Understanding and Fostering Children's Storytelling During Game Narrative Design

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ABSTRACT

Children typically have extensive expertise and experiences of computer games, which can enable them to make valuable contributions when involved in the design of games. Within this paper we discuss our approach to the involvement of children in the game design process, specifically to inform a game narrative. We describe two design workshops with children, which focused on the design of the narrative within a literacy game based on the Day of the Dead festival. We describe how the knowledge that resulted from these workshops furthered our understanding of children's storytelling schema and preferences for games as well as their approach to story creation and expression during the game design process. We also discuss how our findings informed an initial set of design principles for guiding narrative design within children's games as well as recommendations for including storytelling design activities within the technology design process.

Categories and Subject Descriptors

H.5.2. User Interfaces: User-centered design.

General Terms

Design, Human Factors.

Keywords

Children; Game Narrative Design; Storytelling; Design Process.

1. INTRODUCTION

Children have been involved in the design of new technology through approaches such as informant and participatory design for well over a decade. They are considered 'experts' in being children and it is acknowledged that their individual expertise and experiences can enable them to make valuable contributions to the technology design process [4, 5]. In the case of computer games, in particular, children typically have extensive experiences [2], with gaming forming a significant part of children's culture [9]. This experience potentially offers a wealth of knowledge that children could contribute to the game design process, particularly as identifying ways to ensure children's enjoyment of playing the resultant game is seen as a key focus of this process [12].

Previous research has obtained children's input on specific game design features such as for instance game characters, background graphics, game menus and rules. Even though many researchers

have discussed the benefits of involving children in the design of games, several challenges have also been noted. As Duh et al. [7] argued, focusing on the design of specific game functionality can overlook important knowledge about children's experiences, presumptions and cultural values and beliefs that are important to consider within the game design context. Furthermore, although having experiences in a particular area can mean that children may have extremely valuable knowledge and ideas to contribute to the game design process, this can also impact on their pre-conceived notions of what a computer game should include [4], potentially constraining their idea generation to solely producing ideas that they believe the designers are expecting. Indeed, researchers have discussed common situations where children have directly copied from the example ideas provided during design workshops or where they have copied other children's ideas within the group [10, 14]. This imitation, or 'recycling', of design ideas can additionally be observed in terms of the integration of features from existing technology the children are familiar with and have previous experience using [10] . Moreover, in the specific case of learning games, children's ideas often fail to fit with the educational aims of the game as a result of their lack of domain knowledge [15, 16] .

In putting these challenges in context, Druin [5] has argued that we should not expect children to be able to successfully contribute to all aspects of the design and development process. Children are more able to contribute "what excites and bores them, what helps them learn, and what can be used in their homes or schools" [5] rather than detailed specifications of technological features. Therefore it is important that researchers carefully consider what they mean when claiming to *involve* child participants in design. Druin's observations are echoed by Fallman [7] who has argued more broadly that design researchers often aim at generating *knowledge* about participants "by involving typical design activities in the research process". The developed product becomes "more of a means than an end" [7]. In line with this view, children's ideas and input have formed the basis for generative research in the context of game design [2, 11, 13].. Danielsson and Wiberg [2] identified the importance of ensuring that educational games for teenagers were not too boring, childish or prejudiced and one design session resulted in a set of guidelines which could be used to verify this. In a second example, during the design of a game aimed at developing emotion regulation for teenagers at a pupil referral unit, Mazzone et al. [11] set out to gather knowledge relating to "the vocabulary, the interests, and the abilities of the pupils" as well as an "understanding of their contexts".

In line with this approach, in this paper we discuss the outcomes of two design workshops with children that took place in the context of an ongoing research project aiming to design a new literacy game for children between the ages of 9-11. Narratives are an important and motivating component of games. As Tan et al. [15] claim, the integration of narrative elements into games to

increase children's engagement is now a common technique. In elaborating a storytelling component for our game, we initially chose a fantasy-based design concept foregrounding the relationship between life and death, and its celebration. Death is often a topic of fascination for children and was thus expected to contribute to the motivation of playing the game. We envisioned our game to deliver its literacy content through a series of interactive activities embedded within this shared narrative.

In advancing our design work, we recognised the potentially challenging and sensitive nature of our design concept for our target age group, which could prompt some children to reflect on their own attitudes towards mortality and ideas about life after death. Additionally, in considering game narrative design more broadly, children and adults may understand these narratives differently due to their previously acquired schemata [6]. Even very young children are able to comprehend narrative structures, and involving the children in the narrative design could ensure the resulting game is "contextually, temporally and culturally relevant to their life experiences" [6]. Therefore, our research aim was twofold: (1) to examine children's sense making in the context of our game narrative as well as understand how they construct and tell stories more broadly and (2) to explore how to best support children's storytelling within design activities during the game design process. We chose to investigate these aims through design workshops involving low-tech art materials rather than ask the children to create their own games. This was to mitigate against the children becoming overly focused on other less relevant game mechanics, which may occur during a game creation activity.

