

# Game based education with android mobile devices

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**Abstract**—Because of the increasing usage of smart phones and laptops, android application usage rates also increase. To make life easier, android applications are used to serve users. Besides, education is one of the most important part of a human being's life. With the improving and widespreading of technological opportunities, many of the technological developments are integrated with education area. Especially, researchers think that mobile devices will provide many opportunities. Also, with the help of the improved methods, the education and learning periods will be more amusing and useful. Thus, more successful results will be gained. For this reason, many applications and platforms are started to be developed recently for providing more successful education period for children and students. The basic aim of our project is to provide a mobile education application for primary school kids. Thus, they will reach their lesson topics and they will make exams and solve more questions at every place and every time over their smart phone.

**Keywords**—Education; android applications; gaming

## I. INTRODUCTION

Education can be given and presented in classes mostly but today education can be presented in very different places and ways like workshops, seminars and symposiums to different ages between 5 and 90 in [1,2]. At the workshops in Pera Museum, the children meet with art and have a conscious about museums and art. Besides, at the alzheimer project, old people meet with the art in a museum environment to improve their sensitivity about responding to external and visual stimuli.

Today, technology improves very rapidly with the increasing usage of computers and mobile devices, so many applications are developed for users about many areas. Education is one of these areas but the importance of the applications about education area is noticed lately.

Education period is the most important and long term part of human life. Thus, new methods and techniques that will improve and make the period easier are easily accepted. So that, online education platforms and applications are getting widespread. At the begining, these platforms were designed as online education site. Later, lecture presentations are presented as video records and applications.

Then, with the development and utilization of mobile devices in education, many android applications are started to be designed according to the needs in education area to attract the attention of families who have children.

In addition to lectures, games can be utilized for education. Well designed games and game like applications can be used as entertainment and motivation before or after the long education periods. Also, the game itself can be used for education with embedding some informations in games. Thus, utilizing from game dynamics in everyday life attracts great attention of researchers, recently.

In many applications that are developed for android and mobile devices, many gamification principles are used. Also, many education applications are presented in android platform, recently.

Smartphone usage increase between young people, because everyday many innovations are presented to the users: integrated cameras, geopositioning and velocimeters. Thus, smartphones utilized in many areas health[3], education and games. In paper [4] a game named gymkhanas is presented for m-learning. The game is based on surpassing challenges and passing the levels. So, the players will have talent and ability at the end of the game.

The cooperation of mobile computing with computer science lessons considered in [5]. Here, smart mobile devices are used as learning tools to increase the motivation and focus of the students on computer science lessons. In the project, many computer science subjects including android-enabled smartphones are designed for lab environments.

The rest of this paper is organized as follows. In section II the structure of gamification with basic parts are briefly explained. The proposed system description and implementations together with the gained interfaces are given in Section III.

## II. GAMIFICATION AND EDUCATION

With the ever improving computer and communication technologies, the users can reach many applications immediately. And also they can utilize this technology at every area of their daily routine. Especially, young people

between the age of 10-30, have grown together with these technological improvements. For this reason, they use internet and social networks actively and easily. And while surfing over internet, they always come up with the gamification principles. Thus, this generation already spend most of their time over internet with games.

The great interest about digital games, improved the researches about games and education area. Especially in education, economy and marketing areas, game based studies are becoming widespread. Technological improvements effected the whole life of human beings together with the education of young people. Today, reaching data is easier with the improvements in technology and increasing mobile device users. Thus, education have started to cooperate with technology. So that, the number of education site, education applications, videos for education topics and environments that provide statements about a lesson topic together with providing to make practice have increased. Gamification can be utilized in many areas. In education, it may increase the motivation of the students, it may provide students to focus easier and also it may provide more funny and amusing time periods for students during the learning hours. Especially, gamification factors are mostly seen in education applications with giving some awards, scores, task passing levels.

Gamification approach is derived with inspiring from digital games. But, many elements that form gamification take place also in traditional games. So, they can be applied at many cases in our daily life which is a very remarkable and striking fact. Though, owning a very long history, culture of game and games become popular in recent years. The main reasons of this fact are becoming widespread of digital games with the help of the new technologies. Also, the increasing attention and addiction of people for digital games. Hence, using game philosophy for commercial aims have suggested the thought of applying the idea to the education. There upon, the researches have done and the topic have become popular.

