media accounts can be created for different purposes.

Social media has become increasingly important as a tool for achieving learning objectives. There are several studies that indicate the role of social media is expanding when it comes to learning. Previous research also shows that social networks formed on social media are able to enhance learning and

create better learning satisfaction [9]. Social media can be used in various ways for different educational purposes. For example, social and emotional competences can be supported via social media use in education [10]. Social media could also be used as a general tool to enable dynamic interaction between teachers and learners [11].

This conceptual paper aims to open up a new discussion among researchers in the field of education about how physical constraints are no longer challenges, and teaching and learning is not bonded to any social or overall context. Learning may happen at any time and in any place where knowledge is required. We believe that the only challenge that exists is developing an application that provides the required content at the right time, in the right place, and in the right context for individual and group learning.

2 RELATED RESEARCH

2.1 Social context in learning and teaching

Social context as an affective factor in learning has been researched in different fields. The perspectives have been varied and there are different views on the meaning of social context in learning. Social context in learning can be defined as learning that happens during a particular learning event [12]. Some skills and knowledge must be learned through social interaction and are experience-based, e.g., service skills [13]. In this case, the social context can be beyond the traditional classroom. Conway, Amel and Gerwien [13] recognized in their meta-analysis that social outcomes constitute the interaction skills developed by learners or participants.

In online or virtual learning environments, the social context of learners is more ambivalent in that it can differ based on the physical environment of the learner. These different social contexts can have very wide variation, from the learner having no companions in the same physical environment as them to having a few family members, to inhabiting a crowded place. Even though there are learners in very different situations, teachers are less likely to be able to recognize these differences through virtual learning platforms. In their editorial based on research papers, Quasthoff and Heller described how social context affects children's learning [14]. They see families, peers and classrooms as affecting social context for children's learning and call for educational justice, since these contexts provide different premises for learning. This kind of interpretation can be found in many resources. There are also research results that suggest educational context affects a student's goal setting, performance and teamwork [15].

In open source or commercial platform-based learning, the social context between learners can be said to be fading even more. It is possible for learners to study totally independently, without the attention of a teacher. Time and space do not limit learning activities in learning management tool-based learning, creating advantages and disadvantages for the learning process [16]. However, the impact of teachers on learning is still significant if the learning process is not totally automated [17].

According to Wenger, the components for effective learning are practice, community, meaning and identity [18]. The integration of these different aspects emphasizes social participation in a learning process. Concept meaning refers to the meaning of learning in one's life. Practice is a common understanding about reality and learning can appear by doing. The community aspect of learning indicates that learning belongs to a certain reference group. Identity indicates how an individual is changing via learning [18]. The views on collective learning also apply to virtual learning environments. Virtual peers affect learning as well [19].

2.2 Social media and social bonding

Social media is a platform for social bonding. Different social media platforms, such as Twitter, Instagram, Facebook and Snapchat, are building online bridges between people and creating social capital [20]. The social bonding, social capital and psychological well-being of an individual are related to social media usage [21]. These platforms enable the increase of social capital by providing possibilities for interaction, especially in existing relationships [22]. Previous research indicates that students use social media for learning purposes. They communicate effectively with each other by using social media [23].

In online learning, social interaction among students and between students and teachers has been more difficult to support and maintain than in classrooms. Learning communities in online learning are more

complicated to arrange and support [24]. If learning is considered to happen in a social context and either a synchronous or asynchronous manner in virtual learning environments, there are some challenges to overcome, such as different expectations for the amount of social interaction between students and the scheduling needed to connect students [24]. Overall, societies are becoming more digitized, and there is a need to improve the possibilities to participate in virtual or online learning, so that student outcomes will be positive. One solution for this is using a social media-type learning platform.

According to Al-Shoaibi and Shukri, research has been done on attitudes toward social media platforms in general and as learning platforms [25]. Also, the way of learning has changed due to the generalized usage of social media. Students can use social media platforms for learning purposes in classrooms, but also outside classrooms [25]. The classroom can be considered a virtual online learning space or a traditional physical space with tables and chairs.

