

E_learning vs. Multimedia (Ivica & Marica – Hansel & Gretel)

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Abstract. IVICA I MARICA (HANSEL AND GRETEL) is a project of designing an interactive-educational multimedia DVD for children. The very idea of designing the DVD stemmed from personal experience and suggestions from both teachers and students. Namely, the title of the DVD hides the education of children in the field of environment protection, litter and waste problems, the harmful agents that surround us and the polluters of today. From the very beginning, the efforts were aimed at motivating children to acquire knowledge of the pollutants of today. On the other hand, children get to know about the possibilities of sorting the garbage, i.e. of waste packages management as well as about the optimistic views of the future in this realm. Besides the educational part, the DVD as well contains the attractive funny contents via which the knowledge acquired through the use of the DVD and play can be checked.

The paper shows the parts and the process of creating of the multimedia DVD that were based on the previous own experience of students.

The purpose of the paper was to test the successfulness of the project-based out-of-classroom education environment of the secondary school students. The content was based on the project-based learning and new skills development through team work and honing of the vocational skills by means of multimedia.

Keywords. DVD, multimedia, e_learning, computer interaction

I. INTRODUCTION

The deployment of the information technologies is inevitable in everyday life so its deployment in the teaching process is obligatory. By means of the deployment of e-learning, the education and learning are enhanced. Students thus develop habits that are to accompany them in the future, in the course of the lifelong learning through the future education and finally-at their workplaces. Besides that, the implementation of new information technologies inevitably changes the teaching process in terms of the reception of learning and training as compared to the traditional teaching process.

Many educators now believe that computers can be used to promote learning and development in early childhood education if they are used appropriately. Children need to be aware of the nature and uses of computers in order to meet the challenges presented by the present and future technological society [1].

This is why the objective of any teacher –on the individual level- is to combine various methods and procedures, define explicit rules and provide for a

good working environment, interesting conceptions and an appropriate level of expertise.

The educative multimedia DVD entitled "Ivica i Marica" can be used in educating of pre-school aged children and lower-grades primary school students in order to provide a facilitated process of acquiring and checking the knowledge related to the ecological matters by means of interesting animations and attractive pictures.

Technology has become user-friendly, and the cost of multimedia production has decreased, thus providing educators with additional degrees of freedom to explore alternatives to traditional education and assessment. [2]. The sensibilisation of conscious in children is required in order for the living environment to be conserved. The objective is to educate children to recognize the dangers stemming from the contemporary way of living (noise, radiation, pollution...) and the potential problems (waste, litter) arising in the environment protection realm. The project was being implemented with the objective of a multimedia influence on children. Under the mentorship of the author of the paper, two third-grade students started creating the multimedia interactive educational DVD entitled „Ivica i Marica“. A wide scope of software was used that is normally used throughout the four-year course. Namely, this is the web-designer/media technician course for whose implementation the entire necessary software infrastructure has been provided by the Ministry of Education and Sports of the Republic of Croatia. The very work was organized as a teamwork as it had been proved that it was far more efficient a work when one of the students did the programming and the other the visual designing. The students worked on the multimedia interactive educational DVD during their optional subject/activity time where the key role of the coordinator was assigned to the mentor, i.e. the optional subject teacher, who is the author of this paper. In their teamwork, the students chose a specific name, "DreamLand", to work under and this can be seen from the Youtube attached trailer. In this way, the teamwork got a new dimension of being "professional" one and additionally motivated the students. Besides that, for the purpose of the State IT Competition – Infokup 2012. Primošten - a Facebook profile (a group) was created that additionally promoted the multimedia DVD.

II. E-LEARNING

The deployment of the information technologies is inevitable in everyday life so its deployment in the teaching process is obligatory. By means of the deployment of e-learning, the education and learning are enhanced. The multimedia content alone, however, does not necessarily result in significant positive learning performance and satisfaction. Moreover, it is

expensive to design and develop multimedia instructional material. [3].

