

# Adapting an Animation TV Special to Games in a Games Design University Course

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## ABSTRACT

This paper relates the experience the authors had in the Games Design Course of the Department of Product and Systems Design Engineering of the University of the Aegean when they decided to adapt an existing 3d animation TV special ("Alexandra meets the spacetoons", directed by D. Patrikios) to a game, during a semester. The director of the animated TV special gave Level Design specifications, and the Production Company contributed Content Design elements. Students formed several groups in order to design the various game levels and implement their level design using flash technology. The paper discusses the issues of mixing industrial and educational goals in a Games Design classroom and the consequences in students' motivation. Furthermore, a special section is dedicated to the advantages of adaptation in comparison with the obligation to design and implement original work in the classroom.

## Categories and Subject Descriptors

K.8.0 [General]: Games

## General Terms

Design, Experimentation, Human Factors.

## Keywords

Games Design, Edutainment, Content Adaptation, Gamification.

## 1. INTRODUCTION

During the academic year 2004-2005, we've experimented the use of existing animation content to provide design specifications for the design and implementation of games in the Game Design Course we've taught in the Department of Product and Systems Design Engineering (DPSD) of the University of the Aegean. Our explicit goal was to link real industrial needs, i.e. the adaptation of an animation to a game using the same content, to the education of future designers. In this paper, we describe our experience and we discuss the issues of mixing industrial and educational goals in a Games Design classroom and the consequences in students' motivation. We recall this experience because of a New Curriculum that is under discussion in the DPSD. Certain debate

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elements find elucidated answers by questioning this experiment.

## 2. THE ANIMATION TV SPECIAL

The experiment was facilitated by the fact that the first author of this paper was the producer of an animated TV special co-produced with the Greek Film Center (GFC) and the Public Broadcaster ERT. The title of this 30 min 3d animation work is "Alexandra meets the spacetoons" (2003), directed by Dimitris Patrikios. Although relatively recent, this animated TV Special is already a reference in the rare books dedicated to the Greek Animation History [1], [2].

The story of the film is briefly described in GFC's web site under the title of "My Friends the Spacelings", literary translation of its Greek title ("I filoi mou ta diastimakia") [3]: Kidz and Pontix are two astro fighters of the Battalion of Infinite Good and come from a distant planet. When their spacecraft breaks down, they make a forced landing in the bedroom of a little girl, Alexandra. In order to survive, they lodge inside her favorite dolls and ask for her help so that they can repair their spacecraft. Alexandra willingly agrees to help them and all together they set off in search of spare parts, a search that will take them on a great adventure which will test not only their friendship but the limits of "infinity good" to which the two small astro fighters have sworn an oath.



Figure 1. Alexandra meets the space toons

Adapting this linear storyline into a Game was the challenge proposed to the DPSD students during one semester.

### 3. ADAPTING ANIMATION TO GAME

The Game Design course lasted 13 weeks with 2 hours theory and 3 hours laboratory per week. The theory included an introduction to computer games and their evolution, game business models, presentation of game design stages emphasizing in gameplay design, formal design tools and related guidelines and patterns, and introduction to game-based learning and serious games. In the laboratory, the students could practice game design and prototyping using Adobe Flash in both creative and programming tasks. They had to design the scenery and the game elements, to produce the character animations, to interpret user input and to generate dynamic motion in various 2D game configurations (top down, side scrolling, linear and accelerated motion, gravity, etc.), to encode game rules and restrictions, and to implement simplified game AI models. The aims of the course were to understand the main concepts related to game design, business and technology, to acquire the necessary skills for the conceptual and detailed design of computer games and serious games, and to be capable of implementing simple 2D game prototypes in Adobe Flash.

#### 3.1 Content Design Specifications

The adaptation of an existing linear script, such as the story of the animation TV special presented earlier, into an interactive content is a difficult exercise for any student. It requests deep knowledge of the original content in order to integrate seamlessly the characters, the story and the environments of the original work to the new medium. We preferred to refer to the author and director of the animation work to get the necessary specifications. The director came up with a script describing thirteen game levels deriving from the original animation plot. For the purposes of this paper we give hereafter the description of just two game levels:

Level 2: The user has to drive the damaged spacecraft (on fire) to Alexandra’s room avoiding crash.

Level 7: The bad guys capture Alexandra and she is transferred in a mini-van. The user must help Kid-z get in the van, avoiding at the same time various obstacles (gravity, cats, track wheels).