3 RESEARCH QUESTIONS AND METHOLOGY

The aim of this study is to investigate the roles of social context and social media in student performance. We answer the following two main questions:

- What is the context in which learning happens in contemporary digital life?
- What are the features of dedicated social media to address the needs in different contexts?

In this study, we applied user-centered design (UCD) methodology to design and develop the concept. Specifically, we applied the mLUX framework [26], which is proven to be efficient and effective in application design and development within an educational context. The method consists of the following phases (Figure 1):

User Study Phase: Designers applied various user study methods, such as semi-structured interviews and surveys, to learn users' real needs.

Data Analysis Phase: Analysis of the collected data from the previous phase. The analysis consists of transcript coding [27], as well as user, task and environment analysis [28].

Idea Creation Phase: The initial envisioning of the potential application happens in this phase through scenario-based design. A scenario is shared with three to five users for evaluation and then returned based on the users' feedback.

Product Concept Design: At this phase, we design and develop a high-fidelity prototype and evaluate user experience at the usability lab. After validating the concept, the product is ready to be implemented.

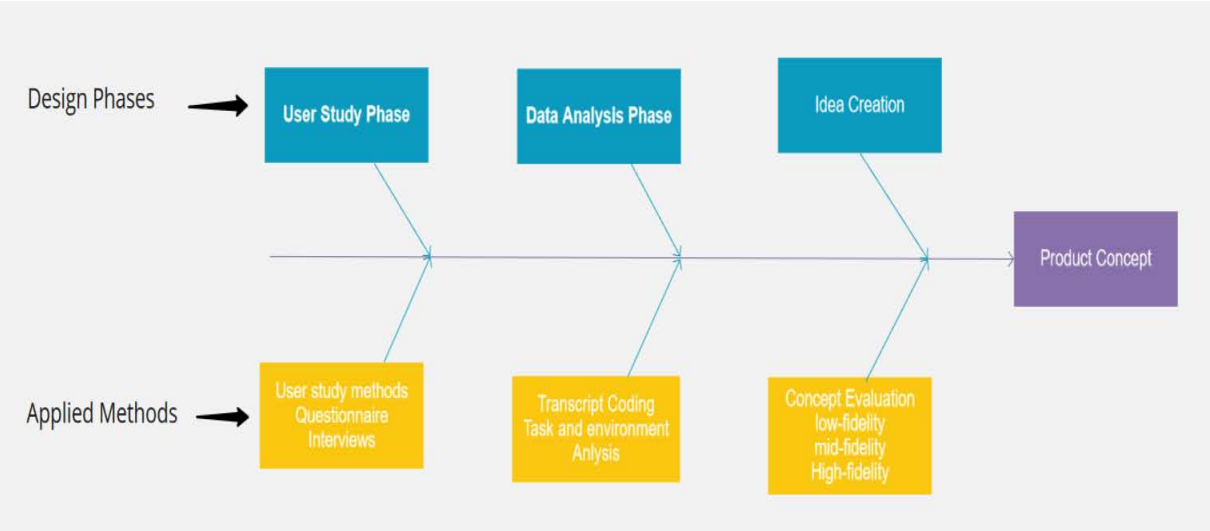

Figure 1. The mLUX framework process for creating the Social Bonding application.

4 CONCEPT DESIGN AND CONCEPT EVALUATION

In this study, we applied a UCD approach to investigate, design and evaluate student-targeted social media applications. We used a survey to collect students' opinions and attitudes toward group work, and study challenges they encountered in communicating with peers during the pandemic. Analysis of the survey revealed that a dedicated social media application for educational purposes would enhance and elevate existing teaching and learning to the next level, specifically during the COVID-19 crisis.

