

# GENDER DIFFERENCES IN VIDEO GAME DEVELOPMENT CLASSES: US AND THE UAE

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## ABSTRACT

This paper describes the motivation, software and hardware purchased, and classroom experience of a video game program in a traditionally women university in the UAE. The paper also compares differences in motivation and performances of the classes in the UAE to corresponding classes taught in the USA.

## Keywords

Video games, prototypes, educational software, GameMaker, Flash, Unity, Playstation, X-Box, wii, mobile devices

## 1. MOTIVATION

Zayed University (ZU) is focused on undergraduate education of Emirati Women. Recently, ZU implemented a Master of Science in Information Technology with emphasis in Security that is open to all students regardless of gender or nationality and a Bachelor of Science for male emirates. The College of Technological Innovation (CTI) decided to expand its curriculum introducing video game development.

Videogames can be introduced into an information technology curriculum with many objectives and at many levels. At ZU, we plan to introduce videogames to assist all these areas. However, the focus of this paper is video game and gender differences with introductory level classes.

Although it is a well-established fact that male students typically love to play video games, research shows that female students also enjoy video games [1]. Females may differ from males in the intensity and the type of games they enjoy most. The top three games according to [2] are “The Sims”, “Dance Dance Revolution”, and “Mario Kart”. As expected, in the top 10, we do not see “Street Fighter”, “Doom”, war games, and other destruction games that are so popular with males. Surveys applied at ZU showed similar results. Car games were in first place, followed by “the Sims”. Students also mentioned that they preferred to play multiplayer games and collaborative games as opposed to play exclusively against the computer. The UAE has hosted many video game competitions [3]. Over 80% of UAE nationals have a computer with access to the internet and most UAE citizens have more than two cell phones [4]. Console games

such as Wii, XBOX and PS3 are also extremely popular [5].

## 2. SOFTWARE

Developing quick prototypes before producing a final production is a good strategy when it comes to video games because designing the software as specified is no guarantee that the video game will be used. It is possible to create entire games with *GameMaker* using the integrated development environment (IDE) and not writing a single line of code [6]. During two consecutive summer camps for junior high and high school students, a wide variety of user friendly tools were taught (*GameMaker*, *Alice*, *Flash* and *Scratch*). Both camps had 16 students and *GameMaker* ranked as the easiest tool to construct prototypes. In one camp, *Alice* was second and in the other camp, *Scratch* was second. *Flash* was ranked the hardest in both camps.

*Adobe Flash* is the ultimate tool for developing animations on the web, as can be seen by the use of many freely available programs developed in flash [7] as well as a wide range of books. Developing a culture of Flash enables the CTI to develop interdisciplinary work as well as service courses for the College of Arts and Communications. These colleges use Adobe Creative Suite consisting of Flash. Adobe Flash is divided into two parts allowing designers and programmers to work together. Designing animations can be done by art majors with drag and drop and saving their work in .FLA files, while CS and IT majors work with action script, the programming part of flash.

Unity Pro was chosen to create high quality 3D graphics as well as deploy the program to a variety of sources. Unity Pro (<http://unity3d.com/>) and Torque (<http://www.torquepowered.com/best-of-torque/torque-3d>) were the candidates. Torque has been a powerful tool for developing video games, but Unity is a more modern tool offering many advantages. Unity has an easier to use project editor tool. The interface is similar to the leading animation tools, Maya and 3Ds Max, and it is able to import objects created with these products. Unity's 3D engine is more modern with an excellent documentation including many tutorials. A few usability tests with introductory video game students a volunteers were conducted and confirmed this belief. Scripting in Unity can be done in JavaScript or any of the .NET programming languages. In Torque, you are limited to Torque's proprietary scripting language

## 3. HARDWARE

We considered hardware specific for playing video games and purchased the three widely used consoles: Sony Play station 3 (PS3), Microsoft XBOX 360 and the Nintendo Wii. Each one has its advantages [8] and we felt that students needed to deploy software for all three. Regarding High Definition (HD) consoles,

PS3 is slightly better than XBOX 360 and Nintendo is third. Regarding controllers, Wii came in first, PS3 second and XBOX 360 third. The G27 racing wheel works with both the PS3 console and the MS-Windows based personal computer. Another purchase of specific video game hardware that we made was the Logitech Steering Wheel Model G-27. According to our research as well as personal observations, racing games rank among the favorite of female students [1, 2].

