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# CHASING THE TRUTH: AN EDUCATIONAL GAME FOR INFORMATION LITERACY AND STUDENT ENGAGEMENT

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## ABSTRACT

Games have been designed and developed not just for entertainment but also for various other purposes such as health and fitness, politics, marketing, and so on. In the paper, we present an educational game, *Chasing the Truth*, developed by a group of IT students and librarians at a college to teach information literacy to college level students. The game was designed to follow an interesting crime story that teaches basic plagiarism and citation concepts and the game story was implemented based on an interactive branching dialog system that can enforce learning by trial-and-error and student engagement.

## Keywords

Serious game, information literacy, plagiarism, library game, unity

## INTRODUCTION

In recent years, games are being used as effective tools for educating, motivating, and changing behavior (Riterfield, Cody, & Vorderer, 2010). Research indicates that games may become more effective than other educational technologies and traditional pedagogy in engaging students and supporting active learning (Prenski, 2006; Riterfield, Cody, & Vorderer, 2010). It has been reported that serious games can be effectively used to facilitate deep and sustained learning (Gee J. , 2007). Games are also making their way into education as a means of helping to motivate and engage students in the learning process.

The paper introduces an educational game that a group of IT students and librarians at a college developed to teach basic plagiarism and citation concepts to college level students. The objectives of this project is to develop a game as an active learning tool for college students and an educational software that can be used in information literacy courses. The game was designed to follow an interesting crime story that teaches basic plagiarism and citation concepts and the game story was implemented based on an interactive branching dialog system that can enforce learning by trial-and-error and student engagement.

## LITERATURE REVIEW

In Van Leer's guide, she bemoans the quality of "games" that librarians have been using to teach information literacy stating that these *games* are more of a vehicle for exposition (2006). These *games* lack the interaction that users expect from games, often coming across more like a quiz than something that is played for enjoyment.

Gee goes on to explain that a *good game* should be interactive, give the player feedback, and expose them to new and *well-ordered* problems, a concept very similar to the idea of scaffolding (Gee J. P., 2005). With this approach, the problems

encountered by the player should be solvable based on the knowledge that they have, acquire and build during the course of the game.

Schiller explores the similarity between the principles of sound game design and sound instruction by analyzing the elements of teaching and learning utilized in the video game *Portal* from Valve Software (Schiller, 2008). Within the game, the player is asked to complete tasks which become more complex as the game progresses. It provides “more intervention to players who need it most and then gradually removes support as players demonstrate a skill level that allows them to stand on their own.

In the final analysis of the merits of *Portal*'s game design as a model for effective instructional design, Schiller posits the idea that there is value in learning through trial and error and that this is something that Google and the idea of federated searching has taken away due to their focus on ease of use (Schiller, 2008). The focus on ease of use means that failure is not always visible to the user. Even if your search fails, there will be results on the page, this takes away the element of “trial and error.” If the search hides your failure, where is your motivation to try something else, or to try and find better results? It could be posited that this is the true challenge for effective instruction through interactive learning to make failure not only evident, but a part of the learning process.

Games are structured in such a way as to make difficulty and challenge not only expected, but enjoyable. In Gumulak and Webber's article, they found that the students they interviewed stated that long and difficult games are more enjoyable because of the excitement and sense of achievement when these obstacles are overcome (Gumulak & Webber, 2011).

## CHASING THE TRUTH GAME

### Design and Development

Game design and development is exciting but requires a lot of time and tedious work. In addition, the process of building the game typically needs many iterations and, as with other large projects, goes through phases and cycles. With a big picture of the target game, the game rules are roughly designed in advance and other components such as programming language, cost, and skills of the team also are taken into account before moving forward into development. After the main idea and goals are decided, a comprehensive storyboard is created to depict the idea of what the game should look like. As the game rules are refined further, the in-game assets, characters, and environment has been obtained and developed (Yerby, Hollifield, Kwak, & Floyd, 2014). For the game development environment, Unity (Unity, 2014) was chosen as the game development tool since it is an extremely powerful game engine capable of creating 2-dimensional and 3-dimensional games for a nearly every gaming platform. For this project, C# was used because game developers of the project team are most familiar with the language.

