

# THE EFFECTIVENESS OF INFORMATION AND COMMUNICATION BASED TOOLS FOR ISSUING THE DRIVING LICENSE AND LEARNING DRIVING ETIQUETTES

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## ABSTRACT

*In this article we will propose a web based gaming software that will help experienced as well as beginner drivers to learn the basic etiquettes of driving. As video games, particularly, social games are growing in popularity, their potential as an innovative teaching tool should be recognized. The gaming software will make users cognizant of the basics of road signs, and introduce them to several driving conditions: hilly terrains, busy roads, or highway traffic etc. It will create a new platform for testing as well, by challenging the driving etiquettes as well as the skills.*

**Keywords:** Driving Skills, Driving Etiquettes, Habits, Traffic Rules.

## Introduction

Challenges of road traffic are strikingly different to other modes of transport such as railways and air traffic, since the road traffic system was not designed to be very safe. Therefore, it is us humans who make a difference between a hazardous and a safe situation when on the roads. With little keeping us from harm should we make a mistake? [1]. Apparently, unlike other modes of transport that have safeguards, and procedures or fall backs to limit both the occurrence and impact of human error; road traffic rules rely more on their users to keep accidents from occurring. Also the increasing number of vehicles on the road leads to an increase in the number of accidents [4]. The magnitude of the number of vehicles, throughout the world, has crossed 1.2 billion as examined by an industry analyst and is supposed to cross 2 billion by 2035. In India alone the numbers of vehicles are estimated between 40 to 50 million; considering the fact that India is the largest growing automobile market. In fact the diversity of people driving these vehicles is dependent on the manufacturing of these vehicles.

In some countries, it is not too hard to receive a driver's license. A disadvantage of such liberty leads to insufficient knowledge of the road safety rules and their negligence by the immature drivers. Thus, there is an exigency for a platform or a tool that will help the users learn the basic road safety etiquettes without thinking of it as a burden. One of the best ways to learn these etiquettes is by gaming.

To help the drivers learn the road etiquettes in an entertaining way, is the cynosure of this paper. A gaming software that trains its user from a very early age. To teach them how to act in critical situations, which are not easily taught in real world scenarios. As well as, test their knowledge, about the rules and driving skills by taking up intermittent quizzes and driving tests.

## Methodology

In this platform we will teach the users about the road safety rules through visual impact which is always easy to retain by the mind [2]. Also, the driving skills of the users will be tested to ascertain whether to give them driving license or not. This game will ensure that the users learn the driving skills in a fun way which has a visual impact on their mind.

The whole work is divided in 3 following phases

1. Learning
2. Test based on learning

### 3. Driving skills

We have categories the total training in 3 modules –

1. Image Based Memory Game for Traffic Symbols
2. Command Cognizance based on Traffic Rules
3. Driving Skills Test

### Proposed System

As said earlier, this web based gaming software is divided into 3 parts.

In the first part of the game we will make our users learn the traffic symbols through visuals. This images will have an impact on the mind of the users and it will be easy for them to remember them. After learning these traffic symbols there will be a multiple choice test. Images will be displayed on the screen and seeing those images the user will have to choose the correct description of the image from the choices. Resultantly they will be scored according to their performance in the test. There will be a threshold score to pass the test otherwise the next level of the game will not be unlocked.

The implementation of the first level is being done by using scripting languages like php and java script and designing language like html and css. There is no backend used. All the data is being loaded on the page using the front end only. Thus increasing the speed of the software.

Based on the score the users will be granted some points. They can buy any vehicles from these points. Each vehicle cost some points. Users can only buy those vehicles which they can afford according to points in their wallet. This means that they will have to play the quiz again and again and score better to unlock the bigger vehicles. For example: if you pass with the lowest score then with the awarded points you will only be able to buy a bicycle. If you score somewhat better you will be able to buy a Scotty and if u score fairly excellent then you can buy any of the vehicles being displayed .This procedure will ensure that the users go through the quiz again and again and thus those images will get incorporated in their mind deep inside.

