

Design and prototyping of Kiddo, a mobile application for parents to control kids' learning

Albandary Alamera^{*1}, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

Noura Alaskar², Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

Sana Bukhamseen³, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

Jawaher Alkhamis⁴, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

Enas Alghamdi⁵, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

Almaha Almulhim⁶, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

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ABSTRACT

A good and healthy seed will always produce a nice fruit, whereas an infected seed will produce an infected fruit. The same concept applies to children; the healthier the environment in which the kids grow, the more likely they become valuable members of society. Therefore, this study aimed to design an app that aims to enhance the communication between parents and their children and enrich the good habits of the kid. This paper will mainly discuss the proposed idea and its design, as also it is mentioning the app's main functionalities. The Kiddo project introduces us to a mobile application that focuses on enhancing the sense of responsibility from a young age and makes raising kids fun and easy. Kiddo Application enables kids to share their accomplishments with their peers in an interactive environment full of enjoyment followed by parental monitoring to handle what their kids are posting and friends following.

Keywords: Educational app; Kiddo; Kids; parental control; social media.

* ADDRESS FOR CORRESPONDENCE: Albandary Alamera, Department of Computer Information Systems, College of Computer Science and Information Technology, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam, Saudi Arabia.

E-mail address: amalamer@iau.edu.sa

1. Introduction

For the time being, we are facing the dawn of the electronic knowledge explosion and the great impact of technology, which includes the smart devices and applications that intrude into our homes without a warning (Tyagi, Fernandez, Mishra & Kumari, 2020). The impact of technology on our lives cannot be denied as it mutually affects adults and children on contrary. Research proved that kids nowadays are more connected to their devices, for example, a study conducted by Leipzig University showed that children's use of mobile phones highly increased between 2011 and 2016 (Gottschalk, 2019).

According to the report released in 2017 by Common Sense Media organization, children up to eight years old spend more than two hours using the technology and 98% of homes have at least one mobile device or more, researchers demonstrated that "the excessive use of modern technological means leads to behavioral problems and disturbances in family relationships" (The Common-Sense Census, 2022). This explains why many parents nowadays are suffering from the preoccupation of their children in using mobile applications where children became attached to those apps, which made the communication between parents and their children and practicing raising methods with them more difficult. Moreover, we cannot dismiss the fact that the internet and mobile applications world is not considered a safe environment for kids due to many reasons the most important of which is cyberbullying (Milosevic, 2018).

According to a study conducted in 2015 that the prevalence of cyberbullying among teenagers has reached approximately 32% and it became a severe issue to deal with (Buelga, Cava, Musitu & Torralba, 2015). Therefore, as Information Systems researchers, we aim to offer an idea of an application called "Kiddo" which is composed of two words, kid plus do, the application is characterized by providing a competitive and safe social environment that allows children to communicate with each other. At the same time, parents are allowed to practice a modern educational method that keeps pace with development, which encourages the children to do their daily tasks and acquire essential life skills in an enjoyable and motivational way. Our newborn application is distinguished from its competencies by the notable features such as full parental control on the matter of posting pictures/videos, checking whether posts are appropriate to share or not, not to mention who the kid is being able to follow so parent will have their hand on their childhood friend zone. Also, it has the nature of social media apps, Instagram might not be an appropriate choice for young children, but Kiddo is. Furthermore, both kids and parents can access the system using one application only, unlike what other similar apps offer the users, as long as the answers to our research questions clarify the importance and acceptance of the idea by the parents.

1.1. Literature review

1.1.1. Class Light

Class Light is an educational application in the distance education system, that aims to direct access to information and lessons for students by presenting and uploading the lectures by the teachers. Moreover, ClassLight aims to create an atmosphere of excitement and competition between students and teachers through the point counting system that counts the points of every activity and task done by the student in the field of education (Classlight, n.d.).

1.1.2. Class Dojo

Class Dojo is a school communication platform between teachers, students, and families to use daily, by sharing what the student had learned classroom or at home through photos, videos, and messages (Eliawati & Rafika, 2022).

