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Information Technology and Edutainment:
Education and Entertainment in the Age of Interactivity

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ABSTRACT

The tight connection which occurs between entertainment and education has originated what is defined edutainment which can be considered as a continuous and innovative brain-training, which stimulates, in an interactive way, the capacity to combine attention and motivation to explore and learn. The role of games in learning is a common topic in research. The various games linked to the edutainment mechanism, in particular, have been analyzed to understand in what way and to which extent they can facilitate study, development of memory, attention, motivation and other cognitive processes as well as spatial abilities. The aim is the definition of "edutainment" as a branch of e-learning which promotes learning process in school, extra-school and didactic field in general, in a playful way, through multimedia applications. The idea of encouraging the integration of game, technology and learning is new and at the same time complex for its educational aims. At international level, United States Department of Education, with the cooperation of educational agents and teachers, recently developed a statistical table of the results reached by an important project for the creation of modules for the learning through Internet. Shown below there are information about the results of this project that were used to be transferred on a national level to start and implement the same project. The interactive technologies, really because they turn the users into actors, they can involve and entertain reducing the gap between the teacher/communicator, standing out as leader of knowledge, and the pupil receiving the information.

Keywords: *Brain Training, Education, Edutainment, E-Learning, Formative Intervention, Game, Infotainment, Intelligent Entertaining*

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INTRODUCTION

The tight connection which occurs between entertainment and education has originated what is defined edutainment which can be considered as a continuous and innovative brain-training, which stimulates, in an interactive way, the capacity to combine attention and motivation to explore and learn.

Edutainment arises from Marshal McLuhan, a sociologist of communication, and from B. Heyman (2002), a documentarian of the National Geographic Society, mixing the concepts of education and entertainment. In 1960, both proposed edutainment as a form of communication which uses the game for educational purposes. In particular, Marshal McLuhan (1998) highlighted that those who distinguish between entertaining and education ignore that the education must actually be playful and that the entertainment must simultaneously be educational. Between the end of the Sixties and the beginning of the Seventies an increasing reflection on the influence of multimedia tools gave a strong impulse to the spread of the educational programs. Also the psychologist and pedagogue Gerald Lesser (1975), a scholar of Harvard, was a forerunner of *edutainment*, having realized an educational program for television, Sesame Street, for children and whose aims were literacy, cultural integration and racism overcoming. It was successful and so it was translated into many languages and spread in several countries, including Italy.

Thus *edutainment*, though at the beginning, was realized to indicate some playful communication forms with educational aims. Then, it developed its meaning, that is teaching by playing, including everything that could be communicated, thanks to the use of game, in a productive and educational way.

Benefits of edutainment derive from the fact that brain's cognitive processes in the moment of playing are similar to the ones occurring in the moment of learning, so that they immediately produce motivation, repetition, self-control, meanings and the elaboration of big quantities of information (Corona & Cozzarelli, 2011).

Obviously, *edutainment* in computer technology has a leading role, so that this terminology is used to describe many multimedia products, funny and easy to enjoy, able to provide to the user useful information and notions. One of the aspects analyzed is the role of game in learning process. Several games linked to *edutainment* mechanism, specifically, were examined to understand how and to which extent they can promote study, memory development, attention, motivation, development of cognitive processes and of spatial abilities (Carlomagno, 2012).

It was underlined that digital games and technological systems can facilitate language development, if for example parents actively participate in their children's experience and teachers take part to this with an educational aim, supporting the development of cognitive schemes and control of impulses.

It's arising so a new line of research which is clearly based on a new approach defined *edu-infotainment*, where the reinforcing word infotainment is added to the previous neologism underlining the will to combine communication and formation.

The *edutainment* field contains some macro-areas: interactive games, divulgation products for children, scientific products and especially specific school and didactic tools promoting an intelligent entertainment.

Many researches have been conducted, in these years, focusing on the potential of edutainment and on the space reserved to the interaction between didactics and entertainment. To educate and inform by amusing, this is the key for many people, for supporting the current needs linked to a socio-cultural dimension subject to continuous changes and belonging to current generations.

Children, who must be the focus of the educational action, move in the multimedia context where they learn by playing and using the mouse, exploiting the sensory-motor attitude of learning based on direct experience of doing. This is a way of teaching, different from that making exclusively use of books and for which it is difficult to promote learning in a playful-creative way.

From the analysis of the results of many researches, it is evident a lowest common denominator, that is children and kids are extremely interested and involved in playful-creative activities they participate in, using several tools and sources according to the principle and the targets of *edutainment*.

The percentage of kids that, thanks to school and to other educational contexts, participate in laboratory teaching activities structured to use technological tools such as Cd-Rom, Dvd, and videogames, is very high.

From this premise, it derives the belief that playful-educational activities, through technological and multimedia products, are very appreciated by users: the choices have to take into account the age of the players, testing the games that can be used in the didactic and educational field.

