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Simulation of Child Care for First-time Father

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Abstract

In past patriarchal societies, childbearing was considered the sole possession of women. At a time when women were struggling to move into society, the concept of parenting as the mainstay of the capitalist economic society and the head of the family has naturally been taken for granted by a woman named "housewife." Since the role of male babies is as important as that of females, Fathers are trying to promote the importance of the effects of fathers due to active participation in childcare and help change old perceptions of the past. Men also know the importance of participating in childcare in early childhood, but often do not know what their children want or why they cry due to lack of basic child care knowledge and lack of education. We tried to give fathers the meaning of indirect experience and change their perception of parenting by producing interactive VR content, which is completed with dad's participation, so that they can experience the child in person. In addition, through familiar childcare professional product advertisement and 360 degree stereo sound. It is made to immerse in the game to gain persuasive effect, inducing fathers to have interest and interest in childrearing.

Keywords: *Child-Care, Baby, Father, Education, Interest*

1. Introduction

The importance of parents in the growth and development of infants is indeed great. Infants are at a critical time when the basis for human development is formed, and the early experience of this period affects the development of human life and forms the basis for development, so parents should provide the best environment [1]. In the past, father and mother were clearly divided into roles, but the change in social system made the distinction between father and mother ambiguous and the division of roles increased. The reason why children grow apart from fathers is due to the lack of interaction among fathers who fail to keep up with these changes. When a father actively participates in childcare, he or she can afford to recharge his or her mother, which has a positive effect on increasing sensitivity, one of the most important things when taking care of her child. Also, by taking care of the child, the father's confidence increases, which is good for

his psychological well-being, and the mother's relationship with the child becomes more intimate [2].

2. Theory

According to the Organization for Economic Cooperation and Development (OECD), Korean men spend 45 minutes on average daily childcare and household labor, ranking lowest after India, Japan, and China, while the gender imbalance remains serious [3]. The development of the Internet has created an environment that can be easily accessed by electronic devices and past generations who studied related books or who were taught parent-related knowledge. Content in the form of a single game can be learned anytime, with little time to spare time. According to the Child Care Policy Institute, the longer a father participates in parenting, the more expressive his or her children have, and the more positive social interactions with pro-social behavior [4]. Although it is not possible to provide a perfect solution to many problems, it is meaningful in its own right as it can improve existing problems by making game contents to lower entry barriers for children and by making changes in perception through indirect learning.

3. Experiments

The baby expresses his demands by crying. Crying for weeks after birth is the only way to express it. Babies often cry because they are hungry, but sometimes when they are uncomfortable, lonely, or bored. A baby-career, like a mother, will soon learn to distinguish between the tears of other babies, depending on the situation. But sometimes the baby breaks into a cry that doesn't. It is very important to respond quickly to the baby's cry. The longer the baby rings, the more painful the baby is. That makes it harder to determine the cause of anxiety. An experienced baby who has been ignored when crying is likely to grow up to become an indifferent person [5]. As such, it is easy to turn a small problem into a big one without knowing what will happen if a guardian is off guard for a moment. Moreover, pre-care knowledge is not an option but an indispensable factor, as it is a matter that is directly related to human life. Playing or interacting with a dad stimulates the development of a logical and rational left hemisphere. A child who did not play well with his father as an infant had low levels of sensory exercise, an early stage of intellectual development. It proves that a father has had a huge impact on a child's development of intelligence since he was a year old [6]. While it is best to let users forget that they are for educational purposes and engage themselves with the idea of a game, it is not easy to make all learning activities look like normal game play. Game rules are an element that cannot be overlooked because they are not just about the interest of the game but also about the inner motivation of the game. This is why it is necessary for users to determine their own right and wrong in a variety of ways rather than in a straight line of motion as intended by the manufacturer. The biggest reason for lack of motivation is not the user's problem, but the lack of fun in games. It is a mobile-based childcare game produced by 'Food and Food'. If the reserve fund is accumulated by watching advertisements, videos, and other games, the company can exchange the money with a gift card or purchase goods at a shopping mall, and cash it. Items needed for childcare activities should be purchased at the store, which consists of five levels. They are not stereotyped because they can raise their children according to their own preferences. Game money is provided if childcare activities are carried out within a set time range, and game money can be exchanged for a point or discount coupon at the mall. As the baby's health and happiness level are displayed, new clothes can be worn if experience is accumulated. However, 'My Little Baby' is not out of the box of mobile service contents. The typical 2D design, fixed point, and Haptic control interface focus on acquiring gift certificates rather than presenting new methods of parenting.