Students should develop habits that are to accompany them in the future, in the course of the lifelong learning through the future education and finally-at their workplaces. Besides that, the implementation of new information technologies inevitably changes the teaching process in terms of the reception of learning and training as compared to the traditional teaching process. Similar research was already done: the researchers have developed a cartoon-style multimedia application whereas animated cartoons were designed from scratch using appropriate programs [4].

This is why the objective of any teacher –on the individual level- is to combine various methods and procedures, define explicit rules and provide for a good working environment, interesting conceptions and an appropriate level of expertise. Therefore, it is interesting to know what teachers think about possible advantages produced by multimedia tools and their limits. Since teachers are in charge of managing students learning processes, these benefits and weaknesses should concern learning [5].

III. MULTIMEDIA PROJECT

Liu & Hsiao [6] report the results of a research that made students take part in multimedia designing by means of using a project-based learning approach. They say that making students to take part “as multimedia designers (is) one type of project-based learning, which requires students’ active participation, and engages them in authentic problem investigations”[6].

Audiovisual media integrate the functions of vision and hearing, which means the sound and the picture and thus enhance the process of learning and memorizing [7]. Students are more effective if several senses and activities are deployed. Moreover, the interaction of the students and the digital learning material plays an important role in the process.

As the morphology of the term indicate, multimedia is eventually an amalgamation of numerous media and, when such materials are created, the skills that have to be taken into account are programming, graphic designing, producing multimedia elements, planning of projects, team working, critical thinking, problem-solving, interpretation and the visualization in an innovative way by means of using the contemporary information technologies. By taking part in a multimedia project, students “are engaged in a variety of activities from brainstorming, gathering and researching information, writing, creating art works, to programming and evaluating” [6]. McGrath et al. [8] say that the self-respect in students increased while they were taking part in implementation of a multimedia project.

The challenge to create a multimedia product for a target audience serves as the central curriculum activity to drive students to learn and solve problems along the way [9].

A. Multimedia-assisted learning

The term *multimedia* is widely interpreted nowadays. It can be said though that the term is used within the context of the multiple meaning. However, it can be agreed on that multimedia involves perception, or, rather, receiving and processing information from one or more senses at a time. Various media through which the information is spread and in which the information exists are used for the purpose.

The multimedia elements are labelled as text, sound, graphics, video and animation. The core use of all the contemporary digital technologies in the teaching process is based on knowing the students' visual and listening skills. The interaction between a student and a digital teaching content plays a crucial role in the process. The multimedia-assisted learning has proved very effective, especially in teaching youngsters.

Applying these fundamental conditions to the context of multimedia learning, we can define interactivity as follows: Interactivity in the context of computer-based multimedia learning is a reciprocal activity between a learner and a multimedia learning system, in which the [re]action of the learner is dependent upon the [re]-action of the system and vice versa [10].

Multimedia content for the young are specially designed, enriched and interesting. No matter whether an adult or a child is implied, the process of the multimedia-assisted learning commences at the moment of reading a text, or at the beginning of watching a graphic image/animation and at the moment of listening to the speech, music or musical effects that motivate, direct, give advice, remind or provides a feedback. As its very name implies, multimedia is eventually an amalgamation of various media and, when such digital content is being created, what is to be taken into consideration is the skills of programming, graphic designing, planning, project implementation cooperation, organizing skills, critical thinking and problem solving, interpretation and visualisation in an innovative way and by means of using the contemporary information technologies.

The use of the definition made multimedia fit perfectly into the making of the DVD and brought the DVD onto a higher level of the quality of being interesting and practical. The primary objective was to provide for an abundance of the educative quality and the educative content as prescribed by the educational wireframe. The mission of attaining the complementarity of multimedia and educative qualities was thus completed.