We may note that only general action guidelines are proposed to the students and that these actions are more difficult in more elevated levels. More simultaneous parameters are to be considered in level 7 than in level 2.

Given the Director’s guidelines, the students have to respect the original character and environments design. For this purpose, the students had access to the design elements of the original animation bible and to the final animation film. An animation bible contains the script, character drawings in several situations, and samples of environment settings [4]. A storyboard-like continuity of frames was also available to all students.

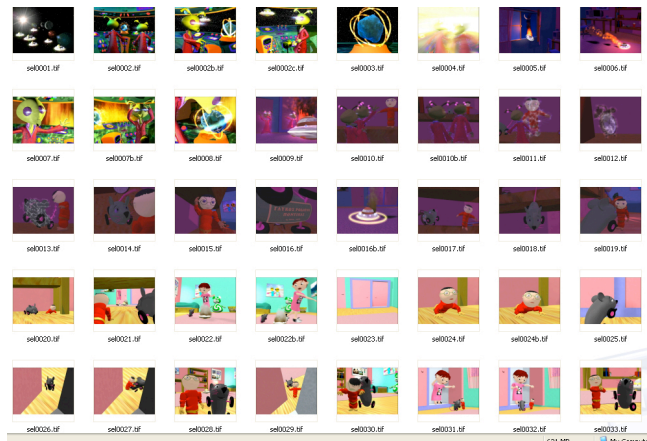


Figure 2. Frames from the animation continuity

Having access to complete content design specifications, the students can concentrate on the game design guidelines.

#### 3.2 Game Design Specifications

Several educational goals were to be respected by the students in the Game Design Course. Using Adobe Flash technology they had to implement Gravity and Collision Detection features. They had also to provide simple user interface using standard keyboard keys such as direction keys (arrow keys). They also had to make concrete designs for the implementation of each level design, intentionally left vague by the director of the animation. Liberated from most of the content design issues, the students had to respect the game design constraints imposed by pedagogical goals.

#### 3.3 Design Process

The students were divided in 13 groups of two or three persons, one group per game level. They had to adapt the level design in a feasible game, and then implement this game in the laboratory.

Let’s describe the design process for the two levels presented under the content design specifications’ section.

Level 2: A group of students decided to present Alexandra’s room as an open side view with rigid borders. Only the open window is collision free and the spacecraft has to enter Alexandra’s room through this opening. The form of the spacecraft is more or less similar to the one in the animation. The composition of the furniture in the room is also compatible with the original designs. The students added a red target mark to indicate that the spacecraft should land at this specific point. They provided a scoreboard to reward user’s efforts in avoiding cartoonish stars in his/her landing mission. Both spacecraft and stars have gravity and the user must avoid crashes by mastering the arrow keys of the keyboard (see Fig. 3). The game experience is smooth enough, but the narrow window opening in conjunction with the narrow space left to land in the target after entering the room may frustrate inexperienced users.



Figure 3. Level 2 Game Design

Level 7: Concerning Level 7 Game Design, the students opted also for the simplification of the form of the van, designing an open vehicle: The bad guys and Alexandra are visible in the back of the engine and Pont-X, one of the aliens transformed in an Alexandra's doll, is running after them to rescue the little girl. As in the previous example, the background is painted as a fix layer. Pont-X's mission is complicated: He must avoid a lot of bananas, thrown against him by the bad guys, in order to be rewarded in the scoreboard. He has also to catch as many kisses as possible, sent by Alexandra in order to encourage him in his pursuit. These kisses add more points in the scoreboard. The problems are that both kisses and bananas have gravity and may be sent randomly. Collision detection is enabled for both items and the contact with kisses is rewarded while the contact with bananas is punished, terminating the game with a crash. Again, the user has to master arrow keys in order to avoid bananas and catch the kisses in the air. This may be revealed a tricky and frustrating experience to many inexperienced users.