*Chasing the Truth* is an educational game aimed at teaching basic plagiarism and citation concepts to college level students. The development of the game began with the main purpose, teaching, and then the story was built around that framework. The story has evolved and grown as the game development has progressed, the writing and game development supporting the other. At this point the first version of the game is nearly finished.

*Chasing the Truth* was developed using Unity's new UI system, which was recently added in Unity 4.6. The game is built around different 'scenes', or still images, which can contain interactive characters, items, and web pages or other electronic or digital information sources. In addition, each scene includes an invisible game object called a Scene Switcher, which contains a script that is called when the player is to be sent to another scene. The Scene Switcher is called from certain dialogue choices or by actions that the player takes within each scene.

The game can be thought of as an interactive flipbook with each of the game's scenes being pages within the book. A player may proceed to the next scene after completing all of the previous scene's learning goals. As it currently stands, the game follows a story that teaches the importance of selecting and finding the proper sources of information and the game story is structured using a dialog tree that allows a player to choose different options and enforces learning by trial and error.

The game's UI system is fairly simple – primarily consisting of the dialogue system. A major portion of the game is dependent upon the player interacting with characters through the dialogue system. The system used in *Chasing the Truth* is a third party asset created by the Pixel Crushers team, obtained through the Unity Asset Store. Utilizing this dialogue system streamlined and decreased much of the development time.

### Gameplay and Story

The story of the game is as follows:

*It starts in an office building at night. Moonlight is shining in through the window. There is a man hunched over in front of a glowing computer screen. The man is doing something suspicious. Chace Verity is a world renowned agent whom everyone loves. His integrity has recently been called into question when news of his corruption has been published in many news sources. A man named Dr. Ersatz has a personal vendetta against agent Verity and has used his organization S.H.A.D.O.W, also known as the Supreme Headquarters of Artful Deluders and Opportunist Wretches, to frame Verity for crimes he did not commit. The player will play the game as the up and coming agent Allison Card, who is sympathetic to Chase's cause, but is above all determined to discover the truth behind the scandal by determining the credibility of the news sources.*

*Chasing the Truth* is so called a “point-and-click” game, which can be played with simple mouse clicks instead of using arrow keys or a game controller. The decision to adopt the point-and-click approach was made to ensure the game would be as simple and intuitive to play as possible. Since this game will be played by a wide variety of people, simple gameplay can avoid alienating any players who may not have much experience with different types of gameplay.

### Game Assets and Artistic Work

Characters went through a rigorous design phase prior to implementation. Characters were sketched out in Photoshop before being presented to the group. Together, we decided which design best fit within the game's fiction. After several iterations, character designs were finalized and fully-rendered to be used as portraits and character icons that the player could interact with in the game.

Backgrounds were designed as 3D environments in Google Sketchup before still images were brought into Photoshop for tracing, shading, and color management. They were designed in a 16:9 aspect ratio to accommodate widescreen monitors and tablet or smartphone devices.

