The Social Skills Video Game Project: Using Technology to Help K-2 Children Make Pro-Social Choices

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ABSTRACT

This paper describes a video game development project. The goal of the Social Skills Video Game Project is to use video game technology to teach social skills to children in the primary grades (K-2). The proposed paper will describe the results of a year-long collaboration between the University of California, Irvine, Center for Interdisciplinary Center for the Scientific Study of Ethics and Morality and the Center for Learning through the Arts and Technology, at the University of California, Irvine.

Keywords: Social Skills, Video Games, K-2.

INTRODUCTION: THE USE OF EDUCATIONAL VIDEO GAMES TO FOSTER PRO-SOCIAL ATTITUDES IS AN OVERLOOKED TOPIC

Educational systems are among the most complex systems that societies have set up. Therefore, changing such systems is particularly difficult. However, change is needed because the focus of education has been disproportionately directed towards the accumulation of knowledge; enhancing memorization skills has been fostered beyond other pivotal abilities of children. Too little attention has been given to encouraging pro-social attitudes in children or fostering social skills. As Dias *et al*. point out:

> "Animators and film makers have been creating unforgettable characters for years, characters that lead viewers to cry, become angry, and react emotionally to what happens. However, creating embodied lifelike computer generated characters that have the power to make the user feel emotional reactions is still an unexplored research challenge"
>
> Dias *et al*. (2006:250) [9]

Gee (2007) [14] is a foremost researcher in the developing field that looks at the educational potential of video games. He categorically rejects the arguments of groups that have advocated against violent video games within the last decade. On the contrary, he pleads for a social debate to examine the contents of video games and explore their endless possibilities:

> "Good video games are thinking tools. Their deepest pleasures are cognitive. The "drug" the video game industry discovered was learning – humans love it when it's done right. We need to discuss the content of games –just as we do the content of books and movies– as a society. We need to ensure that there are lots of different worlds on offer. We need to educate parents about the good games can do their kids when their content is appropriate for their age and the game is part of effective adult-child interactions – just as with books, television and movies. We need to educate how, under other conditions, games, like books, television and movies, can waste their children's time, even if they are not violent. But, the most important thing, in the end, is that we educate ourselves about how to draw the most good from this new and powerful technology, one that has so captured our children and, for some of us, ourselves".
>
> Gee (2007:17) [14]

Gee has developed a series of key research questions that arise from the new field of discovery of educational potential of video games – questions such as how teachers can use them, how parents can guide their sons in playing games critically, how learning theory could introduce video gaming as a topic, or how video game designers could use learning theory when making their products. It seems clear that if the use of video games in education is still under-researched, there is even less research in the particular area of teaching social skills with video games.

THEORETICAL FRAMEWORK: THE NEED FOR EDUCATING YOUNG CHILDREN IN SOCIAL SKILLS AT SCHOOLS AND THE CONVENIENCE OF USING ATTRACTIVE EDUCATIONAL MEDIA, SUCH AS ADAPTED PEDAGOGICAL VIDEO GAMES

This project builds on the theoretical framework previously developed by Dr. Monroe (Monroe, 1996) [24] and other researches (Miller and Eisenberg, 1988; Strayer and Roberts, 1996, 2004; Hoffman, 2000) [22] [32] [33] [18], focusing on the learning of empathic involvement with "the other" as part of the teaching of ethics. As much research shows, in order to prevent, via education, severe issues such as bullying or high levels of violence from arising in the development of young people (Barrios, 2005; Perren & Alsaker, 2005; Mytton *et al.*, 2006) [4] [29] [26], there is a need for longer contact and enhanced social interaction between the young individual and his or her peers during their early years. In this way, the

development of personal prejudices towards other groups of people can be discouraged (Monroe and Martinez, 2007) [25].

