Children Ideation Workshop

Creative low-fidelity Prototyping of Game Ideas

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Abstract. Player's enjoyment is one of the most important goals for games. Without this, children will not repeatedly play them. In order to meet children's needs, it is important to consider them in the development process, for example, by enabling them to participate actively in the process. Therefore, children will be enabled to participate in ideation workshops to create creative low-fidelity prototypes of game ideas that inspire game designers.

Keywords: Game design, user-centered design, participatory design, low-fidelity prototyping, child-computer interaction

1 Introduction

Children are becoming experienced and frequent users of software, services, and technology and are emerging as an important user group [4]. They encounter and use software or technologies in their daily lives through, e.g., mobile phones to communicate, computer games for individual or collaborative entertainment, and educational technologies for learning [7].

As there is not a lot of literature available for the involvement of children throughout the whole development process of games (next to [7] or [10]), children are rarely involved. In order to meet their needs, an adequate consideration of them in the development process of technologies is necessary [1]. For game developers, it would thus be an advantage to work together with children to satisfy their range of desires and needs (e.g., [2], [11]) and not to see them only in the role of game consumers.

2　Objectives/Aims of the Workshop

The child-centered game development (CCGD) approaches [7] offer different ways to integrate children throughout the different phases of game design within the context of the school (i.e., analysis, conceptualization, design phases, prototyping/development and evaluation phase). Suitable HCI approaches from user-centered and participatory design, as well as educational principles and approaches, were used as a foundation. The CCGD approaches illustrate how to guide the involvement and participation of children aged 10 to 14 years in school classes within the development process of games. The children's ideation workshop for the design phase uses game progress storyboards and creative low-fidelity prototyping and aims at:

- enabling participatory design with children for a better game design;
- creating creative and tangible game prototypes of game ideas that provide game designers, as well as developers' insights about children's thoughts on possible game play, in order to better meet their expectations. This in turn should inspire the final game design.

3　Approaches for the Workshop

In the following game progress storyboards and creative low-fidelity prototyping, two CCGD approaches are described in more detail to provide a better understanding about these approaches for the application in the workshops. Afterwards, the requirements for conducting such a workshop are specified and an overview about the break-down of activities (steps) is given.

3.1　Game Progress Storyboards

Storyboards are typically used in the film industry for sketching or mocking up shots before they are actually filmed. They are also used for concept sketches or mock-ups of game levels (see [5], [8]). Game progress storyboards aim at illustrating or highlighting certain aspects within games (e.g., game play scenes). One advantage of using these types of storyboards is that they allow children to experiment with changes in the storyline of the game

and discuss, as well as describe, different outcomes (see Fig. 1 showing example of game menu design or [7]).
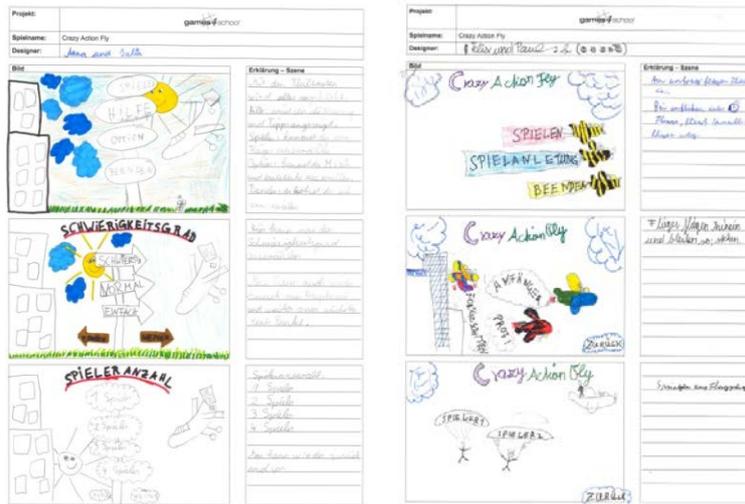
Fig. 1. Two examples of game progress storyboards illustrating parts of the game menu

3.2 Creative low-fidelity Prototyping

Creative low-fidelity prototypes can be built in groups of four to six children. They are sketchy, incomplete, and quickly built working models of game aspects. Druin [3] mentioned in her work that "*there is never a need to teach people how to prototype, since using basic art supplies comes naturally to the youngest and oldest design partners*". Nevertheless, children need a starting point for prototyping [9]. Therefore, this workshop starts with explaining the game idea and the creation of storyboards to illustrate a short sequence of interactions within the game to build the game prototype afterwards.

