Computer Games Authored by Children: A Multi-Perspective Evaluation

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INTRODUCTION

The effects of games on learning and skill development are being examined by a number of researchers [1], although with the notable exception of Kafai [3], much research places children in the role of game *consumers*. In line with a constructionist approach [4], we believe that allowing children to design and implement their own games will lead to deeper learning and transferable skills.

We are investigating the relationship between game creation and the development of children's narrative skills. Non-programmers can now create 3D interactive virtual reality role-playing games using toolsets that ship with certain commercial games (e.g. *Neverwinter Nights*). By adapting these toolsets, and the game content, to children, we could develop game creation environments which allow children to author narrative games by creating settings, characters, a plot structure, and possible dialogues for each character. Given the interactive nature of such dialogue, children would need to create multiple plot threads and associated dialogue. Other children could then play the game, and have a potentially different experience each time the game is played. We believe that these types of environments would have a beneficial effect on the development of narrative skills and overall literacy, and have carried out various pilot studies which look at the *process* of creating role-playing games by children [2, 5].

In this paper, we look at the *product* of game creation, specifically at 3D interactive virtual reality games created by adolescents using the *Neverwinter Nights* toolset. We feel it is important to determine whether games which are considered to be good from an educational perspective are also good from the perspective of potential game players.

To explore this question, we carried out a multi-faceted qualitative study from three perspectives: children, expert game designers, and teachers. As the basis for interaction with the three target groups, we used games created by 10 young people aged 12-15 using the *Neverwinter Nights* toolset [5]. While examining the games, the interviewees discussed the features of successful games. Although there are clear, and expected, differences in perspective between the three groups, there are also common themes.

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INTERVIEWS WITH CHILDREN

Interviews were conducted with two pairs of 10 year old children (two girls and two boys). The pairs of children were interviewed separately, and each interview lasted approximately 3 hours.

The children described their game playing experience, and talked about the features they valued in games. They then played the ten games, and described what they liked and didn't like about each game.

Below, we list the main characteristics which children feel are important in games (note that space precludes a discussion of gender differences):

- Having a sense of purpose, goal to complete;
- Player choice, ability to contribute to action/plot;
- Collaboration, interaction through dialogue;
- Pace (scary, adventurous, exciting games);
- Good quality graphics;
- Use of narration rather than lots of on-screen text;
- Characters (including appearance, motives, contribution to plot and worth as an opponent)

INTERVIEW WITH EXPERT GAME DESIGNER

During a two-hour interview, the expert game designer played and evaluated each of the games. He discussed the characteristics of good commercial role-playing games, and compared the games designed by the young people to professionally created games. The designer had in-depth experience of the *Neverwinter Nights* toolset.

Following is the game designer's list of the most important features of "good" games:

Plot sophistication: good games go beyond a simple quest, or at least integrate the quest into an overall plot.
Causality and consequence: rather than a collection of random events, the plot incorporates a causal structure, events have some meaning within the context of the story as a whole, and actions have consequences.
Sense of Purpose: from the outset, the player has a clear indication of her purpose and goals within the game.

Visual coherency: objects' visual aspects are representative of their nature, e.g. a character's appearance may give some indication of her personality.

Signposting: signposting should be used to maintain player interest, either visually (making sure the player doesn't wander aimlessly) or through dialogue (e.g. having a character give instructions to the player).

INTERVIEW WITH EXPERT TEACHER

Finally, we interviewed an expert teacher and professional storyteller about the potential educational benefits of creating interactive narrative in games. As she played the ten games, she described the aspects of game creation on which she would focus from an educational perspective. Below we describe the main themes from the interview:

Audience Awareness: a single individual may play a narrative game repeatedly (as opposed to written narrative). Thus, audience awareness comprises not only the multiple individuals making up the audience, but also an individual who plays the game several times, with increasing knowledge and skill through repeated playing and who expects the game to be different each time it is played.

Non-Deterministic Stories: the non-deterministic nature of stories in game environments is a major potential educational benefit, and should be exploited fully in conversations between players and non-player characters.

Interactive Story Structure: interactive story structure helps children to think about choices, both in terms of the choices inherent in an interactive story, and also with respect to the constraints of a computer-based environment and the types of story it can support.

Consequences: consequences should be a major component of interactive story-based games at two levels: firstly, the child game designer should be designing by thinking in terms of choices and consequences, and secondly, the fact that actions have consequences should be made apparent to the child game player.

Spoken vs. Written Text: the teacher made a case for spoken text, arguing that providing characters with voices allows children to create more complex characters, and to express their personality more fully.

Character Development: character development often receives little attention in game design, but is crucial from the point of view of narrative development.

DISCUSSION

Below we discuss those features deemed important by more than one group.

Player Choice: The girls, boys, and expert teacher mentioned player choice. The expert teacher also felt player choice would benefit to the child game designer as it requires her to think of many alternatives to the same story.

Consequence: According to the expert teacher, consequence defines many types of narrative, particularly fairy tales. The expert game designer noted that consequence is important for a compelling game, as players will not perceive themselves as effective agents if their actions have no consequences. Finally, although much is made of the decontextualized and gratuitous violence present in many computer games, the boys mentioned consequence, and having to make up for wrong decisions.

Spoken vs. Written Text: The expert game designer noted that experienced game players don't like text that interferes with action, and the children mentioned problems with reading large amounts of text. The expert teacher noted that spoken text would allow child authors to specify their characters more fully, given that much of the character development in a game must be effected through dialogue.

Character Design and Development: Interestingly enough, the boys discussed the importance of characters from a number of perspectives, including appearance and motives. The game designer mentioned the importance of ensuring that dialogue was in keeping with a character's supposed nature since, as the teacher noted, character is primarily expressed through dialogue.

IMPLICATIONS FOR THE DESIGN OF GAME CREATION ENVIRONMENTS FOR CHILDREN

- Ensure that the interface to the story creation tool supports children as they map out the structure of the story, and enables them to understand and manipulate choice points in the story, and the consequences that arise from these choices;
- Design representations that allow children to work with multiple plot threads simultaneously, and provide support to manage the complexity arising from having to consider the numerous turns that a story could take.
- Provide children with tools for creating complex, plausible characters via increased choice in character appearance, and the ability to record dialogue. From an educational perspective, give children support in learning how to convey character through dialogue.

Our current work involves implementing these features in *Adventure Author*, a game creation environment designed specifically for children aged 10-12. Given the data collected to date, we feel that game creation in such an environment can be both educational and entertaining.

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