1.1.3. Testahel

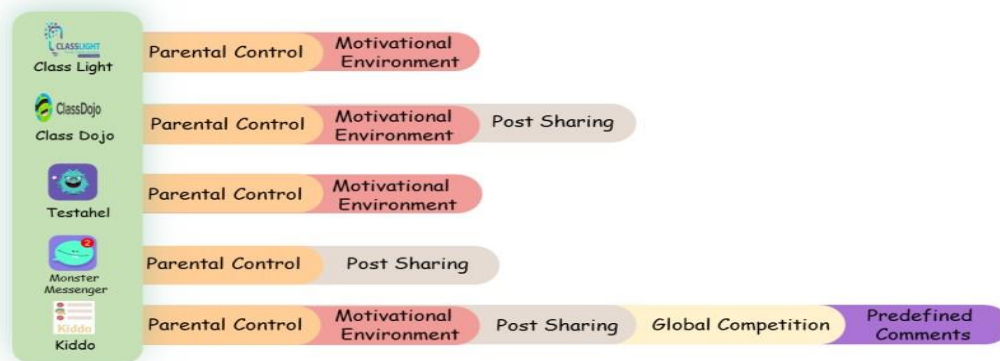
The application is interested in helping parents, teachers and nannies follow up on their kid's behavior by setting their behaviors, tasks, and goals whether positive behaviors or negative, and determining the number of points they will get when implementing the behavior/task. In case he made negative behavior, his points will be deducted as determined .

1.1.4. Monster Messenger

Monster Messenger is an app that is designed to be similar to instant messenger services like Facebook Messenger, except that it is targeted at children under 13 (Monster Messenger, 2022).

Figure 1

Similar Applications Comparison



The figure above shows a comparison between the *Kiddo* application and other similar applications to demonstrate the differences that distinguish *Kiddo* from the rest. We performed the comparison based on *Kiddo's* main features which are Guardian Control, Motivational Environment, Post Sharing, and Global Competitions. Nevertheless, the *Kiddo* app is distinct from others with multiple advantages, the most important one is that users need to download one application only, not two. The same app can be accessed by a parent or kids, and features will be accessed depending on the user type. Second, an important thing that has been ignored by all previous applications is the issue of allowing comments for kids at a young age, as a study conducted in 2017 published by *Insiderscience* shows that 38% of the kids who participated in the study have used foul language . Regarding global competition, it is similar to the new popping trend on TikTok, but this will be handled and maintained by the admins of the application to protect the children from acquiring any useless and aimless actions or ideas.

1.2. Purpose of study

Presently, practicing child-raising is not easy, as it is also difficult to prevent kids at a young age from using inappropriate social media apps since they have an attraction to them. About a third of children ages 7-9 use social media apps on phones or tablets (Wood et al., 2019). Kids are

impressionable and much more likely to practice what parents teach them. Moreover, good habits take time to develop and do not work if parents force them upon them. Therefore, we have designed this solution that aims to enhance the communication between parents and their children and enrich the good habits of the kid. We are providing a *Kiddo* Application that enables the guardian to assign tasks and challenges for the kid with a point system that would motivate them, in addition to enabling kids to share their accomplishments with their friends in an interactive environment full of enjoyment. This paper will mainly discuss the proposed idea and its design, as also it is mentioning the app's main functionalities. But first, it will discuss similar previous systems, then the problem statement and solution. Lastly, the project team discussed the future work plan.

child's actions. Then, motivational environment and post sharing will which open a wide secured environment to the children to do their tasks in an enjoyable way by sharing their accomplish with their peers. Forth in list will be the global competition that is similar to the new popping trend on TikTok, but this will be handled and maintained by the admins of the application to protect the children from acquiring any useless and aimless action or ideas. Last is the predefined comment which have been added for the sake of demising the bullying actions in the comments section, so children should choose from the comment list the reaction they want to put, and all the comments will be inspiring and motivative.

