British Journal of Educational Technology *Vol 34 No 3 2003* 255–264

Edutainment: is learning at risk?

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Abstract

Since the early 1990s interest has surged in developing *edutainment* software, namely applications that possess the allure of electronic games while achieving educational goals. In the rush to adopt this new seemingly harmless technological fad, both educators and parents overlooked its long-term harmful effects. The aim of this article is to draw attention to these effects, particularly to the inflated expectation in the learners that the process of learning should always be colourful and fun, and that they can acquire information without work and serious study. It argues that what is essential is realizing that education is concerned with the development of cognitive structures and that educational technology is a medium, not a pedagogy that is useful in creating such learning environments. In this context, it may be time to examine critically the educational potential of edutainment software together with the advantages and disadvantages it might bring to the instructional process. The discussion begins, after a brief definition of edutainment, with an understanding of what technology and education entail. Then the discussion broadens to a critique of problems with edutainment drawing on the findings of educational psychology.

What is edutainment?

To Buckingham and Scanlon (2000) "Edu-tainment", is a hybrid genre that relies heavily on visual material, on narrative or game-like formats, and on more informal, less didactic styles of address. The purpose of edutainment is to attract and hold the attention of the learners by engaging their emotions through a computer monitor full of vividly coloured animations. It involves an interactive pedagogy and, in Buckingham *et al*'s words, totally depends on an obsessive insistence that learning is inevitably "fun".

McKenzie (2000) coins another term "technotainment" which he defines as technology heavily laced with entertainment but essentially lacking in rigor or value. Techno-

Published by Blackwell Publishing Ltd., 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA.

tainment often stresses technology for technology's sake without enhancing student reading, writing and reasoning skills. Similarly, "edutainment" suggests overtly entertaining learning materials, which contain messages addressed to both parents and children. Through explicit educational claims, edutainment software encourage the parents to believe that this software is beneficial in developing children's skills in a variety of subjects. They also raise learners' expectations that learning can be enjoyable and fun. The titles of the edutainment software frequently indicate the nature of these messages: *Fun for Brains, Play and Learn.* They also use slogans like *Tired of Learning? We got something to keep you edutained!* And they add rewards such as:

Fun for Brains is fun for all,
You won't just learn you'll have a ball!

Even this limited number of examples indicates that edutainment materials are bringing about a change in the definition of the learning process. This exact point is raised in the following section.

Learning as a constructivist process

Mayer discusses the most important developments in teaching/learning over the past ten years:

"At the conceptual level, there has been an important transition from a knowledge acquisition view of learning to a knowledge construction view of learning. According to the knowledge acquisition view, learning involves adding new information to one's memory and teaching involves dispensing information such as in lectures or textbooks. According to the knowledge construction view, learning involves building a mental representation that makes sense to the learner, and teaching involves as a cognitive guide on authentic academic tasks, such as through discussion and guided discovery." (Suomala and Shaughnessy, 2000, 478–79)

Salomon and Almog (1998) agree with Mayer that learning is a process "whereby learners construct their own knowledge by applying their existing knowledge and mental skills to novel incoming information, constructing their own meanings as they go along." (225). They, however, add an interpersonal view of learning to the constructivist perspective, in which social interaction serves a variety of crucial functions, such as provision of feedback, instruction, correction, and so forth. To them, the integration of constructivist and interpersonal view of learning, referred usually as socio-constructivism (Roberts, 1998), brings about the following pedagogical implication: "Good learning is a process of socially based, active co-construction of contextualized knowledge and webs of relations among its nodes" (Salomon and Almog, 1998, 229).

Similarly, Gandz (1997, 11) also points out that:

"Education has much less to do with information gathering than with developing an individual's thinking and reasoning so that he or she can appraise that information, and separate the relevant from irrelevant and the important from the trivial. This requires that individuals develop useful models for absorbing or rejecting this mass of information, critically appraising its validity."

