

Video Games for kids – New way of learning

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Abstract - Video games are the best way for kids to learn as it attracts the attention and keeps them focused until the task is completed. Attention is required for the kids to learn as they can get distracted easily. Visual learning element is the main point, like the view and structure of the game, objects and colours, shapes and puzzles. Analyzing the moving objects in the screen and collecting the moving objects. Algorithms used in the games and working of algorithm.

Keywords - Video games, Attention, Visual Learning, Algorithm.

1. Introduction

A wide variety of web-based online games exist, games that require logical thinking and memory to play them effectively. Web-based online games have become significantly helpful for learning, making it fun for the kids while earning rewards [1]. There is access to information and video games, often at a touch of a fingertip. Although some video games affect children in a negative way of which may include “aggressive thinking, addiction or physiological arousal”, not all games should be considered of little worth, or purely for entertainment [2]. Games can be used to improve child’s understanding, reasoning, planning, critical thinking and problem solving [3]. Designers can design the games in such a way that the contents and goal of the game enhances the visual learning of the players, particularly the children [4].

Parents should allow their children to play these online games only after reviewing the contents of the game. There is a huge difference between the effects of educational games and violent video games. Video game tend to make children more aggressive and have very few positive effects on them [5] [6] [7] [8] [9]. On the other hand, educational games improve various skills like communication, gross motor skills, thinking skills, social skills, creativity and attentiveness [10] [11] [12] [13] [14] [15]. These games are helpful for children as they increase motivation and help them in setting goals [16] [17].

Indian parents are responding positively to this new way of learning. For example, the Fruit Matcher Game: This game consists of different fruit tiles which are faced down. The player has to flip the tiles, here we will understand how the algorithm checks that the player has clicked particular tile or not. If two tiles have same fruit, they remain face up. If not, they are flipped face down again after a short period of time. We will also see how the algorithm restricts tile selection not allowing more than two tiles turned face up, how it checks whether both tiles match or don’t match.

One more game, the Fruit Catcher Game: In this game we will see how the algorithm is working to move the basket with arrow buttons. How the algorithm generates fruits randomly and how they continuously fall from the sky. The player will try to catch as many fruits as he/she can by controlling the basket. Different types of fruits give you different points. The order is this (from highest to lowest scoring) melon > pineapple > orange > apple > banana. The score also depends on the speed the falling fruit. Faster the rate of falling, higher will be the score rewarded to the player. The game keeps tracks of your total score, the number of fruits you missed, and how many you caught. Upon missing 10 fruits, the game will be over. You can restart the game by pressing ENTER key. High Score is displayed on the screen once the game is over.

The purpose of this paper is to find answers to the following questions.

(1) Is this a good method to educate kids? (2) Do these games have more of a negative impact than positive? (3) Are these games simple enough to be played by kids? (4) Do these games actually impart knowledge and increase skills of children?

The use of technology in the form of games can be positive for children as it allows children to excel in learning different topics visually, keeps them focused interested and entertained at the same time.

2. Background

2.1 Fruit Matcher Game

1 to 6 is such an age where the brain of children is developing, so if their mind is trained to do something in a certain way, they are habituated to do it in the same way [18]. For example, if their mind is trained to memorize something at an early age, these habits will help them in future. Fruit Matcher is one such game which will help to develop memory power of children.

Fruit Matcher game is a memory game, where object position and ability to recall what the child sees on the screen are tested. It develops the memory of the children, when they play this game, they have to remember fruit until the same fruit is not found.

When the game starts, all tiles are flipped face down. The player then flips the tiles by clicking on them. If two tiles have the

same fruit, they remain face up. If not, they are flipped face down again after a short delay. The *mouseclick* function is defined to check whether the player has clicked on a tile or not. The *numFlipped* variable allows two tiles to be flipped by the player. In the *mouseclick* function, right after the player has flipped the second tile, the current time is stored in a variable. This time will be used for making a short delay when the two fruits don't match. The flipped tiles are stored in an array. If the variable is pointing at same location in computer memory, then the two tiles are same and both tiles are set to be faced up. It records and displays the total number of moves and the total time taken by the player to match all the fruits.

2.2 Fruit Catcher Game

Since children can learn everything faster than adults so it is easier to imbibe learning habits in children. Playing video games affects the memory power, attentiveness, logical reasoning, decision making and problem-solving capabilities of children [19] [20] [21] [22]. Fruit Catcher is a game which will improve the decision-making abilities and reflexes of the players.

Fruit Catcher game is a skill-improvement game, where time and accuracy are tested. It develops the child's reflex action as the players have to respond according to the gameplay. The player should collect as many fruits as he/she can in the fruit basket using the arrow keys before they fall on the ground. Although these games are beneficial for the children, they should be played under

parental guidance, as they can be addictive if played for prolonged periods.



Fig 1: Fruit Matcher Game

In this game player has to move the fruit basket with left and right arrow keys, position the basket in such a way to catch as many fruits as he/she can. The fruits are continuously falling from the sky. Different types of fruits give you different points. The score depends on the speed of the falling fruit. The faster the rate of falling, the more score you get. The game keeps tracks of player's total score, the number of fruits player missed, and how many fruits player caught. Upon missing 10 fruits, the game is over. The game also shows the high score which updates at the game over screen if you succeeded to beat it.

Here, in the algorithm the *chooseFruit* function is used to create various kinds of fruits depending on the fruit number which is generated randomly. The *fall* function is used for making the fruit descend. While falling the *checkIfCaught*

function checks if the fruit has been caught by the player or if it hits the ground. If it is caught, the player score and fruit counter is increased.



Fig 2: Fruit Catcher Game

The *changeState* function randomly changes the fruit descend speed and fruit number which defines the type of fruit. The *timer* is a variable that records the time and *highscore* variable keeps track of the high score.

3. Conclusion

The use of technology in form of video games has proven to create a well-rounded and positive learning experience for children as it allows them to excel in learning different topics with interest, as games can be designed related to different topics. Games are a visual way for children to learn while enjoying.

We also understood the algorithms used in the Fruit Matcher Game and the Fruit Catcher Game. Two tentative conclusions can be made about these games. First, the inclusion of the Fruit Matcher game may have

positively affected the player's response by the ability to recall. Second, the Fruit Catcher game improves the decision making and reflex action of the player.

It is evident from the study that visual learning is a good way to educate children. Everything has pros and cons but it is up to us how we can take advantage of this opportunity. With parental guidance and controlled screen time these games can be considered a good teaching aid for kids. Contents of the game should be educational and simple enough to be understood by children.

As community embraces the inclusion of technology in everyday life, learning for kids should not be an exception. Excluding web-based online games from children goes against the reality of our lives. The generation is advancing at a faster pace, and visual learning used in video games will enhance even more as we go ahead to help the kids to learn in different ways.

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