B. A development environment

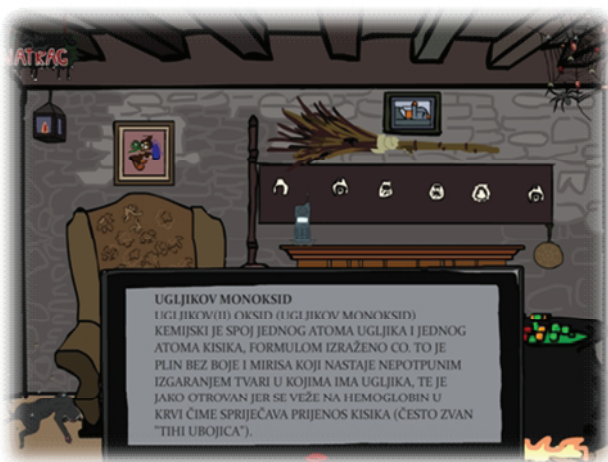
For the purpose of making the Ivica i Marica DVD and the follow up documentation, the following was used: Adobe Flash CS3 Professional, Adobe Premiere Pro CS3, Adobe Photoshop CS3, Adobe After Effects CS3, Adobe Illustrator CS3, Microsoft Word 2007, Camtasia Studio).

-Start up menu:

At the very beginning, i.e. after the introductory film has been shown, the start up menu appears (Picture 1.). The start up menu was made in the way that provides for a practical and simple use. The main elements of the menu are rooms. When the user places the mouse pointer on a certain object, the lateral panel-window opens offering short, important information on the form of pollution (Picture 2.). This principle of work facilitated the navigation and the acquisition of the content.



Picture 1. A section of the main scene - menu



Picture 2. Panels in the game

C. The process of making main menu and submenus

The process of making a multimedia DVD starts from drafts and the drafts are the basis for any future multimedia project development. The drafts as well include a simultaneous work on the purpose of the interactive DVD because the purpose of the DVD directly influences the design, which is the following step in the development of the DVD. The innovative quality is desirable in every sense because it provides for an interested user, which is the objective of making a DVD. It is as well very important to take care of the choice of colours as the colours are chosen in accordance with the content and the purpose of a DVD. This project was implemented with the objective of a multimedia influence on users.

The educative multimedia DVD was created in order for children to get to know more and in an entertaining way about pollutions and activities of the people aimed at protecting the environment by means of the waste recycling. (Picture 3.)

The interactive educative DVD puts multimedia and e-learning in the focus. The use of the information and communication technologies on children develops the active use of the cognitive processes such as the memory, the perception, problem solving, the cause-effect relationships and the independent thinking and the adaptation with the specific attitudes [11].



Picture 3. Entertainment (a quiz)

-Design book:

Once the theme and the content were defined, the Design Book was being written. The quality of the final DVD depends directly on the quality of the way the Book is written. Moreover, the book contained all information and instructions that are necessary for the graphic designer, the programmer and the animator in

order to complete their tasks successfully. After the elements were designed in the Design Book, the respective tasks were assigned to the team members.

-Graphic Design:

The graphic designer played important role in designing the user interface that has to be functional, dynamic, understandable and interactive. Besides the role related to the user interface, the graphic designer had as well a role in developing the textures that were being used in the making of the DVD. The graphic designer used the following software: Adobe Photoshop CS3, Adobe Illustrator CS3 and Adobe Flash Professional.

Picture 4 shows the DVD cover.



Picture 4. DVD cover

-Programmer:

The task of the programmer was to coordinate all the graphic design concepts with the software solutions. The programmer used ActionScript as the basic software system that made the application work properly. The programmer as well showed the respective skills in the use of Adobe Flash CS3 Professional software.

-Animator:

The job of the animator was a particularly hard one. Namely, the animator had to comply with the requests of both the graphic designer and the programmer. The animator contributed to making the DVD by means of Adobe Flash CS3 Professional software.

-Video design:

The task of the video designer was to coordinate the multimedia and the content requests with functionality and the educative quality. He made his ideas true with a help from the following software: Adobe After Effects CS3, Adobe Photoshop CS3, Adobe Premiere Professional CS3.

-Audio design:

The whole audio system that in turn depended on the audio designer is of a crucial importance for the quality of the DVD. The audio designer creates, chooses and coordinates the audio background with the requests of the application.