As for the role of technology in such a process, Salomon and Almog (1998) argue that technology acts as a tool in creating learning environments where information is gathered, processed, and constructed. They argue that technology is subservient to pedagogy, with a conceptually based pedagogy providing the rationale and technology the means. The following section discusses this issue further.

Educational technology defined

Technology is more than machinery, which maintains the existence and comfort of humankind. Not a neutral tool, technology is loaded with cultural values:

> "The new technology is not just an assemblage of machines and their accompanying software. It embodies a *form of thinking* that orients a person to approach the world in a particular way. Computers involve ways of thinking that under current educational conditions are primarily *technical.* The more the new technology transforms the classroom into its own image, the more a technical logic replaces critical, political and ethical understanding. The discourse of the classroom will centre on technique, and less on substance. Once again 'how to' will replace 'why'." (Apple, 1991, 75)

As Apple notes, the debate about the impact of technology on education is usually centred upon how it is used in the classroom, not taking the "why" into account. Thus, the myth that technology is merely a tool at the teacher's disposal is reinforced while the ideological and ethical issues concerning what schools should be about and whose interests they should serve are ignored.

Morrisett (1996) argues that society can be credited for creating technology, but technology is simultaneously creating society. People have become "compulsive information consumers" who favour the passive reception of information as a form of entertainment over the more challenging act of thinking. Morrisett (1996) adds that institutions of higher education have adapted to these conditions but, as a result, they have also compromised the habits of mind (study, analysis, reflection, contemplation, and deliberation) that are associated with logic.

Despite these more comprehensive viewpoints from the literature on the trivialisation of higher education through the way information technologies is being used, a concerted critical perspective on computers is lacking among modern educators. Sloan (1984, 539–541) puts forward a number of possible explanations for this:

- The widespread sense, expressed not only among educators, but also that the computer-communications revolution is inexorable, and that they have no choice but to accept and come to terms with it;
- That human beings have no responsible choices whatsoever in shaping, restraining, and directing this revolution; that coming to terms with it means going along with it on its terms (and what is not so often spoken aloud, on the terms of those who control and stand to profit from it);
- Increasingly, there appears a growing convergence of outlook among educators and the public that the chief goal of education is to develop the concrete-operational skills

of technical reason coupled with functional, utilitarian language skills. That cognition involves rationality much deeper and more capacious than technical reason is forgotten.

Should learning be fun?

Without a doubt computer technology holds great potential for improving the way that people learn. Through the use of network resources, learners can engage in individualized instruction where they can investigate and learn concepts and content to meet their specific needs. With a combination of text, sound, graphics, and animation, computer technology enriches education in such a way that traditional teaching media such as books, video, tape recorder, class discussions, role-plays, and so forth might look irrelevant and tedious. Thus some ill informed educators as well as parents might rush out to invest large sums of money in equipping classrooms with computers.

However, one unforeseen danger of adapting computer technology into education so enthusiastically is that learning is seen as fun and entertainment. Learners who are exposed heavily to the Internet, video games, and ready-made images presented by multimedia develop a new attitude towards learning. As Bloom and Hanych (2002) observe, equating learning with fun suggests that if students are not enjoying themselves, they are not learning. In other words, learning becomes an obstacle that learners need to overcome. To Bloom and Hanych, "such an approach doesn't promote learning; it trivializes the learning process."

Inevitably, when faced with such a change in student attitudes toward learning, many teachers rush to implement new technologies into their classrooms to satisfy students' and parents' demands for more enjoyable and less serious learning situations. Postman (1985) addresses the efforts to make classrooms more entertaining:

> "And in the end, what will the students have learned? They will, to be sure, have learned something about (the content in question), most of which they could have learned just as well by other means. Mainly, they will have learned that learning is a form of entertainment or, more precisely, that anything worth learning can take the form of an entertainment, and ought to." (154)

In fact, Postman (1985) warns that whether particular technologies teach students their ABCs and how to count is of minor importance compared with what they teach students about learning and schooling. They teach them that learning does not have to be a process in which they persevere. Activating prior knowledge, reading critically, making connections between what is learned and what is already known, discussing with peers and teachers are activities that are old-fashioned, requiring effort on the part of students. Edutainment materials lead the students to a promised land of animations, audio clips, simulations etc. "So although technology often fascinates students, it has an unintended effect of battering habits congruent with serious learning" (Olson *et al* 2001).