To identify the needs and requirements for such tools, we conducted a semi-structured interview with students and collected information on potential application features and functions. Based on the interview transcript coding and affinity diagram, we developed a list of potential requirements. We implemented scenario-based design to envision the initial application concept. The scenario was then shared and assessed with potential users. We designed and developed the low-fidelity prototype of the application based on the scenario evaluation feedback.

The process of designing the concept and the steps taken at each phase are presented in Figure 2.

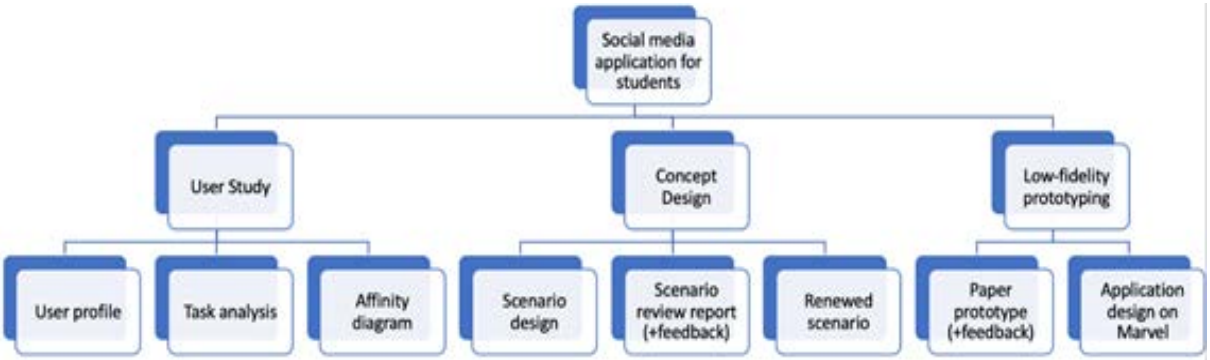

Figure 2. The mLUX framework process for creating the Social Bonding application.

Table 1 presents the sample of user profiles that we used to conduct the user study. We selected four (n=4) participants for the semi-structured interview. Recruiting the users was based on gender, study progress, and time they spend on social media.

Table 1. A sample of the user profiles for the development of potential application concepts.

User	*Age*	*Gender*	*Study Progress*	*Communication Apps*	*Time on SMS*	*Preferred Device*	*Preferred Mobile OS (operating system)*
1	18-22	Female	2nd semester	Call, SMS	3-5 h	Mobile	Apple
2	18-22	Male	3rd semester	Call, SMS	3-5	Mobile	Apple
3	28+	Male	4th semester	Call, Email, SMS	10+ h	Desktop /Mac	Apple

We conducted interviews with four users. All of the interview sessions were recorded and transcribed for further analysis. The analysis was done based on task and environment analysis, as shown in Table 2.

Table 2. Sample of task and environment analysis

Audio/video call	med	med	med	hi
Tools				
Study tools	med	hi	hi	med
Connect to Spotify/YouTube	hi	lo	lo	med
Event organization	med	lo	hi	med
Functions				
School ID	lo	hi	med	lo

After identifying the real needs of the learners, we proceeded with designing a low-fidelity prototype of the application. The low-fidelity prototype was evaluated with the four potential users. Based on their feedback, we developed a high-fidelity prototype. We then conducted a usability evaluation with users to finalize the potential dedicated social media application. Figure 3 presents a sample of the concept prototype.

Figure 3. A sample of the application concept prototype.

5 RESULTS

5.1 Survey

Figure 4 presents the age distribution among the participants.

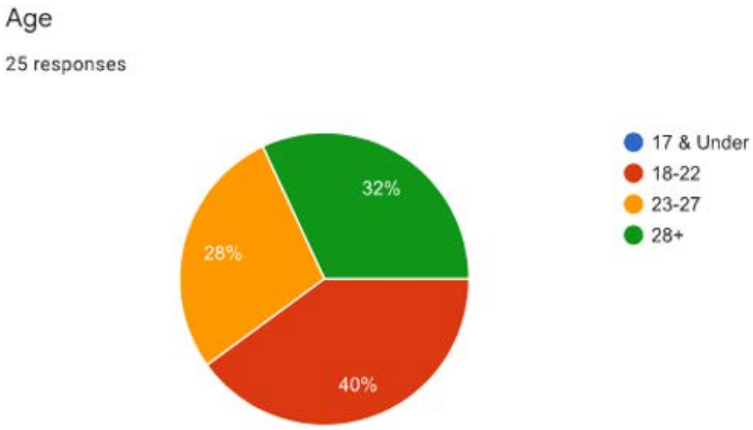

Figure 4. Age distribution among the participants.

