Gamágio: A Game For Plagiarism Prevention

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Abstract

Plagiarism is a serious problem that is detected several times in university assignments, often being intentional. Therefore, the motivation of this game is to prevent plagiarism mostly in students.

The main goal was to create a game capable of teaching the students this subject in an entertaining way. It is a platform game with the aim of earning the greatest amount of points possible. This can be achieved by collecting items and questions, where these questions consist in collectables that show a question. These questions are about the main subject, the plagiarism, and are randomly presented during the game. Thus, each time the player plays the game these questions appear with a different order making the game more challenging. Our game is a simple platform game that runs on web browsers that support WebGL, which means that it is available to several platforms.

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Author Keywords

Plagiarism; platform game; collectable; entities

ACM Classification Keywords

K.8.0 [Personal Computing]: Games; K.4.1 [Public Policy Issues]: Intellectual property rights

General Terms

Serious Games, Plagiarism, Legal Aspects

Introduction

Plagiarism is a serious problem that is detected several times in university assignments. Some universities have their own rules to deal with the plagiarism and they provide information about this subject to students as a way to prevents the plagiarism.

But what plagiarism is? To **plagiarize** is "to copy another person's ideas, words or work and pretend that they are your own" [1].

Performing an act of plagiarism is considered illegal and it is a very common mistake performed by students, intentionally or not. This act can be performed in several ways such as [2]:

• Using somebody's work without changing anything and without citing, pretending to be one's own.

• Changing some words of a text but not citing the source.

• Copying a work, using quotes but without citing the source.

• The combination of several quotes from different sources without citing them.

- Using somebody's idea even creating one's own text.
- Wrong or non-existent sources.

There are only a few games about this subject, most of which being simple questionnaires or informative games to be applied on children. For example, the images in Figure 1 are from Lycoming College and the main goal of the game is to find hidden "plagiarism goblins". When the player clicks in the goblin he/she is asked a question, which if answered right makes the goblin being eliminated [3].



Figure 1. Home screen and first room.

From Northern Illinois University there are two different games called "Give me a match" and "Choose wisely" (see Figure 2).



Figure 2. Choose wisely and match game.

The first one is an interactive questionnaire where the player needs to choose the correct answer within eight different possibilities - the player wins the game when eight questions are answered correctly. In the second game there are two cranes. When a question appears, the player needs to click in the red button of the crane with the appropriate response, having a determined time to answer the greatest amount of questions possible [4].

Another type of game about this subject is an animated movie where the player interacts with it (see Figure 3). The game is divided in three different parts. In the first part, the question "what is plagiarism?" is answered. Secondly, the player needs to answer a questionnaire about plagiarism to help a character win guacamoles in a tv show. The second part teaches how to avoid plagiarism, using quotations with real life examples. The last part is quite identical to the first one, being the character in the tv show present once again and the player having to help him by answering the questions [5].



Figure 3. Beginning of the game and teaching how to cite.

Currently, there are a lot of games available in the web due to HTML5 [6] and WebGL [7]. For example, Ostman and Astrom [8] made a game test with HTML5 and WebGL using the API's Three.js [9] and Impact.js [10]. It consists in a character that walks and flies using a Jetpack and fires shots. It is experimental so nobody wins or loses. This game is a 3D version of "Jetpack Physics Demo" by ImpactJS (see Figure 4).



Figure 4. WebGL game test.

This paper is structured as follows. In section Gamágio the game is described and presented. The last section presents the conclusions and future work.

Gamágio

The objective of this work was to develop an online serious game. The theme of the game is plagiarism and the main goal is to inform users about what plagiarism is and how to prevent it. Another objective was to prevent students from committing plagiarism, intentionally or not, informing them about what is considered plagiarism and what is not.

The intention was to make a game that would be both interesting and enjoyable and that could truly teach the students about this particular subject. For that, we firstly need to understand what plagiarism is.

The idealization of this game turned out to be a lot more complicated than we pictured at first, as it is quite difficult to create a game about a serious subject that can be both interesting and enjoyable. After a few weeks of considerations, we agreed that a platform game with a questionnaire would be the most reasonable choice, because we can develop the game and the questionnaire independently.