Similar to Knudtzon et al. [6] 'bags of stuff' approach, the children are provided with Playmais, Playdough, Lego, and other creative material to create the prototypes. The prototypes are used to illustrate parts of game levels (see Fig. 2) and re-enact scenes of the previously created game progress storyboard. Children can try out game procedures/mechanics and actively discover problems or challenges in the game play. For very complex game concepts, the low-fidelity prototypes might be problematic, as the implementa-

tion might be too difficult or simply impossible for children [7]. Therefore, the game idea should be easy to explain and understand, but also not too detailed in order to leave room for imagination (i.e., children should easily come up with design ideas for the game).
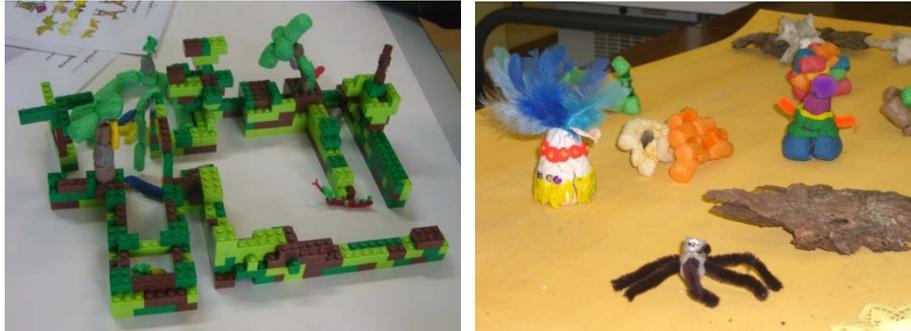
Fig. 2. Two examples of creative low-fidelity prototype illustrating parts of the game world

In the end, the creative low-fidelity prototypes are filmed while the children play the gaming sequence of the game progress storyboard for the others. For the filming, it is necessary that the children assign roles to each other, i.e., one director (storyteller), one or more players (moving the character), and artists moving around the other game elements. Afterwards, the other children can ask questions, make remarks, or improvement suggestions.

These videos can be used to envision the game ideas developed by the children for absent designers and developers [7]. The creative low-fidelity prototype videos provide insights about children's thoughts on possible game play, which can help to better meet their expectations about the game idea and thereby inspire the development process.

3.3   Requirements (Room Specification/Materials/Facilitators)

For the workshop, a multi-purpose room for the amount of children is needed, where tables for group work can be formed and the children can craft. Two people (i.e., the workshop lead and assistant) organize and conduct the workshop. The following materials have to be prepared in advance:

- Hand-outs with the game idea/concept
- Storyboard templates printed in A3 (black and white)
- Matt/Pasteboard and colors (e.g., water colors, acrylic paint or finger paint) for the ground of the game scene (paper to put on the ground and work coats might be useful as well)
- Playmais, Playdough, Lego, and other creative material (e.g., colored paper, felt, foam rubber, pipe cleaners, balloons, pearls, wood, shells, scissors, glue, colored pencil, felt pens or markers) to construct game elements
- Video camera and tripod for recording (an extension wire should also not be forgotten)

3.4 Breakdown of workshop activities

In order not to lose the motivation of children, each workshop should be split into steps/activities and questions or explanations should be prepared if possible unknown terminology is used. Furthermore, it is essential to give an introduction with clear instructions to reach the defined goal of the workshop. During the group work phases, there is also the need to provide ongoing support for each group. As soon as the children know what to do, they are very creative and develop many interesting game scenes. However, they sometimes also get lost in details. When working with children, it has also to be considered that they get bored faster than adults and, therefore, require variations [7].

The following table illustrates how the workshop should be broken down in single varying steps/activities. Activities highlighted in grey are either pre or post activities to be conducted by the organizers and are not included in the 120 minute duration of the workshop. For the different activities, there are timeframes dependent on the pre-experience of the workshop organizers (e.g., pre-experience with user-centered or participatory design approaches or pre-experience when working with children like organizing workshops), the amount of children involved, the complexity of the game idea, etc. Nevertheless, most of the time should be spent on creating the creative low-fidelity prototypes and nearly the same time together for the game progress storyboards and the final filming of the workshop outcome.