Although a wide range of educational television programs have become available in recent decades, the activity of watching is still a passive act. Children benefit cognitively, but the lack of social interaction still limits the ability of young children to develop their social skills. Crime rates have risen in certain neighborhoods, and opportunities for interaction between adults and children have become less frequent in families where both parents work (McDaniel, 1998) [21]. This could create a breeding ground for the formation of prejudices and stereotypes. Since prejudices formed early in life have been shown to be noticeably resistant to change (Wilson, Lindsey and Schooler, 2000, in Monroe and Martinez, 2007) [25], limited opportunities for social interaction in childhood could foster the emergence of discriminatory attitudes in later stages of life.

The ongoing educational debate about whether the old (TV) and the new media (video games, Internet, audiovisual devices) are affecting students positively or negatively displays varied and opposed opinions. Whereas a series of studies have found a significant relationship between exposure of young children to violence in media and a subsequent increase in their aggressive behavior (Anderson and Bushman, 2001; Bensley and Van Eenwyk, 2001; Unsworth and Ward, 2001; Gentile *et al.*, 2004; Barlett *et al.*, 2007; Wei, 2007) [1] [5] [35] [15] [3] [36], others emphasize the fact that a causal relationship has never demonstrated (Gunter, 2008; Mitrofan *et al.*, 2008) [16] [23].

Nevertheless, prominent researchers in the field of video games and learning, like Gee (2007) [14], bring compelling conclusions to the debate; whether a video game is good or bad for individuals depends a good deal on the way how the video game is being used and the context in which it is being used (Gee, 2007:7-8) [14].

AIM AND OBJECTIVES OF THE SOCIAL SKILLS VIDEO GAME PROJECT

The main aim of the Social Skills Video Game Project is to effectively teach social competency to K-2 children at school, via the use of an appropriately designed video game prototype. One of the objectives is to design a multiple-choice, story-telling video game, aimed at this population. The game consists of a simple non-linear story that develops in different directions depending on the option taken by the player at the end of each sequence. By experiencing the effects of their choices, students can learn both social skills and the ethics that underpin these skills. Literature on the benefits of educational non-linear, interactive narrative that enhances student engagement in their learning process influenced the choice of design (Sobral *et al.*, 2003) [31].

Another objective is to present typical problems encountered by children at school. This will involve player-children in thinking through suitable solutions to the moral and social dilemmas they have to face in the game. Problems presented in the game are related to typical conflictive situations that are widely present in schools: these involve bullying, not sharing, disrespecting, making friends, etc.

The game encourages the active engagement of children in the learning of social skills. Players (children) are able to exercise choice through the decisions they make with their character at the end of each problematic situation. This, in turn, determines the unfolding of story sequences. At the decision-making stage in each sequence, learning points are emphasized in relation to the social skills that are being taught: respect, assertiveness, empathy, communicative competency, pro-social behavior, acceptance of differences, etc. Further teaching of the healthy alternatives to antisocial behavior encountered in the game playing is strongly recommended, so that children ultimately manage to transfer what they have learned, applying to real life what was learned by participation in the simulated situations.

PREVIOUS RELATED WORK: "FEARNOT!", "QUIT IT!" AND HOW OUR VIDEO GAME CAN HELP FOSTER SOCIAL SKILLS IN K-2 CHILDREN

Since the use of educational multimedia developed during the 1990s, materials have been improved with the technological advancements brought by the interconnection possibilities of the Web. Although there have been video games developed to help formal and informal education, very few have devoted their efforts in teaching social skills in general, and empathy in particular, in order to address the most conflict-producing issues found in elementary and secondary schools in Europe and the United States. One of the few social skills programs is "FearNot!", which has been shown to help in reducing aggressive behavior of students aged 8-12 by having them play with autonomous virtual agents (Enz *et al.*, 2004) [11]. However, that software has been designed to tackle the very concrete issue of bullying, which is a serious issue at schools, but only one in the wide range of social skills education. As its researchers clearly state "although the results obtained are restricted to this particular application in the area of bullying, we do believe that the results can be extended to other areas of Personal and Social Education" (Dias *et al.*, 2006:254) [9].

