



# New Trends and Issues Proceedings on Humanities and Social Sciences



Issue 7 (2017) 08-13

ISSN 2421-8030

[www.prosoc.eu](http://www.prosoc.eu)

Selected Paper of 6th World Conference on Educational Technology (WCET-2016) , 12 – 14 May 2016, Limak Limra Hotel & Resort, Convention Center Kemer, Antalya-Turkey

## Sample application on dramatization in education

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### Suggested Citation:

Yurtay, Y., Yurtay, N., Yuksel, A. & Armay, A. (2017). Sample Application on Dramatization in Education. *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 07, pp 08-13. Available from: [www.prosoc.eu](http://www.prosoc.eu)

Selection and peer review under responsibility of Prof. Dr. Huseyin Uzunboylu, Near East University, North Cyprus.

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### Abstract

Developments on the technology have a big effect to change our lifestyle and education methods. It is obvious that effects of games based computer technology is increased on people's life. Dramatization in Education is the one of the latest studies that is used education materials and dramatization methodologies. The idea of converting the education materials to game, is invented with changing human profiles and their interests. In these study, it is intended that teaching the Gini Algorithm that is used with dramatization tools which is the one of the most significant usage area in data mining. The dramatization of theoretical steps of Gini Algorithm is executed and it is developed with practiced on a group of student. It is measured the effects on students of classical education and dramatization on education with this application. After the measurement, results are discussed, evaluated and shared. The application is designed for mobile devices and it is coded to be used with Android Operating System. Besides, this application is developed computer engineer students based. Instead of to memorize the theoretical informations and formulas, the application focused on how people understand the logic. This information becomes permanent information in young minds. Application consists two stages. First one is the preparing of dataset and second stage is the operating the algorithm with the help of prepared datasets and formulas. In the last part of the application, whole main nodes provide to users as decision tree table.

Keywords: Education, dramatization, data mining, gini algorithm.

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## 1. Introduction

Visualization and usage of metaphor in education, makes easier to understand the topic. Besides, it is significant for permanent learning. Dramatization concept includes both visualization and also uses metaphors. Thus, permanent learning can be achieved more easily with dramatization

In the field of dramatization in education, there are so much work done and shared. Cavus and his friends, they have conducted a study that can be used for primary school students in Science and Technology course. Kara, created game activities for foreign students to learn Turkish easier and shared the results of these events in Gazi University Turkish Education, Research and Application Center (TOMER) (Kara, 2009). Yildirim and Demir (2014) presented a game design to be used in 9th grade math classes. In another study; Add'em Up, how basic arithmetic skills are evaluated on the effect to the game (Kula & Erdem, 2005)

Polisher and others; edited a game based on a scenario to be used in C++ education for higher education field (Parlatici, Lermi, Ozturk, Yurtay & Tuna, 2015).

This study is designed for students studying at the undergraduate level and the performance of the study is measured on 4th grade computer engineering students. The Gini Algorithm, within the scope of "Data Mining" course, is dramatized in mobile media, and intended to teach the use of the algorithm with metaphors.

## 2. Gini Algorithm Dramatization Software

### 2.1 Platform and Technologies Used

Gini Algorithm Dramatization Software is designed for mobile devices and it is adopted with Android Operating System. Eclipse Programme is used for coding. The visual interface and icon designs of our game has been prepared in Adobe Photoshop CS5. Testing and Analysis parts are monitored with Android Virtual Machine via computer. Applications were revealed with scrum methodology.

### 2.2 Gini Algorithm

Data mining methods can be divided into two parts. These are Prediction Methods and Description Methods. Process for separation according to the common characteristics datas include are referred to as classification. Classification is based on a learning algorithm. It is the process of identifying data of unknown data class. Decision Trees are the one of the classification methods. The dataset is divided into **learning (train)** and **test set**. **Learning (train) test** is using to create models and test set is using to verify the models. Different algorithms have been developed to create decision trees. One of them is the Gini Algorithm. Gini Algorithm is a classification method that takes the form of two compartments. A decision tree arises when the algorithm study finished (Ozkan, 2008; Silahtaroglu, 2013).

### 2.3 Game Scenario

Gini Algorithm has became a fun game with this software. A beginner can benefit from the games' theoretic info. Then it is easier to adapt to the game. One of the aim of the game is, triggering the users competition instinct and ensure them to gain high scores. . In first step, the formula of the Gini Algorithm has been identified to the user with the task metaphor. Within the results, root node is shown to the user and game is returning back to the first step and repeated till dataset finishes. At the end of the game, the decision tree presented to the user. In figure 1, whole processes flow of the game is given.

