

Using Storyboards to Guide Virtual World Design

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ABSTRACT

This poster considers the use of storyboards, in a classroom setting with children in the 8-12 age group. The storyboarding method allowed children to both generate and evaluate scenarios for a virtual world populated by synthetic characters for exploring bullying issues. This approach has assisted children in the process of visualising agent design and verbalising opinions. It has resulted in design implications that have emerged from enabling children to have a voice in the technology process.

Keywords

Storyboards, Virtual Learning Environments (VLEs), design implications, child-centred methods

INTRODUCTION

FearNot (Fun with Empathic Agents to Achieve Novel Outcomes in Teaching) is a school-based Virtual Learning Environment (VLE) populated by 3D self-animating characters that represent the various characters in a bullying scenario in improvised dramas in a virtual school. It is being developed within the European funded VICTEC (Virtual ICT with Empathic Characters) project that aims to provide a VLE with comprehensive and meaningful bullying scenarios, populated by believable and empathy evoking agents and incorporating key educational messages

Gaining children's input in the early stages of FearNot's lifecycle has been partially achieved through the use of storyboarding [3]. This technique involves the creation of comic-strip like representations borrowed from the film and television industry and has been successfully used with children [2]. In VICTEC, electronic storyboarding was used as this is particularly appropriate for supporting the activity of agent systems as it can represent processes such as animation mapping time into space, so that a number of different moments of time may be seen together and compared visually. The comic-strip form expresses both temporal and spatial relations at a variety of scales. The

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stories deal with characters and goals, attempts to achieve those goals, and degrees of success or failure, an ideal format for agent based systems.

THE STORYBOARD APPROACH

A classroom-based approach was used that involved the use of electronic storyboarding software (Immersive Education's Kar2ouche) both to generate and to evaluate bullying scenarios. Generation aimed to capture the stories and experiences that children tell about bullying behaviour and evaluation aimed to evaluate the scenarios designed by the psychological team involved in VICTEC. These scenarios included a direct (physical) and a relational (social exclusion) bullying scenario.

Children (aged 8 – 11) participated in storyboard generation and evaluation. Feedback was obtained through written questionnaires [5] and Classroom Discussion Forums (CDFs). CDFs were developed to obtain verbal feedback, following the approach typically used in schools of "Table Time" (small group discussions) followed by "Circle Time" or "on the carpet" (whole class discussion).

- **Generation:** storyboards were generated by 15 pairs of UK children over a 40 minute period. Subsequently, a CDF led by the researcher was held to gain feedback from each group regarding the storyboarding exercise.
- **Evaluation:** 81 children (2 UK, 2 German schools) watched the bullying scenario storyboards and completed a scenario evaluation questionnaire. Questions inquired about reactions to the scenarios, character preferences, empathy, emotions and coping strategies. A 20 minute CDF concluded the session aiming to explore children's attitudes and reactions towards the bullying scenarios and the characters.

Design implications from storyboard generation

Storyboards depicting bullying behaviour were successfully generated by all participants and were content analysed... Several design implications were concluded from the results. The stories elicited the cognitive and social understanding of bullying behaviour among children aged 10-11 years [4]. The social behaviours and language capabilities of this age group are observed and understood for scenario development and the language system [1].

Most children found the storyboarding software package fun and easy to use and would use it again. Children also stated that it made them think about the serious nature of bullying behaviour in a novel way, something that we aim to evoke with the use of FearNot.

Design implications from storyboard evaluation

Gender is an important consideration for the target age group particularly in the UK. Significant differences were revealed for prime character choice (which character the child would like to be). UK Girls wanted to be female victim characters and UK boys the male victim character. The bully characters were the least preferred in particular, UK boys disliked the female bully characters. In contrast, German children stated a stronger preference for wanting to be a bully character rather than a victim character.

To ensure high interest and engagement in scenarios with educational impetus for boys may mean that same gendered scenarios are necessary in the UK. Conversely, gender does not seem to be an essential consideration for German children. This has had a significant impact on designing scenarios, UK scenarios are now same-gender generated with agents being predominantly same gender as the child.

Interesting results were revealed for empathic feelings where UK children expressed more empathy for the victim characters compared to Germany children, whilst German children expressed more anger than the UK children. For the UK sample only, girls expressed more empathy towards the victim characters than boys and girls also expressed more feelings of anger towards the bully characters.

The fact that most children expressed empathy towards the victim characters is encouraging as it demonstrates that children are clearly engaging and immersing themselves into the bullying storyline. The results obtained here have been used to aid with the development of the personality and emotional model of the agent.

An exploration of the coping strategies stated by UK and German children revealed differences with more UK children telling a friend or a parent about bullying. Overall, a telling culture was visible.

The CDF demonstrated that children could relate to, and found the physical and relational bullying scenarios believable. In line with developmental and gender socialisation theories, girls related to the relational bullying scenario the most and boys related more to the physical bullying scenario.

The comprehension of the direct/physical bullying scenario was higher for children compared to relational bullying and this is particularly the case for German children. Developmentally, this may be explained by the lack of competent social skills at this age although relational bullying will most certainly become more prevalent in early adolescence. Differences in the education systems in

the UK and Germany may contribute to this finding as there is more exposure and media coverage about relational bullying in the UK. The use of relational scenarios for FearNot will still be essential as it may educate children about relational bullying and prevent a problem occurring.

Girls and particularly girls in the UK sample appeared to have a greater understanding of relational bullying than boys. Design decisions will have to be made concerning whether girls interact with more relational bullying scenarios and boys interact more with physical scenarios although from an educational perspective it is important that children understand the nature of both types of bullying.

The information gathered about coping strategies from children in the UK and Germany will input to the design of the coping strategies library that children will be able to consult during the interaction with the VLE and test out different success rates.

DISCUSSION

The use of a storyboarding technique had several important design implications for VICTEC including a child-centred approach, correct language configuration for the bullying scenarios, the development of detailed bullying character profiles that children will comprehend, and storyline design and progression. The storyboard technique has enhanced the design of scenarios and allowed an exploration of the importance of empathy in creating believable and engaging VLEs. Using storyboards supplemented with written questionnaires and CDFs has revealed important cultural and gender-related design implications for developing believable and engaging scenarios.

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