Furthermore, "FearNot!" is a program designed to target 8-12 year olds, whereas our work specifically focuses on children at the K-2 level. Moreover, a deeper look into the objectives of "FearNot!" reveals that fighting bullying is the main goal of implementing this software (Aylett *et al.*, 2005) [2], while the video game that the Social Skills Video Game Project intends to build will treat a wider range of issues in a child's life. This includes how to best respond when faced with bullying actions, but also how to face other difficulties, such as relational and communicative problems. The game also emphasizes the importance of mutual and self-respect, the value of differences, what is done at school, navigating life in society, etc.

The experience with "FearNot!" is highly valuable, but unfortunately not everything from this program can be used and applied in educating younger children and it lacks some goals and learning activities within the whole range of educational objectives and activities that are critical for teaching pro-social attitudes.

On the other hand, the guide for teachers entitled "Quit It!" looks at how to teach alternative ways to respond safely to teasing and bullying, targeting students in grades K-1, 1-2 and 2-3 (Froschl *et al.*, 1998). One of the varied methods presented in the guide is the use of simulated problem-solving scenarios.

Thus, this work has clear similarities to the goals of the Social Skills Video Game Project but, once again, "Quit It!" is particularly concentrated on teasing and bullying.

IMPORTANCE OF TEACHING SOCIAL SKILLS: THE ACADEMIC APPROACH NEEDED TO IMPLEMENT THE SOCIAL SKILLS VIDEO GAME PROJECT

While "FearNot!" and "Quit It!" particularly address bullying situations, the whole spectrum of teaching social skills includes a broad scope of topics, such as the ability to communicate effectively with peers, communication assertiveness, self-control, self-regulation, and social-emotional development.

Socialization and social-emotional development are also fundamental when it comes to children's academic achievement. Research by Bush *et al*. (2001) [7], and Ladd *et al*., (1999) [20], show that the higher the peer acceptance of a child is, the more confident (s)he will feel in matters linked directly with their academic achievement, such as classroom participation and school attendance.

Furthermore, the utility of video games for the educational goal of helping people become skilled in socializing is, for different reasons, an overlooked field within the school system. As it was mentioned earlier, and Gee (2007) [14] points out, society in general is not willing to discover the new treasures that exist in the potential of video gaming because of fear of the unknown, similar as to what happened during the conquer of the Far West. Hence, we are not teaching young children how to play video games reflectively and critically. And it is precisely the attractiveness of video games what makes them a surprisingly suitable tool to be employed in, improved, and applied to school classes, by teachers, to teach different matters – one of them social skills. Video games being such an appealing medium for children… how come that we have not taken advantage yet of this potential? As Gee states:

> "Good video games give people pleasure. These pleasures are connected to control, agency, and meaningfulness. But good games are problem-solving spaces that create deep learning, learning that is better than what we often see today in our schools. Pleasure and learning: for most people these two don't seem to go together. But that is a mistruth we have picked up at school, where we have been taught that pleasure is fun and learning is work, and, thus, that work is not fun (Gee, 2004). But, in fact, good video games are hard work and deep fun. So is good learning in other contexts."

Gee (2007:10) [14]

THE PROCESS OF CREATING OUR PROTOTYPE OF AN EDUCATIONAL VIDEO GAME

The project will construct a video game that will enable the children to decide among a series of options, so that each child plays an active role during the development of the game. To be successful, the game needs to be appealing to children: it has to have a simple and engaging environment, in which social scenarios that are typical for them, such as the school or the playground, are well represented. Previous work is taken into account in order to present problematic scenarios that are familiar to children of this age (Newman *et al.*, 2006) [27].

Each sequence will have a first part, in which a very short situation is explained. This way, the player will encounter a social dilemma with one or more peers in the first person. After the sequence is played, a number of simple options will appear on screen. The child playing the game will have to choose the most appropriate. The choice the child makes will determine how the rest of the story unfolds. Both written text and voice commands will be present in all dialogues and sequences, so that the limited reading skills of K-2 children will not inhibit understanding.