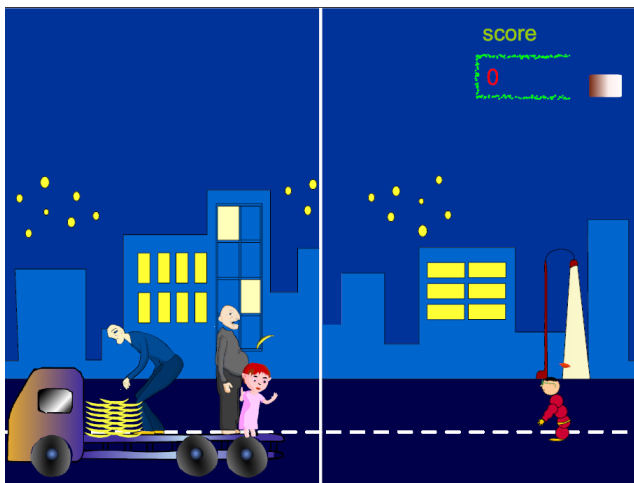


Figure 4. Level 7 Game Design

We note that the original character and set designs were respected in these adaptations of the cartoonish style in both games described earlier.

### 3.4 Lessons Learned

In order to implement the game design properly, each group of students had to prepare a design document, similar to the design document we use in the Multimedia Design Course [5]. The main sections of the Design Document are the following:

**Content Design:** The subject, a brief summary of the story, the narrative and interactive structures, the characters' description, and all available media sources are included in this section.

**Screen Design:** The composition of the screen, colors and typography, sound design, music composition, are the main contents of this section.

**Interface Design:** Choice of navigation tools, design of their look and feel, functions of buttons and other active elements, definitions of orientation elements are included in this section.

**User Experience:** Roles and missions of the user, Alternative paths, rewards and other motivation techniques, are described in this section.

**Technical Approach:** Choice of development and delivery platforms, definition of studio work, description of research and development work to perform in house, are the main contents of this section. In addition, a technical game design document is elaborated in order to describe the game play when this approach is applied to interactive games.

Table 1. Distribution of the Design effort between students and Production Company

Design Document Sections	Level 2	Level 7	Design Effort
Content	Stars as an obstacle introduced by students	Change of the form of the track. Kisses as energy boosting element	Original character and level designs are respected
Screen Design	A two-dimension view of the action scene with a scoreboard in the upper right angle	A two-dimension view of the action scene with a scoreboard in the upper right angle	Original prop and set designs are respected, adapted from 3D to 2D
Interface	Arrow keys and score indication	Arrow keys and score indication	Students' Design
User Experience	Spacecraft Driver	Alexandra's Rescuer	Original Design is respected (Gravity and Collision Detection are enabled)
Technical	Flash Technology	Flash Technology	Imposed by the availability of Laboratory Tools
Strategy	Pre-school children	Pre-school children	Based on the Production Company's Business Plan

Strategy Design: Marketing concerns such as audience and market definitions (target group, competition analysis, etc), as well as feasibility and viability studies, are parts of this section of the design document.

Applying these elements to the examples of adaptation described earlier, we may define which part of the Design work the groups of students did, and which part of the work is done by the director of the animation and the production company of the animated film. We summarize this comparison in the Table 1, where the first column is dedicated to the six sections of the Design Document.

The findings from this experience show that the adaptation of an animation to games motivates students' creativity in most areas contained in the Design Document. From the introduction of small changes in the Content Design to the integral definition of the interface, the Game Design liberates creative skills. Even in the case of pre-imposed technology, the way to apply it gives room to students' creativity. The only area left untouched concerns business strategy, that is taken for granted, based on the Production Company's Business Plan. In case of designing an original work, the students should cope also with this section of the Design Document.

### **3.5 Two Definitions of Development**

The implementation of the Level Design using flash technology, allows us to focus on a terminology issue, concerning the term Development.

#### *3.5.1 Development as a production stage*

Development is first of all a production stage, preceding the pre-production, production and post-production stages. This definition comes from the audiovisual production profession and is expanded to the multimedia applications. In the interactive multimedia profession, the development stage results in the delivery of three outcomes: the design document as we presented it above, the production budget, and a multimedia demo [6], such the one implemented by the students using flash technology.

#### *3.5.2 Development as an implementation stage*

The second meaning of development comes from the computer software industry. It indicates the coding and debugging of a software-based application during the implementation stage. In the Games Industry, the Game Developer is actually a programmer, not a Game Designer.

The distinction of these two meanings of Development explains why the Game Designer may have to implement a demo during the Development stage, but may just supervise a Game Developer during the Production stage.

### **3.6 The Adaptation Issue**

The reference to the professional term development, reminds us to question the involvement of industry experts and industry content in the University Curriculum. There is a lot of audiovisual content available as stock material that may be adapted in new interactive forms in order to attract new audiences. The adaptation of existing work is a promising market for the Designers. Adapting existing animation content in a Game Design Course prepares the students for a potential professional outcome.