Basicly, gamification is explained with three layers in a gamification model [6]. These layers are, dynamics, mechanics and components. In gamification, dynamics take place almost at every type of games which is the basic principle that constructs the gamification design. Constraints, emotions, narrations, progression and relationships are the basic dynamics in gamification.

With mechanics more distinctive acts are identified. The gamification mechanics can incline the players to every intended direction and may add a style to the game process. Challenges, chance, feedback, rewards, win states, cooperation and competition are the most known mechanics.

There are many ways used in education with varieties of curriculums. Conceptual learning, team based learning, learning with classroom approach and digital curriculum are the most known categories in education.

In conceptual learning the lesson topic is given to students by their teachers with solving problems and giving examples. Here, the basic aim is increasing the understanding of students over the application of concepts.

Team based learning is another education category which focuses on working in groups instead of working individually as in conceptual learning.

One of the most known education category is the classroom approach. It is also the oldest and widely used one.

Digital curriculum emerged with the increasing usage of computers, smart phones and other communication devices. With these devices, the people can reach data faster and easier. Thus, these communication devices are started to be used in education area, recently.

In education the cooperation of game and digital curriculum is presented as the last category. Because of proposing more amusing education atmosphere, it is thought as more reasonable for all age groups [7,8].

### III. THE PROPOSED SYSTEM DESCRIPTION

In our work, gamification concept is given with gamification elements. Also, design period is presented together with many key concepts.

The basic aim of our project is to provide a mobile education application for primary school kids. We focus on attracting children's attention together with presenting a useful application by utilizing gamification method. To provide these aims, the syllabus of the lessons will be gained and by providing easy to use user interfaces to the students these collected data will be used in our project.



Fig. 1. Grade lists' interfaces.

In addition to these, gamification elements: the desire of winning and motivation will be used as the facts for encouraging the children. So, we will present a project about e-education that will be a basic example about gamification in education that will be used over smart phones.

Initially, the interfaces are designed with droidDraw which is a graphical user interface (GUI) editor on Android platform for cell phones and tablet application programming. Later, most of these interfaces will be designed over eclipse. In our work, the student will enter the education project firstly, by choosing his/her grade between the presented grades as represented in figure 1.

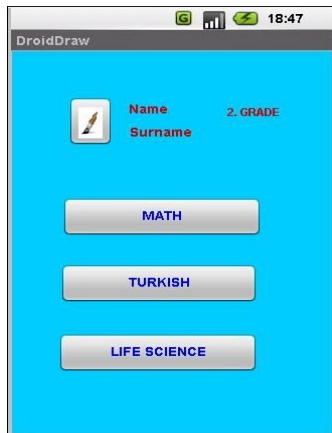


Fig. 2. Lesson lists' interfaces.

Then, according to his/her chosen grade, his/her related lessons are listed on the interface as presented in figure 2. Afterwards, the student selects his/her lesson and the topic. And he/she starts to learn its course with presented headlines and examples.



Fig. 3. The design of an exam page interface .

After the presentation of lesson topics, the students may have some exams whenever they prefer over the education project as given in figure 3. Thus, they will reach their lesson

topics and they will make exams and solve more questions at every place and every time over their smart phone. By this way, the students will make good use of their time. Today, many of the students spent most of their time while travelling from their home to their schools. To be able to utilize their lost time which is spent during the travel between home and school, this project will provide a good solution. Because many students have smartphones and they can easily use the project.

#### IV. CONCLUSION

In a game, many feelings may be felt and perceived from sadness to happiness. Feelings of amusement and fun are important and gained enjoyment with pleasure feelings at the end of the winning process, strengthen the request of keeping on the game. Besides, the progressions present players their improvements. For players, it's very important and meaningful to gain improvements and progress, instead of doing the same things over and over.

With relationships in the game, the players' interaction with their friends and competitors will be increased. Also, the players will see and notice his/her knowledge level between his/her friends. Only with the help of these dynamics, the children will be motivated for learning their own lessons and many more informations. They will improve themselves with a more funny way.

At e-education environments, there is not a direct connection or communication in between the students and teachers, so there is not an environment that provide the teacher to transmit his/her feelings and emotions to his/her students. There is a lack of emotion at the e-education environment. Gamification can be used in education applications because it's basic aim is to make the education period more interesting. To satisfy this absence of emotional environment and to motivate the students, the gamification method is very useful [9].

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