In addition, the character avatars will resemble boys and girls at elementary school. The player-children will have a say in choosing some aspects of their avatar's appearance, in order to enhance their engagement in the game (Paiva *et al.*, 2005; Dias *et al*., 2006) [28] [9].

The programs used to make the prototype of the video games were PowerPoint, Flash and images from the Kar2ouche package. The prototype would be played as a slideshow in PowerPoint, which, thanks to the hyperlink feature, allows users choose among the possibilities in the story that is unfolding, slide after slide.

After some introductory screens, which introduce the setting (an elementary school) and the characters (children), the story begins with the first in a series of four scenarios. This first scenario is called "at the playground" and takes place during the recess time in the school yard. In it, the main character, a girl, wants to play on the swing but she has to wait for half of recess because a boy is using it. She is asked what to do to reach her objective. Three possible answers are displayed: 1. wait for him to get off, 2. push him off, and 3. ask him to get off.
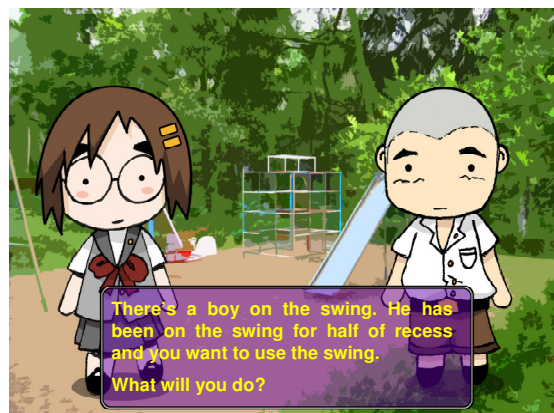
If the player chooses option one, the boy will stay on the swing while the recess time goes by, and therefore the player will be asked again what to do, with options 2. and 3. appearing on the screen. Option 2. leads directly to the potential start of a fight, since the boy gets angry after being pushed, then "what will you do" is asked again to the player. Finally, option 3, asking the boy to get off, leads to the winning situation in which he gets off and asks her to play with him on the swing – the player gets a swing plus a new friend by having chosen the communicative and more assertive option. A rewarding screen shows both

characters playing together in the swing, while the player is congratulated.

The second scenario is called "in the classroom". The problem displayed in this scenario arises from a collaborative task assiged by the classroom teacher. The teacher asks the students to draw a mural together, but the player does not find a place to work, since the other classmates won't give her a space at the board. Again, the player has three options when asked to take action: 1. to start crying, getting everybody's attention (which leads to the player being asked by the teacher to sit down at her desk), 2. to ask fellow classmates to give her a space at the board (which is the communicative choice that leads to the winning situation where the classmates move over to give her a space while they complete the mural together, followed by the congratulation screen), and 3. to push the classmates (which leads to the player having to go to the principal's office!).


The third scenario, "in the school bus", is typical of children who use school transportation everyday. The action takes place inside the bus. The problem here is similar to the one in the first scenario. An older girl is blocking the aisle, and the player wants to get past to sit with friends at the back. But instead of offering three options like on the previous scenes, this time the player will be asked about the choices that (s)he has.