5.2 Initial usability test

Figure 5 presents the participants along with the stages of their studies and semester. The majority of the survey respondents were in their third semesters.

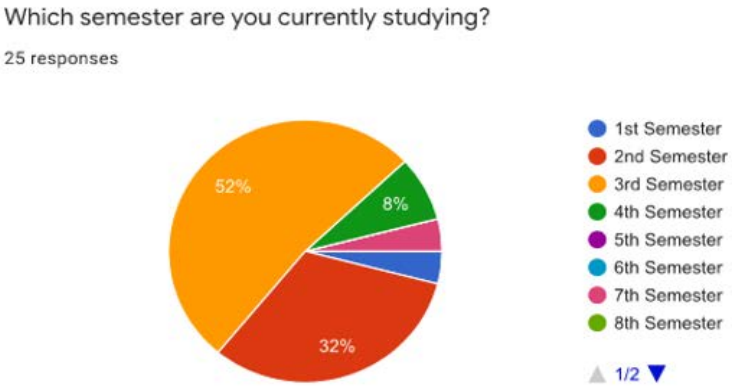

Figure 5. Respondent study phase.

Figure 6 presents the students' responses about their preferred methods of communication. Social media applications were their most preferred way to communicate with peers in an educational context, even more than email.

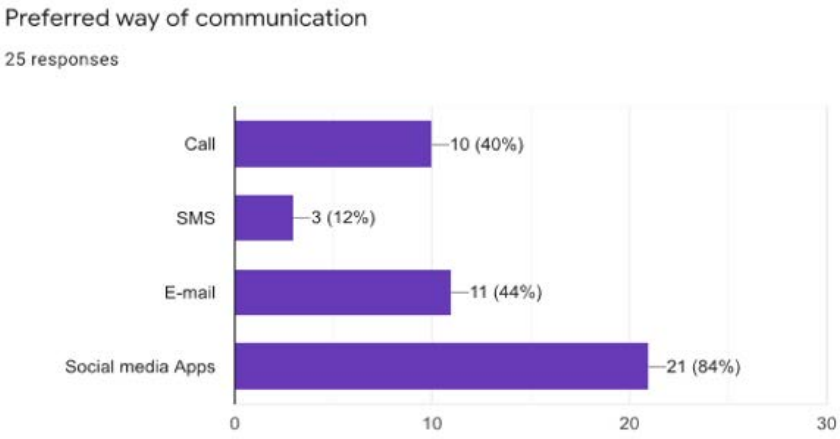

Figure 6. Respondents' preferred methods of communication.

Figure 7 presents the number of hours that students spend using social media. Almost 48% of the students spend three to five hours on social media per day.

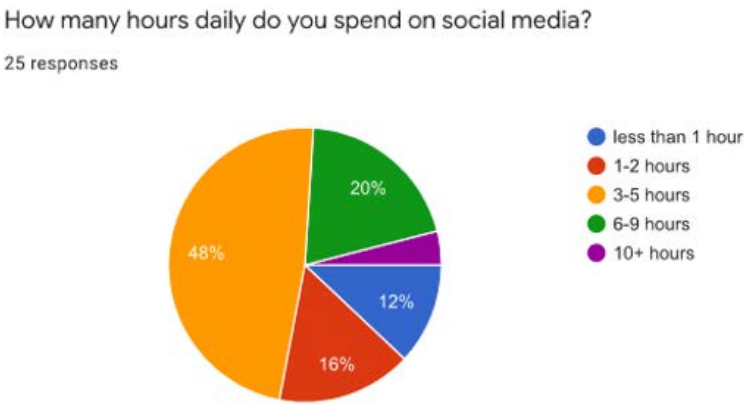

Figure 7. Number of hours that students spend on social media.