AIM AND FUNCTION

The crucial point consists in a comparison and correlation between the playful stimulus and the educational strategy which inserts these approaches in a didactic continuity that takes into account the meaning of the concept of *edutainment*.

The idea of conceiving the Web and the technologies for playful educational activities as a new creative and educational environment becomes a strategic way to educate new generations (Di Tore S. et al., 2012).

Through multimedia and technology it is possible to establish a new balance within the didactic and educational system, because there is the possibility to combine a dynamic approach to didactic processes with the acquired knowledge.

The aim is the definition of "edutainment" as a branch of e-learning which promotes learning process in school, extra-school and didactic field in general, in a playful way, through multimedia applications.

The technological complexity, or better, the technological "simplexity" (Berthoz, 2011) of e-learning underwent developed following the evolution of the technologies for the elaboration of information which allowed the building of platforms for learning at distance, which are in the forefront as concerns their ipermedia, interactive, simulative contents, their virtual reality and their endowment modality, their during evaluation of learning and their incoming orientation, called *profiling*.

In a theoretical and practical perspective, the current Information and Communication Technologies make virtual the whole teaching-learning process; though the realization of e-learning actions seems to have, from a technological point of view, more levels of technological complexity according to what of the teaching-learning process has to be virtualized.

In this case, the learning model proposed by *edutainment was* analyzed, among the several "simplex" aspects and functions, simplified as regards the traditional didactics, because it is based on interactivity, a concept that facilitate and make more rapid the elaboration procedures.

Interactivity allows, through a more creative approach, a better receptivity of the subject in the learning phase, thanks to stimuli deriving from the use of technological tools.

Edutainment should be consolidated as a paradigm, and according to parameters provided by the National Association for Informatics and

Among the edutainment formats able to do this, there are, concomitantly to the indicated methodology, some didactic pathways of different nature, for example the sensorial ones, that is perceptive journeys which explain the huge potentialities of our senses. Such a type of pathway can pursue several aims, it allows to deal with strategic themes for the subject, from sensory-bodily perception, to the feeling as regards the context, from the listening to the integration of different cultures.

RESULTS

The idea of encouraging the integration of game, technology and learning is new and at the same time complex for its educational aims. At international level, United States Department of Education, with the cooperation of educational agents and teachers, recently developed a statistical table of the results reached by an important project for the creation of modules for the learning through Internet.

Shown below there are information about the results of this project that were used to be transferred on a national level to start and implement the same project.

One of the first results of this project is the Federal Resource for Educational Excellence, which made available a statistic web site dedicated to learning through the Net.

Another important international resource was the use of Gem-Gateway to Educational Materials, a huge archives counting more than 4800 educational on-line resources.

Another resource is The Learning Kingdom, one of the most reliable private company which deals with e-learning and which has included in the playground section some mathematic and linguistic games that take on account the results deriving from the educational and playful aspect and that are used in Italy too.

Edutainment worldwide was instead a big collector site which is the reference frame for educational field in the world and which was used to collect some data for the comparison with the Italian scene.

Finally, it was considered a big list of educational games from the Gamelan site, which offers programs realized with Java language that need no installation.

As concerns the results obtained by the use of Cd-Rom, in off-line modality, Riverdeep was analyzed, it is a reference player for software products with educational contents, addressed to users whose age in less than 12. The products developed by Riverdeep are mainly for educators and for the didactic sector. The tested products are: Destination Math, Destination Reading, Science Explorer, Science Gateway, Tangibile Math.

One of the main player of multimedia products to support education in the world is Edusoft, a society working in Israel. Edusoft's choice is interesting and functional because it is focused on three main segments: English language learning, didactic supports for childhood and tools for scientific subjects teaching.

Especially as concerns Kid segment which distributes tools for numbers learning, for reading time understanding, for maths, for the perception of space and objects. Some of the best educational projects were born and developed in the open-source and some were analyzed to find and increase the usability: Tux4Kids with: Tux Paint, for drawing, with a big range of graphic interesting opportunities for children; Tux Typing 2 useful to develop writing and alphabet. Gcompris is an ensemble of more than 70 applications, starting from the use of computer to games concerning geography, maths and science. And in conclusion, ChildsPlay, dedicated to children until 7 years which includes amusing games for approaching computer, helping to develop the coordination eye/hand.

All software cited above, free downloading, are object of analyses to return to the mentioned project, on a national level, without excluding, obviously, those conceived for higher age groups.

In the United Kingdom there is a valid example of our project, that is the school Redeemer Church of England, object of attention of

Telecommunications, it has to be considered as an essential component of the entertainment, as well as the other product categories having a playful and educational aim; we can refer again to *infotainment*, for informative purposes and *advertainment*, with purely advertising purposes, and *shoptainment* for commercial purposes.