This situation is designed so that the teacher can ask the class for the possible choices of action, if thy were faced with the problem. By discussing what they would do and why, pupils can work through the reasoning behind the decision they might make if they faced a difficult or problematic social situation like the one suggested in the game. Three spaces are provided in the screen to write down the choices, although the length, depth, and direction of the discussion are matters to be decided by the educator.
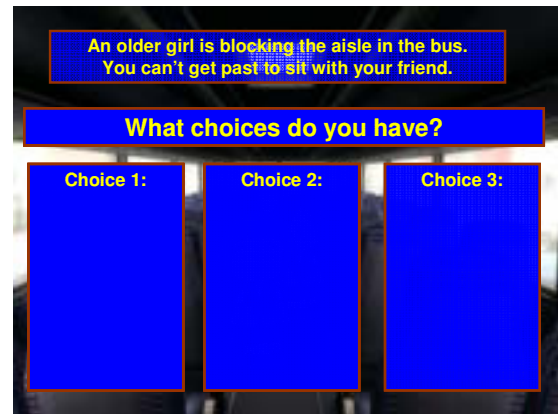
The fourth scenario is called "in the crosswalk", and it is a conventional situation in which kids can develop their sense of responsibility and urban awareness in the face of a dangerous situation. In this scenario, a boy who is a member of a group of children is determined to cross the street when the signal is set to "DON'T WALK". Cars might pass by any time. What can the player do in that situation? Then the screen, once again, shows three spaces that are to be filled with reasoned answers from the group. The teacher determines which are good choices and explains why.
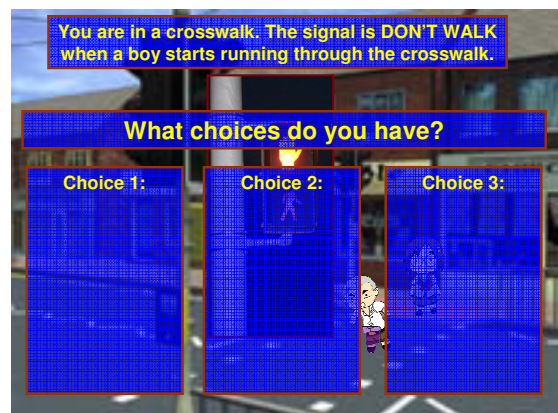
METHODOLOGY

Once solidly set up, this research is to be continued and applied by the Surf-IT research group at the University of California, Irvine. The project is structured to be implemented in two elementary schools in California, during an academic year. Qualitative research, in the form of observation, conversations with children, and semi-structured interviews with teachers, will be used to assess the program. Since teachers will be assessing children's social competencies through the Desired Results System Model (using tools such as the Developmental Profile - Revised, DRDP-R), they will be reporting their observation on whether and how the program has been useful for them. A set of conclusions will be written at the end of the project.

Along with the observation records and the teacher interviews, there will be a simple questionnaire with questions for the pupils, in an attempt to assess their level of social skills before and after the use of the game. Hence, there will be a pre-test and a post-test questionnaire, written in a simple, adapted language that the children can understand, and where they will be asked about social situations and problems similar to those they will find in the video game.

A teacher's guide will accompany the video game –so that (s)he can dispose of guidelines to coordinate the activity of playing the video game in class with the projector, and pilot the discussions– and some learning activities will be suggested for use in the classroom too, following a series of educational objectives in teaching social skills.

CONCLUSIONS

In an attempt to explain how the value of video game technology has been downplayed in some previous studies, this paper has investigated the main research done to date in this relatively new field. Having laid the foundations for a project that will be continued in the upcoming academic year, three major issues can be outlined at this stage.

First, more research is needed in the use of video game technology as an educational tool. We have looked at how the reputation of video games has been severely affected by both the focus of research in the last decade – the spotlight being directed towards whether video games are harmful for society, particularly whether they provoke an increase in violence – and pedagogic trends that are more resistant to change. These trends do not consider that social skills can be really taught at school, and in any case not with video games. A flexible and open approach to the matter is necessary.

Second, there is a need for further creativity within the minds of those who have a direct effect on the development of young children. Teachers, academics, and video game producers are all connected since they have a critical influence in children's lives. The ideas set out here aim to demonstrate how educators, researchers and video game makers can use their creativity to introduce projects such as this one. All can benefit from it, especially children, but ultimately the whole society.

As a consequence, it is desirable that society undertakes a deep reflection about how parents and educators can teach young children how to play video games reflectively and critically.

New textbook contents and guidelines addressed to parents, teachers and designers would help much in this task, contributing to a wider education on how to use the different media available to the public. Implementing ventures such as the Social Skills Video Game Project in public schools would be highly beneficial for this purpose.

REFERENCES

[1] **Anderson, C.A. and Bushman, B.J**. (2001). *Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature*. Psychological Science, Vol. 12 (5):353-359.