This game called "Gamágio" was developed to be played online in any platform. In this game about plagiarism we find a character who jumps from platform to platform in order to get as many points as possible by answering questions right. The difficulty of the questions increases simultaneously with the increasing levels. If the character touches the evil character or falls of the platform, he dies and the player needs to press R to be transferred back to the beginning of the level. Currently, the game has a set of questions that are used in the three levels available. But in the first level the questions are more oriented to understand the knowledge of the player about plagiarism. On the other hand, in the other two levels the questions are more formatives about the plagiarism. All questions are multiple choice, usually with two or three options.

Tools Used

The game was developed in WebGL with HTML5 and JavaScript to be available in a browser in any platform. To create our game we used Gamma.js API [11], HTML5 and CSS3.

We chose Gamma.js API to make this game because it has all resources needed to make the kind of game that was idealized. Gamma.js is a JavaScript library only for platform games. Moreover, in the website there are a lot of tutorials that we could follow in order to learn how to work with this tool. The major problem with this resource was that there were only a few users of it, so we had to learn only by using the tutorials and examples on the website, sometimes not being enough. "Gamma is a new JavaScript library which can be used to create 2.5D platform games for a web browser using the power of HTML, JavaScript, CSS and WebGL." [11]. One can understand that it is possible to create an extremely simple game with only a few platforms using this API. Summing up, it makes the job easier because it is given the option to add evil figures and collectable figures, as well as travelling from level to level using portals.

The HTML5 is a new version of HTML that came with the objective of tracking changes in the web since 1999 when the previous HTML version was launched. To create this new version of HTML, W3C and WHATWG [12] decided to cooperate and established some rules for HTML5, as the followings:

- "New features should be based on HTML, CSS, DOM, and JavaScript"
- "Reduce the need for external plugins (like Flash)"
- "Better error handling"
- "More markup to replace scripting"
- "HTML5 should be device independent"
- "The development process should be visible to the public"

Some of the new features are the *<video>* and *<audio>* elements for media, for 2D drawing the *<canvas>* element, new form controls (calendar, date, time, email, search, url) and content-specific elements like *<article>*, *<footer>*, *<header>*, *<nav>* and

<section>. Furthermore it has support for local storage. This new features turn out to be very useful and easy to use. In our case the <canvas> element was crucial because it allowing WebGL graphics.

Game overview

The results can be seen in the images below. Figure 5 shows the home screen of the game where the instructions to playing the game appear. In Figure 6 we can see an overview of the first level of the game with the playable character of the game and the collectables. The screen when it asks a question is shown in Figure 7 and after the player answers is shown in Figure 8. Finally the screen when the game is over appears in Figure 9, in this case when the player gets a really good score.



Figure 5. Home Screen







Figure 7: Question



Figure 8: Answer



Figure 9: Ending

Conclusions and Future Work

In conclusion, with this work we learned that plagiarism is a very important and a serious matter that we suppose that a lot of students do not know enough about. Therefore, this game was developed with the aim of teaching students about what plagiarism is, and how they can prevent it. Hence, we need to prepare a detailed protocol to evaluate the game and its effect in the prevention of the plagiarism.

Being the first author of this game allowed me to understand that my knowledge of what plagiarism is was a little low and I learned from the researches that I did to create the questionnaire how to prevent it and what cases are considered plagiarism, being it consciously or not. Thus we believe that the same could be true for most of the students and this game can help to clarify them about plagiarism.

Our game is a simple platform game that runs on web browsers that support WebGL, which means that it is available to several platforms.

In the future we would like to give the game a new look with different backgrounds and entities. There are other important aspects like the implementation of lives, such as losing a life if an enemy hits the character or if he falls into the lava. We would also like to include another character in the game, as well as finding a way of saving the scores, and in the end, show the top ten, for example.

However, it is an ongoing project that we want to improve by creating an enjoyable character for the game, as well as testing and validating the game with students in order to obtain their feedback.

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