

GAME DESIGN WORKSHOPS FOR CHILDREN USING AN EXPERIMENTAL LEARNING SOFTWARE PROGRAM

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ABSTRACT

One of the most popular professions sought after by elementary school students is to become a game creator. However, there are few game development experience software and workshops made available for these young, aspiring creators. Existing game production experience software is limited to stage editors where blocks and enemies can be arranged freely. In this research, we created a software to understand the existence and significance of stage clear effects and sounds, etc. in addition, we examined the placing of blocks and enemies. We conducted workshops with over 70 elementary school students in order for them to gain the experience of creating games. As a result, over 90% of children answered: "Goal effect can make the game more fun," "Sound can make the game more fun," and "Changing the speed of the main character etc. can make the game more fun". It was shown that the game design workshops using our software was an effective way for children to learn the importance of different elements of the game and its effects on the player.

1. BACKGROUND

In Japan, becoming a "Game developer" has been ranked as one of the top career choices among primary school students in recent years. However, despite its rank, there are few places for young students to actually experience what it would be like to work in the profession. This is not to argue that efforts to teach students programming in their early school years do not exist. For example Yamato Toshizaku's study, "Proposed program of learning in elementary school using Scratch and WeDo"[1] works towards implementing compulsory programming education in future elementary schools, but there is little effort to reach game development at this time. "Game lecture using 'Mario Maker' for elementary school students who directly advises Nintendo's game creator is held [2]" provides an example of learning game production. However, "Mario Maker" is limited to stage editors where it is only possible to freely arrange blocks and enemies. In order to experience game production, software that helps designers understand the existence and significance of certain effects such as when clearing a level, sounds effects, etc. is necessary. In 2013 we presented "Elementary Gameducation: The attempt of

teaching the experience of making games at an elementary school"[3]. In the system of this paper, the designer can make free changes such as inserting blocks and enemies, system changes such as the presence or absence of clear effects and sounds for the players to experience what can make the game more fun". By using the tools of the system, the designer can also determine the game's difficulty, by making it harder or easier, which affects the game's fun factor. By doing so, they are able to learn how to create a good balance of difficulty.

2. PURPOSE

We created "Adventure Creator", an experimental learning software for game development aimed at children. It can help them understand the presence and importance of clear effects and sounds etc. In addition they can use the stage editor to place blocks and enemies freely. In order to check the usefulness of the workshops and software, we distributed questionnaire surveys, which were completed by participating children and visiting parents.

3. SIMILAR GAME PRODUCTION EXPERIENCE LEARNING SOFTWARE

The following part introduces some other learning software used for children's game production experience.

"Super Mario Maker"

Popular as a commercial product and its deep content. It allows the modification of "Aesthetics" element of blocks and enemies. There is a large amount of objects from the "Super Mario series", and no explanation is needed for them. It is a commercial product, software, hardware (wiiU) is necessary.

"Scratch"

A popular programming learning tool that is used worldwide. A combination of language blocks can be used to make it visually easy to understand programming. Regarding game design, implementation is possible, but you can not learn the necessity of the parts implemented and the parts that were not.

"Minecraft"

It is popular as a commercial product and its contents are deep. It is also used for educational purposes. A game where the player collects materials made out of voxels and creates objects. By defeating the boss, credits rolls, but since you cannot reach it unless you aim for it, you can basically play forever. It is different from a game experience software.

4. FEATURES OF “ADVENTURE CREATOR”

Figure 1 shows a comparison between "Adventure Creator" and "Super Mario Maker".

	"Adventure Creator"	"Super Mario Maker"
Game design factors	<ul style="list-style-type: none"> • Arrangement of blocks and enemies, etc. (Figure 2, 4) • Changing of sounds, effects and parameters • Easy to arrange visually (Figure 3) 	<ul style="list-style-type: none"> • Arrangement of blocks and enemies, etc. • Easy to arrange visually
Learning factors	<ul style="list-style-type: none"> • How the arrangement of blocks and enemies can make a game more fun • Changing sounds, effects and parameters can make a game more fun 	<ul style="list-style-type: none"> • How the arrangement of blocks and enemies can make a game more fun

Figure 1: Comparison of designing experience softwares

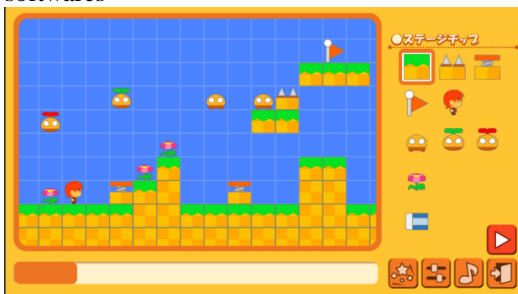


Figure 2: Stage editor screen



Figure 3: Sound setting screen



Figure 4: Play screen

5. EVALUATION

We conducted workshops using our software four times. (Figure 5) We also analyzed the questionnaire from the 74 children who participated in the workshops and from the 45 parents who came to observe. The results showed that more than 90% of the children found that "Goal effects can make the game more fun," "Sound can makes the game more fun," and " Changing moving speed etc. can make the game more fun". It was shown that game design workshop experience using our software wasan effective tool for children to learn about the different effects of game design elements. In addition, more than 80% of parents answered "I enjoyed watching the children having fun while learning using ‘Adventure Creator”".



Figure 5: Elementary school students playing

6. CONCLUSION

In the 4 workshops using "Adventure Creator" produced in this research, we were able to verify its usefulness as a software and as a tool for elementary school students to experience what it’s like to be a game creator.

REFERENCES

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