The generic hardware included: Windows 7 desktops and laptops, Macintosh laptops and desktops, the iPad and mobile phones (blackberry, iphone, android). MS-Windows 7 has a considerably better graphics than Windows XP and it is a much faster Operating System than the Windows Vista. As for screens, we chose three 32 inch LCD TV Full HD with 100 MHz motion flow.

#### 4. VIDEO GAME CLASSES IN THE US

During three consecutive summers, game development classes were taught for continuing education at Kennesaw State University. All these classes were one week long and were taught for a full day. GameMaker was the primary tool used, although other tools were presented. The class focused on students playing and editing the GameMaker tutorials as well as creating their own games. During the last hour of the last day, students presented their games to their parents. A few observations of these classes were: the total amount of female students was less than 10%, the females always sat together as well as went to lunch together, females were just as successful of their male counterparts, type of games they created were significantly less violent. A further description of these classes may be found in [6].

In the undergraduate classes, video game development was in GameMaker and Flash. GameMaker was the primary tool used. Similar to the video game camps, students modified the tutorials before creating their own games. They also had a final project that they presented. Unlike the camps, there were two exams. Another difference is that students had to also created a video game in flash. Students were presented to a site with 36 video game tutorials in flash [7]. A few observations of these classes were: approximately 10% female students (26 males, 3 females), the female students did not have the need to group together like the high school and junior high school students of the camps, the type of games created were significantly less violent, and the females were just as successful of their male counterparts.

During the summer of 2008, 15 students (8 male and 7 female) went on a study abroad to Brazil that was focused on video game and entertainment (robotics, animation, e.g.). Students attended 16 guest presentations from faculty and Ph.D. students of top Brazilian institutions. As their deliverables, they were required to contribute to discussion groups (related to the presentations they attended). They were also introduced to GameMaker as well as required to develop a video game that they presented at the end of the summer. Similar to all other classes described above, female students performed just as well as their male counterparts and the games they created were less violent. Unlike the other classes, the ratio of males to females were approximately the same since the primary motivation for student registration (as confirmed by our survey) was the study abroad and not the video game.

#### 5. VIDEO GAME CLASSES IN THE UAE

Two introductory video game classes were offered at ZU. The content of these classes were similar to the video game classes in the United States. GameMaker was also the primary focus. Students modified gameMaker tutorials, created their own games

and had a final project. Students were also introduced to Flash and Unity. Similar to the conventional undergraduate video game class students did the following tasks: modified gameMaker tutorials, created GameMaker programs, presented a final project, had two exams and were presented to the web-site with flash tutorials [7]. In this class, they only went over one flash tutorial and were not required to create their own flash programs. Unique features of this class compared to the ones described above were that they were presented to Unity. This requirement was due to Unity's recent growth in the world market as well as being used by a local company that recruited our students.

These video game classes were created as a result of student demand. Female students personally requested these classes to the video game instructor as well as the Dean of the College. They even offered to come on weekends. At our institution, regular courses have never been offered over the weekend.

Comparing female students to their male counterparts was not applicable in this class since it consisted only of female students. Observations of these classes were: all female students enjoy creating video games, games were significantly less violent than the corresponding male students in the United States, and many instructional games were created.

#### 6. CONCLUSION

Our empirical observations indicate that female students enjoy developing video games as much as male students and can perform just as well. The data indicates that female students tend to shy away from video game classes that involve male and female students while they are attracted to video game classes that involve female students only. Although a wide range of different type of video game classes were described, we lacked video game classes in the US of female students only as well as video game classes with female and male students in the Middle East. However, we expect that the difference in nationality as far as interests and performance would not be significant like the differences in gender.

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