2. Materials and Methods

2.1. Data collection instrument

Kiddo team has surveyed to find out attitudes and reactions of the parents, as they represent the main parties involved in the application users, as also the survey's responses show a high demand from the parents toward such ideas.

2.2. Participants

There were 262 responses collected from parents in different cities in the Kingdom of Saudi Arabia, the survey was created by Google forms software and written in Arabic language, shared via social media apps WhatsApp, Twitter, and Snapchat by the project team members using.

3. Results

As a start, the parents' responses show that 80.5% of the kids own a smartphone/tablet, this is a serious percentage of kids having phones, which leads us to the second question which asked whether the kid uses social media apps or not, as shown in figure 2, more than the half answered positively with a percentage of 56.7%. Moreover, we asked whether the parent prefers having an app that motivates the child to achieve tasks and share posts with friends under parents' supervision or not, and the majority responded as 'Yes', with a percentage of 87.4%. As figure 3 shows, most parents face difficulties in carrying out their children's tasks assigned to them, a percentage of 46.4% answered 'Sometimes' and 28.4% answered 'Yes'. Lastly, to ensure that the project will be well received by the target group, we asked the following question shown in figure 4: 'If there was an application for kids that enables them to share their accomplishments with friends under the parents' supervision, would you download it?' Most parents answered, 'Yes' with a percentage of 62.5% and 31.4% responded 'Maybe'.

Figure 2

Survey Question, does your child use social media applications?

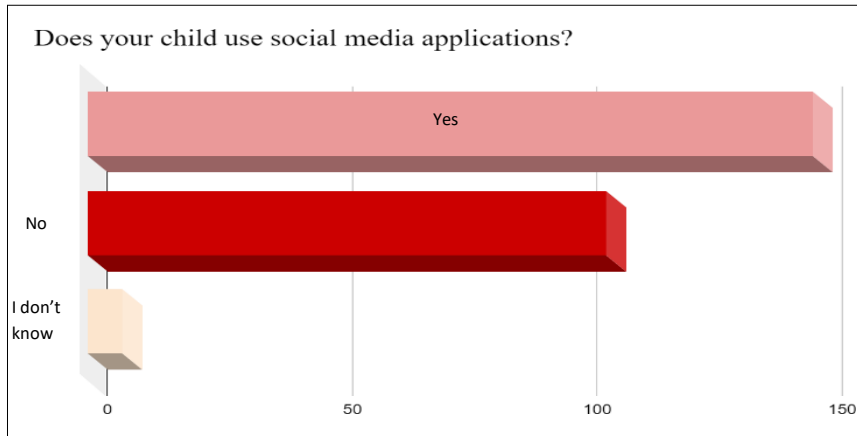


Figure 3

Survey Question, do you face difficulties making your kids obey your quests?

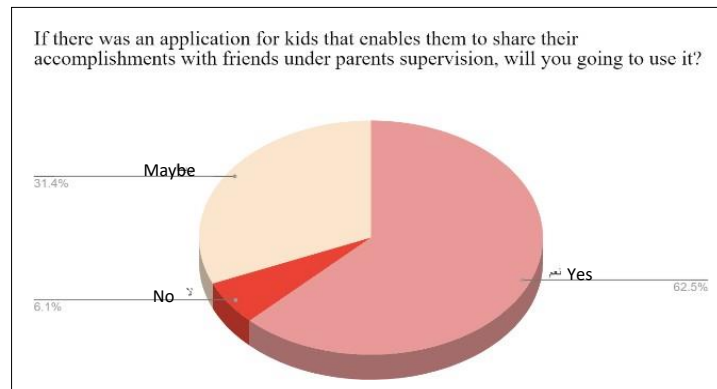
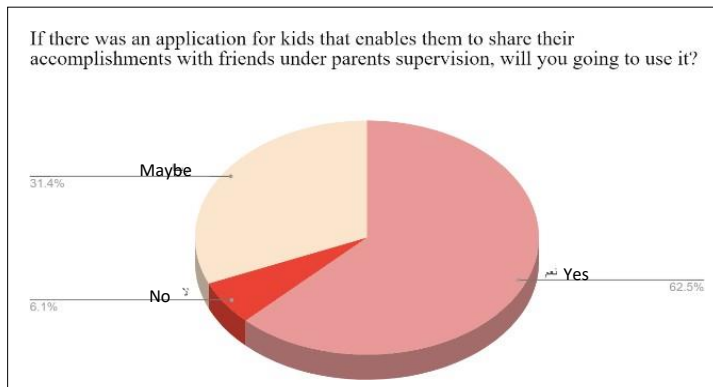