Edutainment offer is usually divided into three segments and for all these three segments there some experimental researches to verify the aims, effects and benefits for every user to which their reference products are addressed to, as regards to traditional didactic pathways.

There is the *Edutainment/kid* which includes playful products whose aim is the development of knowledge and creativity of the subject. These products aim at stimulating infant curiosity, providing a virtual environment to satisfy it. The subject is involved in situations that prove his/her intuition and develop the skill to choose according to specific logic, with the audio support and graphic elaborations.

The other segment is the *Educational/School* which includes those software whose aim is to support the traditional didactic education, preserving an easy approach and use, typical of videogames. They are products which have a reduced use of the text and that mainly use the audio support and graphic elaborations to guide child's learning.

In the end, the *Reference/Art*, a segment including products which allow to study in depth extradidactic contents and providing alternative formative pathways about different themes and in different fields, moving from the sociologic field, to artistic, to anthropological and cultural one.

All these contents are given to different users, taking into account didactic context and the age of users, through two modalities, off-line and on-line; that is, using both materials such as multimedia Cd-rom and Dvd, also called off-line modalities, usable by computer and videogames console; or tools such as Internet and tablets in on-line modalities.

MATERIALS AND METHODS

The thematic areas of *edutainmen*t are very different and they depend on the target segment where the offer is positioned. Within these segments, we have distinguished several groups.

As concerns Kids and Educational segments, the areas frequently touched were grammar and language courses, general encyclopedias, mathematics, history, geography, nature, oriented to an age range that is the one of children attending school.

Furthermore, we observed that multimedia products are different and they obtain different results according to the type of the playful activity used for educational purpose such as simulation, tests, mathematic calculus, skill games, strategy game and virtual environments. We also noted that simulation games mostly encourage the visualization, the experimentation and the creativity, giving rise to informal learning which remains constant in time because it is learned by experimentation, errors and the relation with the others.

Multimedia products of Kids and Educational segments are at the edge for the obtained results, for age groups, thus facilitating greater attention and a wide user standard range.

In addition, tablet in on-line modality, increase the use of a method based on the use of technological games. It made so by converging technologies, usability and different tools such as videogames, toys and electronic media in one tool which include entertainment, information, education and game and which is perfectly contained in edutainment. The idea of encouraging the integration of game, technology and learning is new but complex at the same time. It is new for the deriving proposal, but complicated for the aims it wants to pursue.

Today these skills and abilities are expressed on a technological level helped by sensors, software for voice recognition, touch and sensory interfaces, connectivity and mobility tools, that modify and often increase cognitive and social skills of the user.

pedagogists and of Apple, which started to work with this school to realize a centre for testing the products through the students. At Redeemer Church of England, indeed, didactic programs don't consider subjects in a traditional way, as literature, history or geography, but teachers as *knowledge and understanding of the world*. Furthermore, children use portable systems, iPod, tablet and videogames, and computer of course. But especially the Redeemer Church was assessed, for its results, the best ICT of the country and inspired a new project of school reform, which contemplates the introduction in school programs of social networks, blogging and podcast courses.

CONCLUSION

The first of the original and essential concepts at the basis of interchange process between Didactics, or rather, *e-didactics*, multimedia formative products and e-learning, Edutainment paradigm, is the possibility to realize an effective educational performance. This concept of possible realization has to base on principles allowing to preserve some of the main concepts of Didactics, that is: learning measurability, effectiveness of the teaching-learning process, formative action success. A very analyzed aspect is the one related to the role of game in learning process. Interactive technologies, due to the fact that they transform users into actors, they can involve, amuse reducing the gap between teacher/communicator considered as leader of the knowledge and student receiving information. Videogames explicit the interactivity being simultaneously on an ethic-epistemological level, for the development of shared values; on a social level for effective social practices; and on an experiential level for the experimentation of different and intense identities; meaningful for the development of situated comprehension. J. Paul Gee, professor at the Arizona State University, in contrast with opposite positions, supports in this sense the evident improvement obtained with multimedia products, didactic and interactive in terms of learning, memorization and trust. Thanks to these products, indeed, too rigid evaluation systems, such as test and traditional exams can be supported; students can be involved by these tools in activities of problem solving, stimulating behaviors that develop their psychological and emotional growth, because they have to risk and accept challenges, assuming the game as a mediator. Also language learning can become more simple because it doesn't derive from a book or a dictionary but from its application within an experience, as the playful-video one, to realize a situated and meaningful learning. There are therefore some studies on how playful-video activity can help in difficult cases. There are studies, but also active experimentations, like the one of the Australian project Autism Games, which proposes free on-line titles. This evolution towards new structures and new cognitive, perceptive and reflective abilities underlines how multitasking action, complex reality under all the points of view, is comparable to these new learning systems.

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