Setzer and Monke (2001) view the computer as an artificial sweetener, used to make what has become the bitter medicine of learning palatable to children. They argue that

in fact computer usage is nothing but a harmful additive to the educational diet, which only temporarily covers up the sour taste that too many children have toward learning. What technology does, they say, is to "push us away from the solution to boring education, which involves making the education process humane and holistic, full of reality and surrounded by enthusiasm and human love."

Of course, stating that learning and enjoyment mutually support each other and that effective teaching should make use of mentally stimulating enjoyable materials is not necessary. However, that meaningful learning may sometimes be difficult and requires cognitive and emotional effort should be kept in mind; this point is especially relevant in the light of the fact that post-secondary education is not usually a **fun** undertaking. On the other hand, recognising the serious nature of higher education does not necessarily mean that fun is an opposite of activities that are serious. Rea (1998), for example, suggests the chaotic idea of a "strange attractor" in Serious_Fun framework where Stretching (fun) and Folding (work) creates an infinite system. In this system, fun can be had in serious activities and seriousness in fun activities. Thus, they may co-exist in a negotiated balance.

Are students motivated to learn, or just to play with the computer?
Perhaps the most widely articulated argument for the use of edutainment materials is that such software motivates students to explore topics in greater depth. Because students are highly motivated through rich, interesting and engaging learning experiences, their understanding of the subject is enhanced. Moreover, their senses are enthralled and stricken on all levels, as one of the software in the market claims. Therefore, students cannot help but pay attention to information that is presented in dynamic and memorable ways.

However, a few points must be considered before acknowledging the appeal of edutainment materials in motivating learners. Here, research is needed to clarify why and how motivation happens to evaluate the role of technology to support engagement.

A number of studies (Lepper and Chabay, 1985; Middleton and Toluk, 1999) indicates that motivation depends upon a complex mix of intrinsic and extrinsic factors. Intrinsic motivation is defined as a tendency to engage in activities for their own sake, just for the pleasure derived in performing them or for the satisfaction of curiosity, while extrinsic motivations include compliance, recognition, and grades and rewards, which are unrelated to the act of learning (Covington and Müeller, 2001). It is possible that students might be influenced by several of these factors at once, with a complementary relationship between intrinsic and extrinsic processes, but studies show that intrinsically motivated students tend to persist longer, work harder, actively apply strategies, and retain key information more consistently (Guthrie, McGough, *et al* 1996; Guthrie, Van Meter, *et al* 1996).

Intrinsic motivations arise from many sources in a school setting: engaging and meaningful tasks and materials; giving and receiving constructive feedback, actively explor-

ing and discovering a variety of resources and solution, working persistently to reach a deeper understanding, stimulating students' interest in tasks and content; and, understanding the nature of the learning environment as a whole (McDonald, 2000).

Therefore, to realize the full potential of computer technology and to engage students in learning, one needs to look beyond the packaging and special effects (McKenzie, 2000) that make computers engaging in the most superficial sense. Motivating learners is more than adding entertainment value to lessons or tests. Otherwise, as Healey (1998) puts it, learners will not be motivated to learn but just to play with the computer.