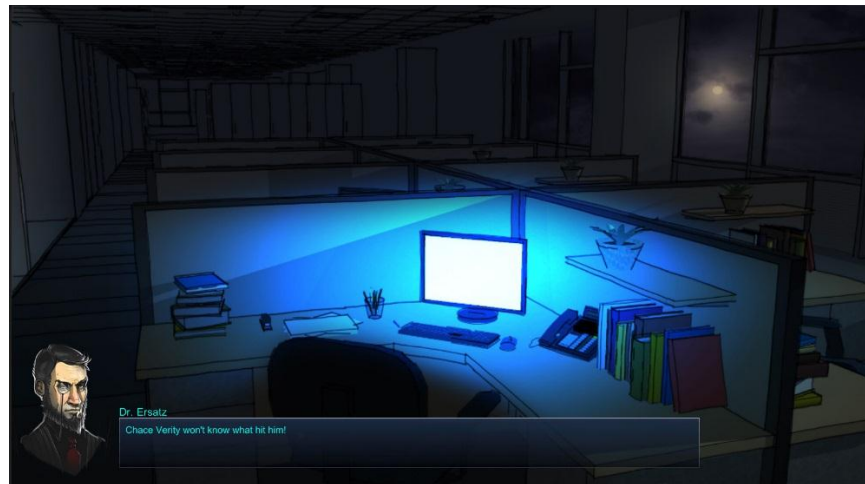


Figure 1. The first scene of the game

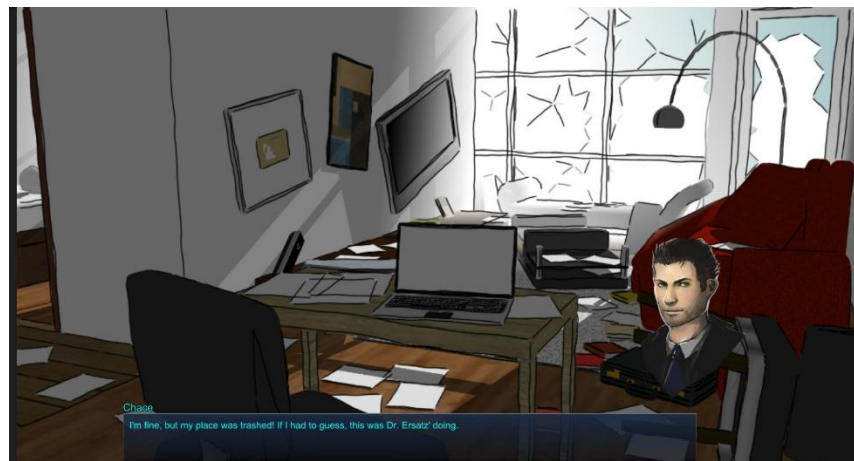


Figure 2. A game scene inside apartment



Figure 3. Example citation source page and relevant quiz question

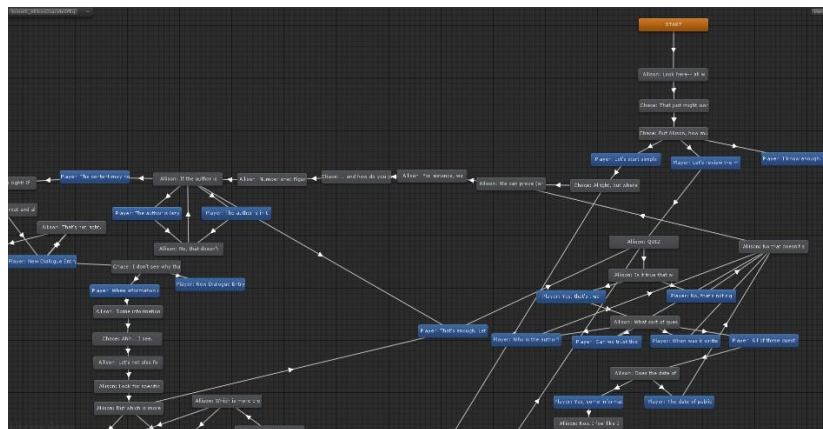


Figure 4. Dialogue tree of the game story

**CONCLUSION AND FUTURE PLAN**

This paper presents an educational game developed by IT students and librarians at a college and aimed at teaching basic plagiarism and citation concepts to college level students. The game is currently in the final stages of early development now. A playable game will be ready to be released shortly. Future plans for the game include the player navigating through a scene to locate certain items to analyze before they can proceed. A login system is a possible addition for the future. It will require a student to input a username and password before beginning the game. In addition to this would be the ability for a student print out their score from the game. This will allow professors to request proof of completion from each student with the confidence that each student personally completed the game. In addition, the game will be used in information literacy classes and its effectiveness will be evaluated using pre-determined metrics.

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