Table 1. Activities for the Workshop

Step	Time in Minutes	Activities
0.	5-10	• Prepare the multi-purpose room, i.e. arrange tables for group work of 4 to 6 children
1.	2-3	*Welcome and preparation* • Welcome the children to the workshop • Formation of groups of 4 to 6 children o Either let the children choose themselves or use creative techniques[1] o This should be done before the introduction, in order to let the children start work immediately afterwards and avoid troubles later on
2.	2-3	*Introduction to the workshop and goals* • Explain the steps of the workshop to the children (it is necessary to break down the workshop in workable and memorable steps) • Introduce and discuss the game idea with the children • Hand out a written version of the game concept to the groups
3.	15-20	*Create 1-2 pages of storyboards in the group to illustrate a game scene* • Explain the outcome of this step and what will happen afterwards • Handout 1-2 A3 pages of the storyboard template and different kind of pens to each group and explain that the scenes sketched on the left side should be described on the right side • Walk around from group to group and help them o Briefly discuss their storyboard with them to assure it goes along with the game idea and that they did not get stuck in details
4.	70-90	*Creation of creative low-fidelity prototype* • Explain the outcome of this step and what will happen afterwards • First hand out the matt/pasteboard and colors for the

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[1] www.planotes.org/documents/plan_01925.PDF

		ground to each group (this activity should not take longer than 10 minutes) • Afterwards, make a 5 to 10 minutes break and use to the time to put the matts away in order to let them dry • Next provide the other creative material on a table where the children are allowed to pick up what they need in order to create game elements (e.g., characters, obstacles, opponents or other game world elements) and return the rest not needed • Use the last 5-10 minutes to clean up (i.e. all unused creative material is brought back to the table it was provided)
5.	15-20	*Preparation for filming (study the scene of the storyboard)* • Explain the outcome of this step and what will happen afterwards • Put the game world ground (the matt/pasteboard) on the different tables and let the children place the other created materials on top of it (this should not take longer than 5 minutes) • Children should assign roles in the group: 1 director (storyteller), 1 or more player (moving the character) and the rest are artists moving around the other game elements o Help the children to assign roles, if this takes more than 2-3 minutes, in order to have enough time to study the play according to their storyboard • Let them practice the game scene from the storyboard according to the directors instructions
6.	10-15	*Filming (recording of the played gaming scene)* • Explain the outcome of this step and what will happen afterwards • Walk from group to group with the video camera and tripod • Let the children act their gaming scene, if necessary let them react parts of it • Meanwhile let the other children stand around the table, watch the play and ask questions afterwards, if there were obscurities
7.	5-10	*Closing* • Wrap-up the workshop

		• Ask children about their experiences
		• Summarize your own experiences and the outcome of the workshop
8.	30-90	• Edit recorded videos and provide them to the designers as well as developers

4   Outcomes of the Workshops

The objectives of the workshop, the expected outcome, and outcomes of previously conducted workshops are described in the following sections.

4.1   Objectives of workshops

The workshop should enable participatory design with children, i.e., children are enabled to develop about four different game play scenes for each game idea that will be prototyped by them. The outcomes of the workshop should provide the game designers and developers more insights about children's thoughts on possible game play (i.e., understanding) in order to better meet their expectations about game ideas when building games.

4.2   Expected outcomes of the workshops

The outcomes of the workshop should be different visualization of game ideas in form of game progress storyboards and creative low-fidelity game prototypes. Short narrative videos showing possible game play scenes to the game designers and developers should enable them to get a better under-standing and feeling of how children envision the game idea and what they expect from it. Additionally, they should inspire the final game design that game designers and developers develop and implement in a next step.

4.3 Outcomes of the conducted workshops

This toolkit was already successfully applied with 3 school classes in the Games4School Project[2]. This was the activity most loved by the children (among other workshops that were previously conducted with them). The videos enabled the game designers and developers (in this project master students) to get familiar with how children understand and envision the different game ideas. Together with the researchers, they decided how to prototype the games in order to best meet their expectations. The final design was greatly inspired by the provided the videos and creative low-fidelity prototypes. The children of the workshops were proud of their ideas included in the final game design and had a lot of fun while playing the game like others.

5 Conclusion

The need for child-centered design methods for game development is there. As the suggested approaches for the children's ideation workshops have already been successfully applied with children ages 10 to 14 years, the proposed workshop holds the potential for actively involving children in the development process of games with a win-win situation. On one hand, children are enabled to actively participate. On the other hand, game designers get insights regarding children's need and inspiration from the produced videos of the creative low-fidelity prototypes.

6 Acknowledgements

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[2] http://www.sparklingscience.at/de/projekte/508-games4school-wissenschafter-innen-entwickeln-spiele-mit-und-f-r-sch-ler-innen/ or
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