[2] **Aylett, R., S. Louchart, J. Dias, A. Paiva and M. Vala**. (2005). FearNot!: An experiment in emergent narrative. In T. Panayiotopoulos et al. (Eds.), *Intelligent Virtual Agents.* Hamburg: Springer.

[3] **Barlett, C.P., Harris, R.J. and Baldassaro, R**. (2007). *Longer You Play, the More Hostile You Feel: Examination of First Person Shooter Video Games and Aggression During Video Game Play*. Aggressive Behavior, Vol. 33:486–497.

[4] **Barrios, C**. (2005). *Audiovisual Violence and its Effects on Human Development: a Theoretical and Empiric Study*. Revista Comunicar, Vol. 25.

[5] **Bensley, L. and Van Eenwyk, J**. (2001). *Video Games and Real-Life Aggression: Review of the Literature*. Journal of Adolescent Health, Vol. 29:244–257.

[6] **Brouillette, L**. (2009). *How the Arts Help Children to Create Healthy Social Scripts: Exploring Teacher Perceptions*. Arts Education Policy Review. (In Press).

[7] **Bush, E. S., G. W. Ladd and S. L. Herald**. (2001). *Peer Rejection as an Antecedent of Young Children's School Adjustment: an Examination of Mediating Processes*. Developmental Psychology, 37 (4):550-560.

[8] **Davis-Kean, P.E., Huesmann, L.R., Collins, W.A., Bates, J.E. and Lansford, J.E**. (2008). *Changes in the Relation of Self-Efficacy Beliefs and Behaviors Across Development*. Child Development, Vol. 79 (5):1257–1269.

[9] **Dias, J., Paiva, A., Vala, M., Aylett, R., Woods, S., Zoll, C. and Hall, L**. (2006). *Empathic Characters in Computer-Based Personal and Social Interaction*. Chapter in: Pivec, M. (Ed.). (2006). *Affective and Emotional Aspects of Human-Computer Interaction: Game-Based and Innovative Learning Approaches*. Amsterdam: IOS Press.

[10] **Dickey. M.D**. (2005). *Engaging By Design: How Engagement Strategies in Popular Computer and Video Games Can Inform Instructional Design*. Educational Technology Research and Development, Vol. 53 (2):67-83.

[11] **Enz, S, C. Zoll and H. Schaub**. (2004). FearNot!: The Use of Empathy Towards Autonomous Agents for Education Purpose. In H. Schaub, F. Detje & U. Brüggemann, (Eds.), *The Logic of Artificial Life*. Berlin: Akademische Verlagsgesellschaft.

[12] **Fink, L. D**. (2003). *A Self-Directed Guide to Designing Courses for Significant Learning*. San Francisco: Jossey-Bass.

[13] **Froschl, M., B. Sprung and N. Mullin-Rindler**. (1998). *Quit It! A Teacher's Guide on Teasing and Bullying for Use with Students in Grades K-3*. New York: Educational Equity Concepts.

[14] **Gee, J. P**. (2007). *Good Video Games and Good Learning: Collected Essays on Video Games, Learning and Literacy*. New York: Peter Lang.

[15] **Gentile, D.A., Lynch, P.J., Linder, J.R. and Walsh, D.A**. (2004). *The Effects of Violent Video Game Habits on Adolescent Hostility, Aggressive Behaviors, and School Performance*. Journal of Adolescence, Vol. 27:5-22.

[16] **Gunter, B**. (2008). *Media Violence: Is There a Case for Causality?* American Behavioral Scientist, Vol. 51 (8):1061-1122.

[17] **Gunter, G.A., Kenny, R.F. and Vick, E.H**. (2008). *Taking Educational Games Seriously: Using the RETAIN Model to Design Endogenous Fantasy into Standalone Educational Games*. Education Tech Research Dev, Vol. 56:511–537.

[18] **Hoffman, M. L**. (2000). *Empathy and moral development*. New York: Cambridge University Press.

[19] *Kar2ouche*. (2009). Retrieved April-May 2009, from the Immersive Education Website: http://www.immersiveeducation.com/Kar2ouche.