The remainder of this paper explores what we learned about the children's approach to storytelling within the context of the narrative design for a literacy game. Based on our findings we contribute a set of design principles for children's games, and storytelling technologies more broadly as well as recommendations for supporting storytelling design activities involving children during the game design process.

2. METHODS

2.1 Participants

We undertook two design workshops with two classes (year five and six) at a single mainstream primary school in south-east London, located in a socially and ethnically diverse area. The children were all within our target age group (9-11 years). A total of 37 children participated (20 boys and 17 girls), with 22 children from the year five class (aged 9-10) and 15 children from the year six class (aged 10-11). The children were divided into groups of four or five, with a total of five groups in the year five class and four groups in the year six class.

2.2 Procedure

Each workshop lasted approximately one hour and was facilitated by three to four researchers, including one fully qualified teacher with specific experience of teaching children with reading/writing difficulties. The children's class teacher was also present throughout the session.It was explained to the class that we were designing a learning game for reading and writing based on the Day of the Dead (a Mexican festival celebrating the lives of relatives/friends who have passed away) and that we needed their ideas for developing the characters and stories within the game. The children were first introduced to the festival as a class by showing them an animated film based on the story of a child's experience of this festival. This provided the children with an overview of the visual style of the festival. One researcher then told a story about a girl and her dog, through which the children

were introduced to the specific customs and traditions associated with the festival.

Within their groups the children were asked to create their own characters for a story about this festival, one living character and one dead. Each group was provided with two paper templates (see Figure 1), which they could fill in with information about each character such as their hobbies/interests, job, and relationship to the other character. Example templates, based on the story that was told to the children earlier, were displayed on an interactive whiteboard as a prompt for groups who were struggling to think of ideas for their characters. Once the children had agreed on their two characters they were then provided with modelling clay as well as a selection of other art materials and asked to build or draw each of their characters. Next the children were asked to create a story about their characters, focusing on why and how one character wants to contact the other character, what they want to say to them and to think about how the story could end. Each group was provided with a blank paper storyboard on which they could document their ideas for their story. Lastly each group was given a Flip video camera and asked to capture their story on this to enable the researchers to share the children's story ideas with the game development team. Due to the setup of the workshop it was not possible to video record the sessions, therefore each of the researchers took written notes to document their observations across teams.

**Figure 1 – Example Character Template**

3. FINDINGS

In order to explore the children's approach to storytelling within a game context, a thematic analysis [1] was undertaken on the workshop data. The data included all of the materials produced by the children as well as the researchers' written notes. The analysis aimed to identify relevant themes in terms of the children's approach to understanding the specific game focus and related topics through storytelling as well as how they created and shared their stories through the different design activities. These themes are discussed in detail below.

3.1 Understanding children's sense making through storytelling

The original brief set at the beginning of the workshops was for the stories to focus on the communication between the living and dead characters, which five groups successfully managed. The other groups' stories ended up having a slightly different primary focus. Our analysis identified some general themes that occurred across multiple stories. Some groups focused on the *relationship between the two characters* and described a shared experience that they had had together, such as going on an adventure. These were often in the form of missions set by one of the characters that they

had to complete and related most directly to the game design context. Some of these stories integrated aspects that the children were familiar with from their everyday lives, particularly family life and friendship, for example: "*Lucas was really upset and jumps up and down on his bed and breaks it, which his mum is really annoyed about and says 'that cost £150 you will have to pay for that now'.*" Within the written notes of the workshop, one researcher also noted that one boy had particular trouble making up characters and instead only talked about characters based on his family and what they do at home.

In addition we identified what we have termed *'nonsensical' story elements*. Example nonsensical ideas included "*a cocker-spaniel loving skeleton called Zorgon*" (see Figure 2), "*his other hobbies include being a hat critic and chihuahuas*" and "*the pirate lives in a caravan and is grandfather to an FBI agent who owns a bullet-proof tuxedo*". These forms of nonsensical story elements, random inclusions that often appear from nowhere and have little relation to reality, requiring the reader/listener to use their own imagination to fill in the gaps, are quite common and appealing features of children's stories. For example, they frequently feature in children's books, such as those written by the well-known author and poet Dr. Seuss.
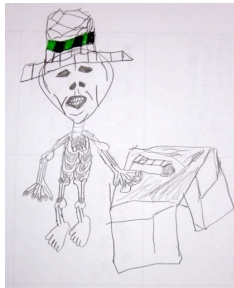
Figure 2 – A child's drawing of Zorgon the cocker-spaniel loving skeleton

Other groups' stories focused on how the living character *enters the world of the dead*. Some children became fascinated with how the dead character had died. They therefore focused their story around this character's death, which in some cases was quite violent, and the emotional response of the living character to this.

Within two groups the theme of *religion* was highlighted. In these groups it was clear that some of the children had religious backgrounds and for them the Day of the Dead festival was associated with religion and their idea of god and heaven/hell. This made prayer the obvious means of communication and they saw the 'world of the dead' as heaven.