Figure 4

Survey Question, if there was an application for kids that enables them to share their accomplishments with friends under parents' supervision, will you go to use it?



To sum up, the research questions indicate the society's acceptance and demand for such an idea, in addition to the importance of paying attention to the matter of lacking kids' appropriate applications. This has proved us to the need of starting the project implementation and release the app on different mobile apps market platforms.

4. Discussion

4.1. Proposed System Structure

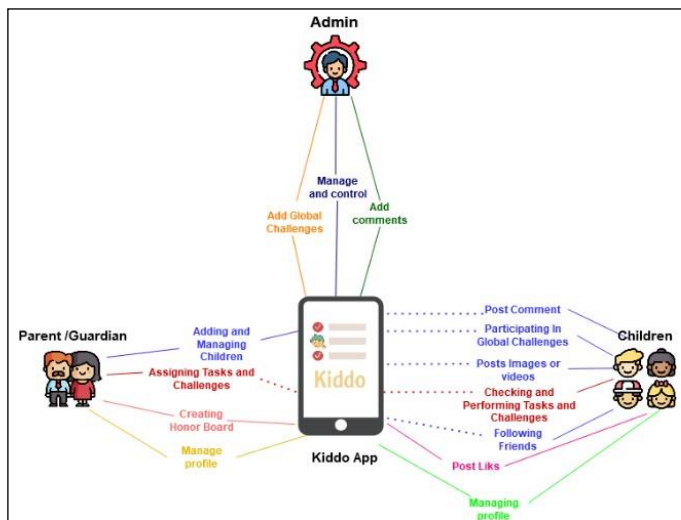
4.1.1. System Overview

The below system overview diagram explains more about *Kiddo* users, which are represented as icons, and the interaction between them within the app. The three user classes of the *Kiddo* application are the admin, parent/guardian, and the child. The admin interacts with the system through managing and controlling the app and adding and managing the comments, as they are predefined by the admin to be posted by the kids. Moreover, the admin interacts with the app by adding and managing global challenges that will be available in all the kids' accounts.

Parent/Guardian are the foundation, without them, the child will not be able to access the system, parent/guardian interacts with the *Kiddo* app by managing and adding their children, assigning tasks and challenges, creating an honor board to increase the competitiveness between siblings and friends, and managing their own and their kids' profiles. The last user class is the child, the child can interact with the application after being added by the parent/guardian through checking and performing tasks that were assigned by the parent, participating in global challenges, post images, and videos, interacting with others' posts via adding comment and likes, following friends, and finally, their ability to manage and edit their profiles.

Figure 5

Kiddo System Overview



4.1.2. System Main Functionalities

In the following paragraphs, the system's main features will be highlighted and explained. Universal usability principles are an important concept to work upon it, as the project team ensures to produce an easy useable kids' application design by testing its usability on a kids' sample group.

4.1.2.1. Post Sharing/ interaction

The children can share either photos or videos that will be shown under their profiles and on the community page -it will be described in the following paragraph-. The post should be describing the achievement of the task assigned by the parent to the kid and posted to be seen by the kid's followers.

4.1.2.2. Parental Control

The parental control feature allows parents to ensure children's safety especially since the app is considered a social media app due to the ability to follow friends and share posts. Parents will be able to monitor all of the kid's activities, accept/decline the kid's friends' requests, and edit/delete posts.