> "If the primary advantage of using the technology is that it will be fun for students or more 'motivating', seriously consider why this is so. We think you will find that technology often diminishes the need to attend seriously to prior knowledge, to use metacognitive strategies, question prior ideas, generate examples, compare alternative solutions, grapple with experiences, make sense of these new experiences, make new connections, and analyse whether prior connections make sense." (Olson *et al* 2001)

In fact, as Healey (1998) notes, one of the important learning skills threatened by electronic stimulation is selective attention: the ability to direct one's attention and focus clearly on what is to be learned without succumbing to distraction. Children, when faced with flashy special effects, cannot resist the temptation to click impulsively, which encourages stimulus-bound behaviour (Healey, 1998). In fact, many educators and parents complain about students' having short attention spans and lacking critical thinking skills.

If edutainment materials are to address affective domain considerations, the creation of such materials will require more than mere colour and movement. Tasks designed to raise interest must be balanced with those to develop intellectual capacity. Here, the guidance of educational psychology is of great importance. This will be dealt with in the following section.

Learning from visual displays

The development of new technologies poses a specific challenge for the use of verbal and pictorial information in learning and instruction. Edutainment software put special emphasis on the use of visuals to make the learning an immersive experience where the learner uses all her/his senses. However, research on educational psychology suggest that effective learning with visuo-spatial adjuncts is not dependent on the professional appearance of visuals, but rather on the relation between these displays and the task demands and on the learner's prior knowledge and cognitive abilities. Instructional design of visual displays, therefore, requires sufficient understanding of how the human cognitive system interacts with these displays.

Schnotz (2002), for example, argues that visual displays can support communication, thinking, and learning only if they interact appropriately with the individual's cognitive system. Thus, contrary to the widespread belief, the support that visual displays

provide the learners is not automatic. Carney and Levin (2002) claim that the supportive function of visuo-spatial adjuncts seems to be especially evident with learners of low prior knowledge and low verbal skills. They report that a text that is simple and can be easily envisioned by the learner does not need additional pictures. However, if the subject matter is complex and/or if learners have low prior knowledge, then visual displays increase comprehension.

Mayer and Moreno (2002) also emphasize the importance of active cognitive processing of visuo-spatial adjuncts requiring appropriate processing strategies. Much edutainment software, for example, makes use of animation as a means of demonstrating change and development. Mayer and Moreno, however, suggest that animations are only beneficial for learning if the individual engages in active cognitive processing. They further argue that research on the conditions for using animations effectively is required, and such research should be based on a well-supported cognitive theory.

Does the medium used in teaching shape the content and the users?

Educational technology affects learning and thinking in profound ways. Salomon (1983) argues that learning is highly affected by the way one perceives the source of the information-to-be-learned and by the amount of mental effort learners invest in processing the material. He refers to studies that investigated the ways in which TV is perceived in comparison to print, and how these perceptions affect the actual ways of handling specific materials from each medium.

More recently, Salomon (1998), when he assesses the use of technology in a constructivist-learning environment, draws attention to the negative effects of learning by means of multimedia and hypermedia. He argues that hypermedia and the Internet have a non-linear, association-based structure and the learner, lured by the visual appeal of the presentation, wanders from one item to the other. Salomon and Almog (1998) distinguish this shallow exploratory behaviour from deeper search. The former is influenced by visual appeal while the latter is focused, goal-oriented and metacognitively guided. They assume that learners who are in an intensive interaction with hypermedia products can construct shallow associationist cognitive networks, which have no intellectual merit. This possibility, that is, "the aimless visually-lured wandering through the screens of a hypermedia program" is called the Butterfly Defect.

They further hypothesize that the Butterfly Defect might affect students' conceptions of what knowledge consists. They may come to believe that knowledge is a hypermedia-like structure. They may also "prefer to learn from sources that present fields of knowledge in a hypermedia structure, thus sidestepping the acquisition of the logical, hierarchically structured connections and links that constitute science, as we know it" (Salomon and Almog, 1998, 235).

Salomon (1998, 7) warns against the danger that technology might redefine the nature of learning environments and the principles of constructivism—the active and

thoughtful construction of knowledge- into the active but thoughtless compilation of raw information:

"It is as if technology might take charge, demanding of constructivist philosophy and of the psychology of learning and instruction to follow suit and to adjust themselves to the technological affordances."