[20] **Ladd, G. W., S. H. Birch and E. S. Bush**. (1999). *Children's Social and Scholastic Lives in Kindergarten: Related Spheres of Influence?* Child Development, Vol. 70 (6), 1373-1400.

[21] **McDaniel, A. K**. (1998). Character Education: Developing Effective Programs. *Journal of Extension*, Vol. 36 (2).

[22] **Miller, P. A. and N. Eisenberg**. (1988). The Relation of Empathy to Aggressive and Externalizing/Antisocial Behavior. *Psychological Bulletin*, Vol. 103 (3), 324-344.

[23] **Mitrofan, O., Paul, M. and Spencer, N**. (2008). *Is Aggression in Children with Behavioural and Emotional Difficulties Associated with Television Viewing and Video Game Playing? A Systematic Review*. Child: care, health and development, Vol. 35 (1):5–15.

[24] **Monroe, K**. (1996). *The Heart of Altruism: Perceptions of a Common Humanity*. Princeton: Princeton University Press.

[25] **Monroe, K. and Martinez, M**. (2007-07-04). *The Politics of Difference: Practical Ethics and Empathic Involvement with the Other*. (Paper presented at the annual meeting of the International Society of Political Psychology). Classical Chinese Garden, Portland, Oregon.

[26] **Mytton, J., C. DiGuiseppi, D. Gough, R. Taylor and S. Logan**. (2006). School-based Secondary Prevention Programmes for Preventing Violence. *Cochrane Database of Systematic Reviews*, Issue 3, Art. No.: CD004606.

[27] **Newman, M., A. Woodcock and P. Dunham**. (2006). Playtime in the Borderlands: Children's Representations of School, Gender and Bullying through Photographs and Interviews. *Children's Geographies*, Vol. 4 (3), 289-302.

[28] **Paiva, A., J. Dias, and R. Aylett**. (2005). Learning by Feeling: Evoking Empathy with Synthetic Characters. *Applied Artificial Intelligence*, Vol. 19, 235-266.

[29] **Perren, S. and Alsaker, F.D**. (2005) Social Behavior and Peer Relationships of Victims, Bully-Victims, and Bullies in Kindergarten. *Journal of Child Psychology and Psychiatry,* Vol. 47 (1), 45-57.

[30] **Prensky, M**. (2008). *Students as Designers and Creators of Educational Computer Games: Who Else?* British Journal of Educational Technology, Vol. 39 (6):1004–1019.

[31] **Sobral, D., I. Machado and A. Paiva**. (2003). Managing Authorship in Plot Conduction. In G. Goos, H. Hartmanis & J. Leeuwen (Eds.), *Virtual Storytelling*. Berlin: Springer.

[32] **Strayer, J. and Roberts, W**. (1996). Empathy, Emotional Expressiveness, and Prosocial Behavior. *Child Development*, Vol. 67 (2), 449-470.

[33] **Strayer, J. and Roberts, W**. (2004). Empathy and Observed Anger and Aggression in Five-Year-Olds. *Social Development,* Vol. 13 (1), 1-13.

[34] **Underwood, J.S., Hoadley, C., Lee, H.S., Hollebrands, K, DiGiano, C. and Renninger, K.A**. (2005). *IDEA: Identifying Design Principles in Educational Applets*. Educational Technology Research and Development, Vol. 53 (2):99-112.

[35] **Unsworth, G. and Ward, T**. (2001). *Video Games and Aggressive Behaviour*. Australian Psychologist, Vol. 36 (3):184-192.

[36] **Wei, R**. (2007). *Effects of Playing Violent Video games on Chinese Adolescents' Pro-Violence Attitudes, Attitudes Toward Others, and Aggressive Behavior*. CyberPsychology and Behavior, Vol. 10 (3):371-380.

[37] **Wilson, T. D., S. Lindsey and T. Y. Schooler**. (2000). A Model of Dual Attitudes. *Psychological Review*, Vol. 107, 101-126.