On the other hand, the Media Industry unveils a growing demand for the Design of original multi-media works that exploit the same content through different platforms [7]. Transmedia, Cross-media, Second Screen, are some of the professional terms describing this trend. The fact is that a professional demand exists for original concepts that will be consumed in different screens, some times simultaneously. The second screen concept for instance applies in the case of a TV show needing the use of a second screen (computer or mobile) to accomplish the audience experience. At this time, DPSD students are not prepared to meet these market expectations. We will treat this issue in the Discussion Section below.

## **4. OTHER ANIMATION ADAPTATION EXPERIMENTS**

The growing demand in the market for interactive adaptations of existing animation work is exemplified via two cases using the same animation content we used in the classroom, i. e. "Alexandra meets the space toons".

The first example concerns the adaptation of the overall concept of the film in a game by a DPSD student, intern in a company acting as a Video-on-Demand (VOD) provider, during the pilot phase of the VOD service (2008-2009) [8]. The player had to find the two astro-fighters, after their spacecraft crashing in Athens, and help them meet Alexandra and begin their mission. The game is played using a zoom-able map of Athens, given that the two aliens landed in distant neighborhoods of the city. Assembling the protagonists of the game and the spacecraft in Alexandra's place, gives the player the possibility to consume free VOD content and pass to the next game level.

The second example concerns the launch of a Game Contest for High School students by the same VOD provider during the operational phase of the service (2010). The official distributor of Adobe in Greece supported the Contest and it was based on the experience of the Games Design Course we taught during the academic year 2005-2006. Seven DPSD Professors and Lecturers composed the Jury of the Contest [9]. The contest was launched in September 2009; supporting audiovisual material was distributed to selected schools late October 2009. The High School Teams should deliver their first designs using Flash Technology at the end of March 2010. The Jury should examine each proposal and deliberate the final decisions on winning teams during April and May 2010. A Gala for the announcement of the winners was scheduled for June 2010. Unfortunately, the financial crisis hit Greece at the same period, forcing the VOD provider to discontinue the service. We never had the opportunity to evaluate the works provided by the High School Teams. We can verify anyway that the interest in participating to the contest was real and that the same content, produced in 2003, found an interactive adaptation at least seven years after its production.

## **5. CONSEQUENCES FOR THE CURRICULUM**

The animation adaptation experiment unveiled several educational issues concerning the matching of industrial needs in a Game Design Course. In case of adaptation, the students play a limited role in the Content Design part of a Game. They experience the design solutions given by the director of the animation, but their involvement in creating new solutions is secondary. The same weakness is experienced in the Strategy Design for a Game, as the Production Company already provides the original business plan.

Finally, technical solutions are limited in just one medium and they are sometimes imposed by the availability of the adequate technology.

In order to match industry expectations, the curriculum should accommodate the involvement of the students in all creative and production tasks such as the needs for new original digital storytelling, briefly discussed in Subsection 3.6. At present time, the DPSD Curriculum includes courses in Audiovisual Techniques (Script, Filmmaking, Production), Animation (Techniques and Principles), Computer Animation, Virtual Reality, Interaction Design, Multimedia Design and Technology, Games Design/ Edutainment, Advanced Computer Animation (Simulation and Special Effects). Clearly, there is no such a Content Design Course embracing all Digital Storytelling Forms, including Interactive Storytelling [10], applied later to linear or non-linear applications, and interactive or non-interactive works.

A reform of the DPSD Curriculum is proposed for the next academic year in order to include such a horizontal Content Design Course. The introduction of this course in the curriculum should attenuate, if not eliminate, the weaknesses discussed previously in case of adaptation of existing works in the classroom. The students would have only the benefits of meeting industry experts and matching industry needs, with the certainty that their previous knowledge in content design is sufficient for any professional accomplishment. At the same time, the Multimedia Design and Technology Course should be transformed in a Development Design Course, understanding the term Development as a production stage.

All other DPSD courses should build on the knowledge acquired by the students during these Content and Development Design Courses. Applied in the Game Design Course, this prerogative allows us to reduce to 3h per week the students' effort and to focus on the game play design issues, given that 2h of theory and 2h of laboratory work per week are dedicated to Content Design issues in a Content Design Course of a previous semester.

## 6. ACKNOWLEDGMENTS

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