4.1.2.3. Global Challenge

The global challenge is the turning point feature in *Kiddo*, as this feature differentiates our app from other similar apps. To increase the sense of competition in a fun way between *Kiddo's* users, we innovated this feature. The child can join and participate in any challenge which is being added by *Kiddo's* admins, the child's participation will be public and visible to other children, as the child can also view other children's posts. Parental consent is a requirement to join any challenge.

4.1.2.4. Points System / Prizes

Kiddo contains a points system which is the essence of the application. The points or prizes are given in return for achieving tasks or challenges. Guardians can specify the number of points given per task and set a prize that will be claimed by the kid after finishing the challenge as a reward for achieving it. As also there is an honor board that ranks the kids based on their points total.

4.1.2.5. Kid's Community

An important and special feature of *Kiddo* is that it is a safe social networking environment for children, inspired by the timeline of adults' social media platforms such as Instagram. This part of the application is part of a child's profile that enables them to view their friends' latest posts and interact with the posts by liking or commenting. Note that, the comments are predefined comments designed by us to prevent cyberbullying among children.

On top of that, the *Kiddo* team has ensured to meet all usability standards to deliver a good and usable entertaining and educational application for kids. As children find it difficult to identify different buttons and their functionalities, we made it very clear and easy for them to identify as the buttons are displayed using icons representing the button's functionality. Also, we have conducted usability testing on 3 children aged 6, 7, and 10, the observation indicates that the system is well designed and can easily be used by 6-12 years old kids.

The upcoming figures highlight some of the systems features design, kid's homepage clarifies all interfaces and functions that can be accessed by the kid, as the community homepage shows the kids' posts timeline. Predefined comments are displayed with emojis that explain the comment. Global challenges posts are displayed when pressing on the challenge name. The honorboard shows the ranking of siblings based on their pointstotal.

Figure 6
Kid's Homepage



Figure 7
Community Interface



Figure 8
Predefined Comments

Figure 9
Global Challenges

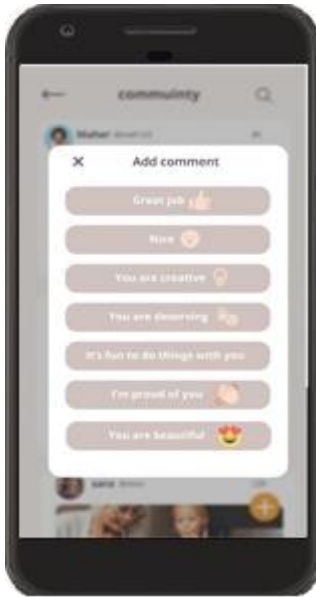


Figure 10
Global Challenges Posts

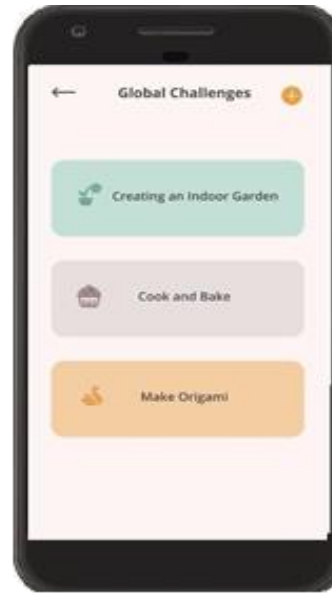


Figure 11
Honor Board



5. Conclusion

Regarding Kiddo Project's future work, the project team has already designed the app and it is ready to be released on Google Play Store. Afterward, the app will be designed and released on different platforms such as iOS. In the plans for the project, the team intends to design the app to support multiple

languages. Lastly, the application can be used as a competitive system for students in schools, as it will make the educational process fun and motivational.

Kiddo is a kids' mobile application that aims to help parents in providing a safe socially encouraging environment application, in addition to facilitating the educational process for their children, by creating a social educational platform full of motivation and joy. Kiddo will focus especially on the parents/guardians and their children. The project aims to motivate children to respond to their parents for what they are asking them to do in their daily life, to provide community engagement as measured via posts and replies, and to provide parents with full controlling features in this social application. The application's design requirements ensure clear usability standards, to guarantee an easy-to-use product provided for kids.

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