Figure 8 presents students' preferred devices for communicating. The majority of the users are using smart gadgets, such as smartphones, for communications.

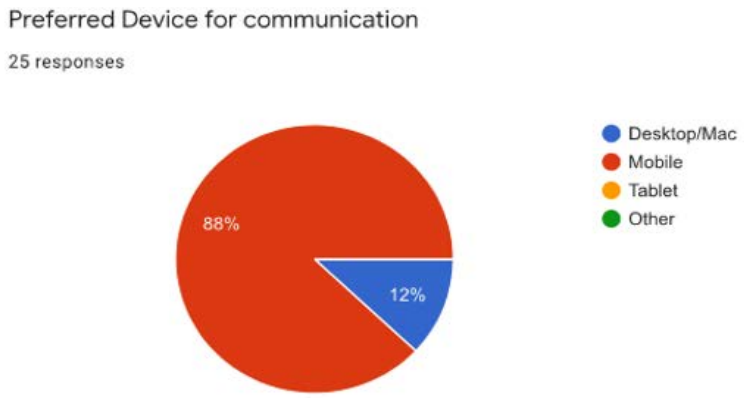

Figure 8. Preferred devices for communication.

6 DISCUSSION

During the COVID-19 crisis, educational institutions have faced numerous challenges. Face-to-face lectures, teamwork, and instant messaging between teachers and peers all present challenges. Current online learning platforms have proven ineffective when it comes to delivering immersive and live-streamed lectures. As a result, in the early weeks of the COVID-19 pandemic, the conference calling program Zoom became the primary method for educators to deliver courses.

The user study and survey analysis indicate that 84% of students preferred social media applications for communication (Figure 6). Furthermore, the average time they spend using social media is around three to five hours per day (Figure 7). Almost 90% of the users use mobile devices for performing their communications activities (Figure 8). It is self-evident that students' educational activities have shifted toward smart gadgets with the help of social media. This has also been identified in various studies, such as [29], [30], and [31]. We believe and the evidence [32] shows that the context of using social media as an educational medium and for educational content delivery will increase in the near future. In the past year alone, the COVID-19 crisis has illustrated that learning is no longer dependent on physical places, such as classrooms.

People may experience learning and teaching in any setting or context where knowledge is required. Learning and teaching may occur in social contexts with an ad-hoc group of individuals. Furthermore, artificial intelligence-based learning platforms are continuously developing to customize learning content for learners. In recent years, we have witnessed many initiatives on open-source and long-life learning platforms, which fully align with providing group and individual learning when knowledge is required. These developments lead to the fact that the traditional mobile learning platform is not enough to anticipate the huge demand.

The objective of this study was to design a social media-based learning platform that learners can interact with to access learning content at any time and in any place. In addition, the social media-based learning platform is meant to improve students' interaction and engage users emotionally, since social bonds impact educational outcomes [33]. Social media has been widely used in marketing to evoke emotions [34], demonstrating that engaging customers through social media impacts growth.

7 CONCLUSION

In this study, we investigated how the educational learning context has evolved through the advancement of educational technologies in recent years. This has led to the importance of developing new learning platforms, such as social media-based platforms, from a student's perspective. The feasibility study revealed that such platforms are widely appreciated by students. Therefore, we developed a proof of concept prototype and tested with the potential users to ensure functionality. For future work, we have planned to design and develop a functional prototype and assess the application in a real environment. Additionally, we will pursue the use of various data mining approaches to assess and evaluate the emotional experiences of learners using this application in various contexts.

In this way, we are able to anticipate and provide learning content in an effective form based on learners' most emotionally-engaged state.

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