After they have bought the vehicle, users will now have to learn about the traffic rules. These rules can be different for different countries. But since we are talking about the driving issues in our country we will initially incorporate the traffic rules of our country. The users will have to learn these rules and then there will be a quiz to test the knowledge about these rules. To pass this test there will be a threshold score too. After clearing that score users can choose from a list of the different terrains. Different terrains will include different driving conditions. For example: there will be a national highway with vehicles on that highway driving at a speed of 100 km and above. There will be a very busy road and you need to show off your driving skills so that you don't hit at some one's other vehicle. Then there will be hilly road which will have deep gorges to one side of it and hill on the other side. This will allow the user to experience the different driving conditions and different terrains.

Our program will monitor the driving skills while the user is playing. It will record if the user makes any mistake while driving or has broken any rules while driving. The traffic signs are also to be followed failing to do so will result in poor scores of the driving test. After seeing the driving skills the program will decide whether to give the driving license or not. Our software will also study the psychology of the drivers as to how is the user reacting when a vehicle is over taking or when he is driving in the hilly terrain. This will help the software predict if the user is fit to be given the driving license or not. The user will have to play this game repeatedly to get himself or herself a driving license for all the vehicles.

Our software will have the features of artificial intelligence to sense the psychology of the drivers while driving.

For snapshots, please see figures 1-3.



Figure 1: Front Page of the Game



Figure 2: Game Rules



Figure 3: Game Questions

## Statistical Approach

Almost 1.3 million people die in road crashes each year, 3,287 deaths a day on average. Additional 20-50 million are injured or disabled [7]. More than half of all road traffic deaths occur among young adults ages 15-44. Road traffic rank 9th leading cause of death and account for 2.2% of all deaths globally.

The most affected people belong to a young age group, road crashes are the leading cause of death among young people ages 15-29, and the second leading cause of death worldwide among young people ages 5-14. Nearly 400,000 people under 25 die on the world's roads each year, on average over 1,000 a day. Over 90% of all road fatalities occur in low and middle-income countries, which have less than half of the world's vehicles. Road crashes cost USD \$518 billion globally, costing individual countries from 1-2% of their annual GDP. Road crashes cost low and middle-income countries USD \$65 billion annually, exceeding the total amount received in developmental assistance. Unless action is taken, road traffic injuries are predicted to become the fifth leading cause of death by 2030.

Over 1, 37,000 people were killed in road accidents in 2013 alone, that is more than the number of people killed in all our wars put together. 16 children die on Indian roads daily. There is one death every four minutes due to a road accident in India. One serious road accident in the country occurs every minute and 16 die on Indian roads every hour. 1214 road crashes occur every day in India. Two wheelers account for 25% of total road crash deaths. 20 children under the age of 14 die every day due to road crashes in the country, 377 people die every day, equivalent to a jumbo jet crashing every day.

Seeing these statistics one can easily imagine the importance of these gaming tools which can incorporate the safe driving sense into the minds of our youth from a very early age so that we don't lose these many lives every year.

## Future Scope

Presently only the first stage of this gaming software is being developed, where there is image based learning and then quiz. Future work includes developing the next two phases of this gaming software. Second stage would be to drive the vehicles in the different terrains so that the user have experience of driving in different road conditions. This work will include use of graphics and animations. Third stage would be to incorporate in it, some application of artificial intelligence where we can predict the nature and psychology of the user. This will help the users to know their weaknesses and also it will help them control the adrenaline rush when they are driving in the real situation.

## Conclusions

This gaming software will not only work as entertainment but it will also work as a driving teacher who will teach its player. This gaming software when will be played by the children, will incorporate in their mind the basic rules of the roads, different road symbols and also the driving etiquettes. Thus it will improve the overall scenario of the roads. When people will know the rules and they will be trained in their mind about the right step that need to be taken in the situation then obviously it will be beneficial for all.

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