3.2 Supporting story creation and expression

Within the workshops the children were provided with various tools to plan their stories, which they were encouraged, but not required, to use. Seven of the groups utilised the *character profile paper templates* that allowed them to specify characteristics, relationships and preferences of their story characters and enabled them to develop a backstory. The use of *clay modelling* to develop the visual appearance of their characters was extremely popular (see Figure 3), with eight out of the nine groups using the clay. In addition to this three groups drew out their characters using *pencil and paper*. The *paper storyboard grids* were designed to be used flexibly, with seven of the groups using them to varying extents, some drawing their story, some documenting with text and others using a mix of both. Three of the groups used the storyboards minimally in their story planning and four of the groups used the storyboards more extensively, the remaining groups did not use

them at all. There was evidence of four groups using some level of *verbal improvisation* when filming their story, with some children modifying their original story plan and others generating the majority of the storyline from scratch during this phase.

Figure 3 – Children creating their clay model characters

As with the creation of the stories, there were also clear differences between the groups in how they chose to express their final stories. Two groups acted out the majority of their story, six groups used their clay models to help them tell the story, two groups incorporated dancing and/or song within the telling of their story and four groups used their drawings and/or storyboards to aid them in verbally narrating or explaining their story.

4. DISCUSSION

The findings presented above have provided a basis for a set of initial design implications to help guide the development of narratives within children's games, as well as recommendations for supporting children's storytelling within design activities during their involvement in the game design process.

4.1 Initial design implications

4.1.1 Fostering imagination through nonsense

The incorporation of nonsensical and fantasy-based narrative elements within the stories highlighted the children's enjoyment and engagement with this type of narrative content. It also raised the possibility of using this content in order to inspire children's imagination. Integrating nonsensical content within game narratives provides opportunities for children to use their creativity and imagination to 'fill in the gaps' within different stories encountered during the gameplay. It can also provoke curiosity or surprise through the narrative that can support enjoyment and engagement within the game.

4.1.2 Providing space to explore the unfamiliar

Although the subject of the characters' death was not positioned as the focus of the story during the workshops, a number of the groups explicitly chose to centre their stories on how one character died. It is possible that the children's engagement with the more macabre elements of the design task (such as the violent way a character died) could be due to the more taboo nature of this topic appealing to children of this age group. Our workshops appeared to provide the children with a safe environment for exploring and grasping more adult topics such as mortality, which could be incorporated into the game narrative. Experiencing emotions associated with topics such as this within a secure environment is important for children to learn how to deal with death in the real world. Therefore whilst topics such as mortality should be handled with care, game designers should not completely avoid the inclusion of more macabre narrative components, as this is a key area of potential appeal and learning for children. Lastly the findings raised the need to consider the handling of certain game topics such as the Day of the Dead sensitively, particularly within the context of religion. It may be

necessary to avoid religious associations and connotations where possible to ensure the game narrative does not directly conflict with a child's individual religious beliefs.

4.1.3 Social rules and structures

Children created stories that presented relational dynamics between characters based on familiar social structures, rules and experiences from their own social environment. Identifying these recognizable social rules and structures, and reflecting them in the game narrative, may therefore help to support children's comprehension and connection with a game and its educational content. However, it is important to note that game narratives can also provide valuable opportunities for children to learn about unfamiliar social rules and relationships, but that these may be more appropriate to introduce at later points within the narrative when children feel secure with other aspects of the game context.

4.2 Recommendations for supporting children's storytelling within design activities

The flexibility of the workshops helped to provide more creative freedom for the children to plan their stories in a way that best matched their preferred approach to story creation and expression. Some children preferred to document their ideas in detail on paper to ensure they did not forget anything and were highly engaged in the creation of detailed drawings or clay models. Whereas others appeared to be at their most creative and engaged when spontaneously generating story ideas in front of the camera and sharing them verbally. Previous research incorporating storytelling-based design activities with children during the game design process typically requires all child participants to share their stories using the same modalities, e.g. [3, 8]. Based on our findings, future work may consider incorporating a number of different options and modalities that further enable the space for personal expression, including audio-visual as well as tangible modalities. Considering the effectiveness of our design approach to support children in telling stories, we believe that multimodality can enable a range of children with different creative and communication styles/preferences to participate, as a consequence giving researchers better insight into the particular questions they want to address.

5. CONCLUSION

To conclude we reflect on our findings in the context of Druin's [5] consideration of what children are best able to contribute to the technology design process. Through our design research we have increased our understanding of children's storytelling to provide an engaging experience for children through game narratives as well as how to support their involvement in the game design process within storytelling activities by understanding how they construct and tell stories. This has resulted in an initial set of design guidelines for children's game narrative design in relation to existing social structures, fostering imagination and exploring unfamiliar content as well as recommendations for a multimodal approach to storytelling design activities. Within future work we intend to build on these findings by conducting similar activities specifically with children who have literacy difficulties, to establish how game narratives can best promote their confidence and engagement with game-based literacy activities. We will then use the workshop outcomes to guide development of our game characters, ensuring their background stories report information the children felt was important such as how they died and their relationships with other characters as well as allow the children to discover further nonsensical facts about them through the game play. We hope that this work will be a useful basis for designers

of children's games, and that they will be able to use this a starting point to further extend our proposed design guidelines and recommendations.

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