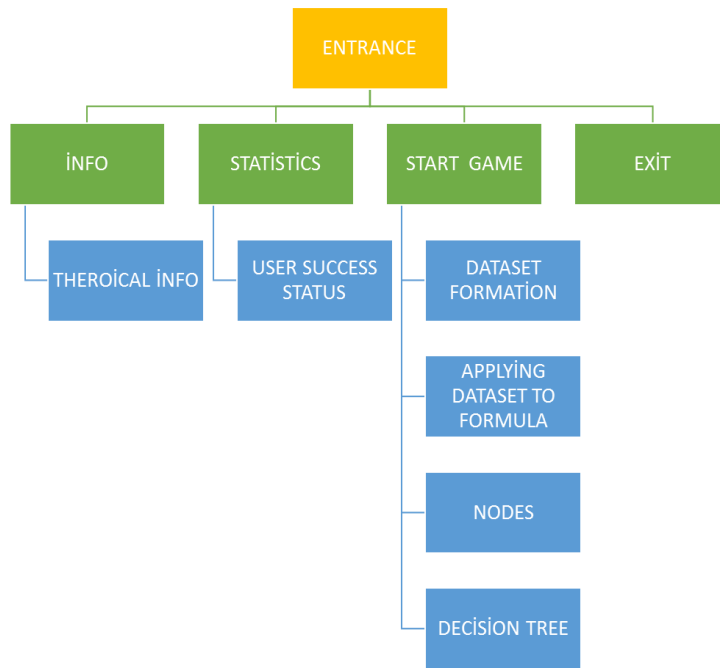


Figure 1. Game Scenario

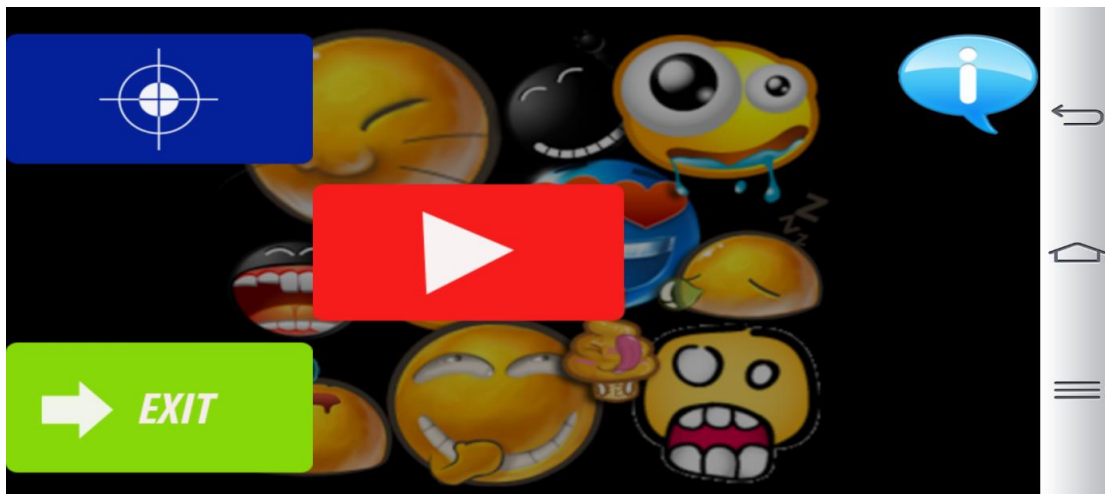


Figure 2. Gini algorithm Dramatization Software Home Screen

As it can be seen in the Figure 2, there are score statistics, info, exit and start button in the home screen. In the part of score statistics, five highest scores are ranked. In the part of info, theoretical information is given and explained how to play game.