IV. PLATFORMS, TECHNOLOGIES OF THE MAKING THE DVD AND WEB SITE

All the projects on which the team had worked before were intended primarily for the Windows platform. The main development environment was Adobe Flash. Within the DreamLand studio, there is an active website (<http://www.dreamland.com.hr>). The updates related to the work are posted on a regular basis and there the photo/pictorial content can be browsed.

V. RESEARCH METHODS

The purpose of this research was to define the extent of the quantity of the multimedia content and effects the secondary school-aged youngster can acquire within the curriculum framework. A targeted affirmation of the acquired knowledge is focused at the recognition of the activities that can contribute to enhancing the teaching process in the future working tasks/projects.

The questionnaire consisting of 8 questions was used on the sample of 116 students attending Web Designer and Media Technician subcourses within the Multimedia course. The students that took part in the survey were from all grades (1-4) of the course. The students expressed their opinions by means of Likert scale where they marked as 1 – strongly disagree with the statement, 2 – disagree with the statement, 3 – have not got explicit opinion on the matter and 5 – agree fully with the statement.

VI. RESEARCH RESULTS

The opinions of the students after they had taken part in the activities of the project of making a multimedia interactive DVD entitled Ivica i Marica:

I think that....	
...I have mastered a satisfactory level of knowledge and skills of creating multimedia applications.	
Mean	Std. Dev

3.896	1.211
...I have mastered a satisfactory level of practical ...Skills required for getting a job in the production sector of economy.	
4.466	1.002
...I have mastered the use of (Adobe® CS4 Photoshop, Adobe® Flash CS4, Adobe® Premiere Pro® CS4 v4.0, Adobe® After Effects® CS4 v9.0. Cinema 4D®, 3D Studio Max etc.), the applications similar to those used in the production sector of economy.	
4.649	0.099
...I can successfully cooperate in a team work.	
3.991	0.995
...my knowledge and skills level in the area of planning and organizing resources (time, space, material, equipment) needed for fulfilling activities are satisfactory.	
4.557	0.775
...I can successfully take part in all the stages of planning and developing of a multimedia application.	
4.221	0.418
... I do have the skills of identifying and applying the relevant knowledge to solve challenging multimedia tasks	
3.339	1.128
...I do have the skills for a creative solving of multimedia problems.	
3.456	0.844

The results showed a high averages in students as to the knowledge and skills in the realm of multimedia (Mean = 3.896, Std.Dev = 1.211). The same goes for their perception of the possibilities of getting a job in the production sector of economy (Mean = 4.466, Std.Dev = 1.002). As to the use of the multimedia tools: Adobe® CS4 Photoshop, Adobe® Flash CS4, Adobe® Premiere Pro® CS4 v4.0, Adobe® After Effects® CS4 v9.0. Cinema 4D®, 3D Studio Max, the averages are even higher (Mean = 4.649, Std.Dev = 0.0994). Needless to say, all other parameters showed as well that the students appreciated the project activities more when particular economy or their future occupations tasks were implied.

VII. CONCLUSION

The primary objective of the educative, interactive and multimedia DVD is education through playing. By means of the multimedia DVD, the process of acquisition the knowledge about waste, waste fumes, pollution etc was facilitated. As a multimedia, entertaining and useful application, the Ivica i Marica DVD is intended for pre-school aged children and the children attending 1-4 grades of primary school and thus provides for effective learning through playing. Besides the educative part, there are as well lots of entertaining content.

By means of interactive learning, the students:

- acquire knowledge and cognitive skills
- can argument their attitudes and opinions
- ask questions
- actively listen to others
- come to the conclusion that the result belong to everyone, not to individuals only
- develop the sense of personal responsibility for attaining the goals of the group

It can thus be concluded that the level of self-reliance as to the acquired skills and knowledge was raised through the project activities. More than a decade ago, researchers have suggested that “as teachers have progressed from the use of blackboards and chalk, to overhead transparencies and computer-aided presentations, and now to multimedia, more research is needed to help guide the use of these tools to enhance learning” [12].

The Dreamland team recommends this application whose goal is to entertain and educate its users.

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