In a similar vein, Schnotz (2002, 118) speculates that even if the general constraints of the human cognitive system will not change as a result of new technologies, learners could develop new attitudes and processing habits:

"As humans are exposed to an increasing mass of information that frequently dazzles the eyes, ears and mind, new standards of presenting information emerge... . One can assume that learners who have much experience with electronic media and with new kinds of information presentation might have new expectations, new attitudes, and new processing habits that affect their cognitive processing."

Conclusion

The aim of this article is to stimulate a debate on edutainment media. It argues that advertising of "edutainment" materials is proceeding at full force without any significant, evaluative studies into the effects that the very use of these materials has on young people. Almost all of the attention has focused on how to use them as a tool to increase students' motivation and engagement in the learning context. Almost no attention has been paid to the broader and more fundamental issue of the impact of edutainment software on bringing about a change in the definition of learning.

The assumption exists that instructional designs when combined with fun elements enhance learning (Lepper and Cordova, 1992). However, if the co-existence of education and entertainment within learning environments is to be implemented, as in the case of edutainment software, the question is how much "edu" and how much "tainment" (Mann, 1996) should be included. Put differently, the question concerns the need for distinguishing between the situations where colour and fun are a welcome bonus or a useful attribute and those where they merit praise under neither heading. The immediate answer is that appeal, per se, should not be a focus of design of such computer software. Instead, it should be well grounded in constructivist learning theory and consider the findings of research on educational technology and educational psychology. Here the argument is in favour of the software that acts as cognitive tools to engage students in learning, rather than to play with the software. (See Mayes, 1992; and Kommers *et al* 1992 for examples of cognitive tools for learning) Such software can be used in several ways:

"mind-extending or catalysing tools for intelligent and volitional learners and virtually autonomous problem solvers. They should provide stimulating and facilitating structures in order to promote meaning construction activities, such as planning, representation and reflection." (Reusser *in* Hinostroza *et al* 2000, 109)

Here, the need for educational and parental critical awareness of a deeper understanding of the role of edutainment software is essential. Such awareness demands that before voluntarily adopting edutainment software as a symbol of innovation, educators and parents need to question the pedagogical and didactic philosophy the software design incorporates.

To claim that this discussion on the edutainment materials is comprehensive one would be overly simplistic. The whole story is not provided for the discussion, for example, excludes how these materials are used in both homes and classroom contexts. Neither does it touch upon economic and political issues, which are directly linked to the adoption of these products. What the discussion does, however, is to voice some concerns that have been troubling the writer for quite some time. To conclude, here is a brief excerpt from Oppenheimer (1997):

"Some people view technology as the tool of our children's day, despite the fact that little data exists regarding the outcome of its use in classrooms. Opinions range from computers as expensive drill and kill flash cards, to the view that achievement gains are irrelevant when compared to the need for techno-literacy. Little or no data exists on how computers affect the brains of young learners and whether we are teaching students to be better thinkers because they have access to technology. In other words, no clear method of 'best practices' is evident. In lieu of this, it appears that schools are forced to make subjective decisions, which affect the future of education on a massive scale."

Acknowledgements
The author would like to thank Patrick McLaughlin, Wanita Zumbrunnen, and anonymous reviewers for their helpful comments.

References

Apple M W (1991) The new technology: is it part of the solution or part of the problem in education? *Computers in the Schools* **8**, 1/2/3, 59–81.

Bloom M V and Hanych D A (2002) Skeptics and true believers hash it out *Community College Week* **4**, 14.

Buckingham D and Scanlon M (2000) That is edutainment: media, pedagogy and the market place. Paper presented to the International Forum of Researchers on Young People and the Media, Sydney.

Carney R N and Levin J R (2002) Pictorial illustrations still improve students" learning from text *Educational Psychology Review* **14**, 1, 5–26.