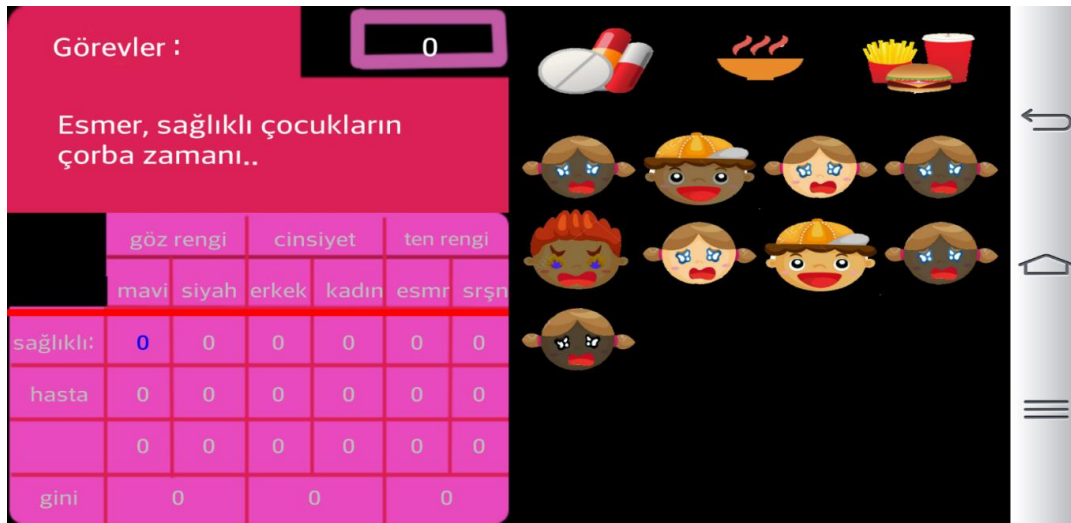


Figure 3. Gini algorithm Dramatization Software Game Screen

Game Screen in the Figure 3, is the main page of the application. It is intended to create a set of user data with the tasks. Gini Algorithms decision tree is a health based scenario. In the process of determine of subject of scenario 3 main thing is considered. Those are eye color, skin tone and gender. Three objects are used in the fulfillment of the tasks assigned to ensure the continuation of the scenario; medicine, soup and food. And those samples are taken from normal life. Every completed mission is returning back to the user as more scores. In this way, users desire to play more. Bottom left of the screen shows the user dataset of table. User is observing the changes on the table step by step in every mission.

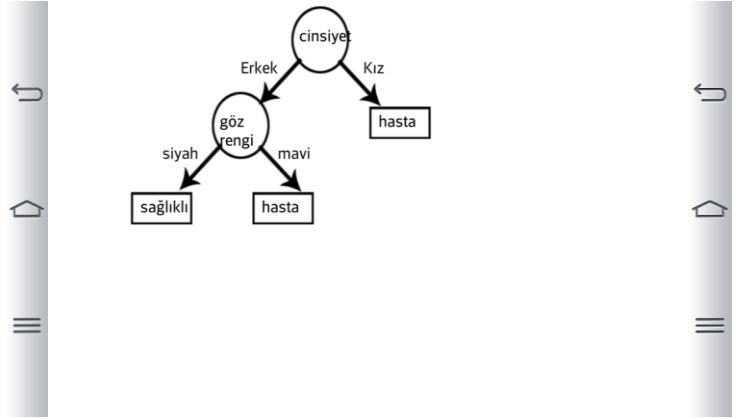


Figure 4. Gini Algorithm Dramatization Software Formula Screen

Formula Screen is located on the left side of the page on the Figure 4, and on the right side two main formula is placed of Gini Algorithm. Purpose of the page is forwarding the results to user with digitization of formula



**Figure 5. Gini Algorithm Dramatization Software Root Node Screen**



**Figure 6. Gini Algorithm Dramatization Software Decision Tree Screen**

Root Node Screen in Figure 5, the end user is reflected by the formula page. At the back of the application, comparison of the Gini values is made and comparison is performed and smallest Gini value is picking as qualified root node. Then, this qualified root node is displaying the user in a new screen for 10 seconds.

It has been prepared in accordance with the data in decision tree on Figure 6. To occur a decision tree, all datas in dataset should be proceed.

## **2.4 Performance evaluation**

Application performance evaluation was conducted on Sakarya University Computer Engineering students. In selection process, the students who do not know the theoretical and practical application of Gini Algorithm has chosen. 168 students were subjected to performance measurement. 83 students have been described theoretically Algorithm G and a short test was applied on those of students. And other 85 students remained, described the algorithm and the same test was applied. In figure 7 quiz results can be seen. Among students taking full score, success rate after direct theoretical education is 30.76% and students learned by dramatization method is 69.41%. The success of theoretical training and gamify up training be compared. It can be said that number of students who takes full score are increased by teaching Gini Algorithm Dramatization.



**Figure 7. Quiz exam results values**  
**Exam results (made with the application)**  
**Theoretical exam results**

### 3. Conclusion

Dramatization concept in bachelor education, has become a research subject progressively. Thanks to mobile applications with remote access, it is possible to students understand courses better. They may reach the course information anytime and anyplace with this application. Besides, this application increases the level of success. We strongly believe that, that sort of studies will become widespread day by day. Especially, it is a major component in education areas, associate, bachelor, master degrees.

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