Covington M and Müeller K (2001) Intrinsic versus extrinsic motivation: an approach/avoidance reformulation *Educational Psychology Review* **13**, 2, 157–176.

Gandz J (1997) The death of teaching: the rebirth of education *Ivey Business Quarterly* **62**, 1.

Guthrie J T and McGough K *et al* (1996) Concept-oriented reading instruction: an integrated curriculum to develop motivations and strategies for reading *in* L Baker *et al* (*eds*) *Developing engaged readers in school and home communities* Erlbaum, Hillsdale NJ.

Guthrie J T and VanMeter *et al* (1996) Growth of literacy engagement: changes in motivations and strategies during concept-oriented reading instruction *Reading Research Quarterly* **31**, 306–332.

Healey J M (1998) The "meme" that ate childhood *Education Week* October 7.

Hinostroza E and Rehbein L *et al* (2000) Developing educational software: a professional tool perspective *Education and Information Technologies* **5,** 2, 103–117.

Kommers P, Jonassen D and Mayes J T (*eds*) (1992) *Cognitive tools for learning* Springer-Verlag, Heidelberg.
Lepper M R and Chabay R W (1985) Intrinsic motivation and instruction: conflicting views on the role of motivational processes in computer-based education *Educational Psychologist* **20**, 4, 217–230.
Mann D (1996) Serious play *Teachers College Record* **97**, 3, 446–470.
Mayer R E and Moreno R (2002) Animation as an aid to multimedia learning *Educational Psychology Review* **14**, 1, 87–99.
Mayes J T (1992) Cognitive tools: a suitable case for learning in P Kommers, D Jonassen and J T Mayes (*eds*) *Cognitive tools for learning* Springer-Verlag, Heidelberg.
McDonald D (2000) *Engaged learning: turning students on to learning* ⟨www.shc.edu/mcdonald/SharedResources/EngagedLearningArticle.htm⟩
McKenzie J (2000) Beyond edutainment and technotainment *From Now On* **10**, 1.
Middleton J A and Toluk Z (1999) First steps in the development of an adaptive theory of motivation *Educational Psychologist* **34**, 2, 99.
Morrisett L (1996) Habits of mind and a new technology of freedom *First Monday* **1**, 3.
Olson J K and Clough M P (2001) Technology's tendency to undermine serious study: a cautionary note *The Clearing House* **75**, 1.
Oppenheimer T (1997) The computer delusion *The Atlantic Monthly* **280**, 45–65.
Postman N (1985) *Amusing ourselves to death: public discourse in the age of show business* Penguin, New York.
Rea D (1998) Achievement motivation as a dynamical system: dancing on the "edge of chaos" with "serious fun." *Educational Resources Information Centre* (ED 415 287)
Roberts J (1998) *Language Teacher Education* Arnold, London.
Salomon G (1983) The differential investment of mental effort in learning from different sources *Educational Psychologist* **18**, 1, 42–50.
—— (1998) Novel constructivist learning environments and novel technologies: some issues to be concerned with http://cybercon98.harvard.edu/wcm/sal_article.html
Salomon G and Almog T (1998) Educational psychology and technology: a matter of reciprocal relations *Teachers College Record* **100**, 1, 222–241.
Setzer V and Monke L (2001) Challenging the applications: an alternative view on why, when and how computers should be used in education *in* Muffoletto R (ed*) Education and technology: critical and reflective practices* Hampton Press, Cresskill, New Jersey, 141–172.
Schnotz W (2002) Towards an integrated view of learning from text and visual displays *Educational Psychology Review* **14**, 1, 101–120.
Sloan D (1984) For the record: on raising critical questions about the computer in education *Teachers College Record* **85**, 4, 539–547.
Suomala J and Shaughnessy M F (2000) An interview with Richard E. Mayer: about technology *Educational Psychology Review* **12**, 4, 477–483.