In response, the author mentioned the advantages of "My Little Baby" and used three-dimensional sound that

amplifies VR's 360 degree space and its sense of space, and increased user participation and freedom by using first person time. Instead of simply clicking on items and adding sound, the company has given the user an active role by looking for items that can solve problems directly at a given time. This VR childcare simulation is an interactive content that focuses on the completion of daddy's participation unlike previous childcare games.

Figure 1. My Little Baby Game Screen 1

Table 1. In-game PPL List

Brand	Product
Covidien/Medtronic	Diaper
Samsung	Smart Phone
Sony	Portable Game Player
Tsingtao	Beer
Born Free	Baby Bottle
Apple	Laptop Computer
Commonwealth	Doll
Nestle	Milk Powder

3.1 Hand gesture interaction

When choosing a target, one of the visceral movements a person has at birth would be a grasping movement. Since humans have evolved into hands, using hands can be the most convenient means of interaction for humans. Recent studies are also using the hands as a whole. It is easy to learn to use your entire hand when you are interacting with a finger gesture or compared to using two fingers when performing a selection. That's why using the whole hand has the advantage of interaction applications and a well-realized approach to grasping enables natural learning in a virtual environment [7]. Current interactions should be accessible to the user to use a large number of hand-held touches, but need not maintain a distance that the motion sensor can recognize. This has the advantage of playing more flexibly regardless of viewing angle as the size of the display becomes larger.

Table 2. In-game PPL List Differences from traditional games

Existing parenting game	Simulation of Child Care
General Sound	360-degree Stereosound
3D 1st person time	3D VR 1st person time
an intuitive movement	free movement
No specific target	Complete with Daddy's participation
No Obstacles	Obstacle
No invalid objects	Invalid objects
No PPL	Persuasive effect with PPL
Distance and field of view limited by use of use	Motion sensor enables no distance, no field of view

3.2 Prototype Fabrication

The childcare simulation is set in the home, and is a way for the user to find and solve problems whenever the baby character in bed cries. As digital games became common, they began to be recognized as one of the media. As a result, education has become more intense in its attempts to use games as media to improve learning effectiveness, and games as education have become a type of functional game and are gaining attention. Functional games as education are developed with the aim of improving the effectiveness of learning through fun activities called games. Games are obviously polar media that induce voluntary participation and perform excellent functions in inducing immersion [8].

Figure 2. Childcare Simulation Game Screen

Table 3. Item List

Item	Conformity
Dried milk	O
Diaper	O
Medicine	O
Toy	O
Hamburger	X
Soda	X
Tea	X
Hangover solver	X
Energy drink	X

While moving freely around the house, the character must find and use the corresponding object for each cry when hungry, sick, or sleepy over objects such as diapers, bottles, medicine bottles, mobiles, and toys to stop the baby from crying. The classification of baby crying so far does not make clear the distinction between drowsy and burping crying [9]. Therefore, similar cries were found and implemented. Even if the crying stops, it begins to cry again after a certain amount of time, and each time the user has to find objects placed in different places as quickly as possible and comfort the baby. Every time these problems are solved, childcare-related knowledge is pop up through the UI interface. If a user takes an object incorrectly, the cry sound decibels will be raised and a warning UI will pop up. Rather than simply taking passive movements, users can think and move, reducing linear movements, increasing difficulty, and adding sound to actions to make them feel real. PPLs are not simply limited to dramas or movies, but are expanding into a variety of fields. PPLs through games are increasingly important because they can induce a higher sensory input from the acceptor side than conventional movies or TV media, thereby strengthening the bond between products and consumers, and continuously controlling exposure times and exposure times to specific targets [10]. However, excessive PPLs are counterproductive. This is because products that are not related to contents prevent users from entering the market. In order for ads in the game to be successful, user analysis according to the game type is necessary and necessary advertising according to user class orientation should be properly posted [11]. Since childcare simulation is a background game in the home, most PPLs have deployed commonly used products. Using laptops, dolls and smart phones, which are commonly used in the home market, people can play naturally without disturbing the user's entry. Press the UI Virtual Play button to start the game.
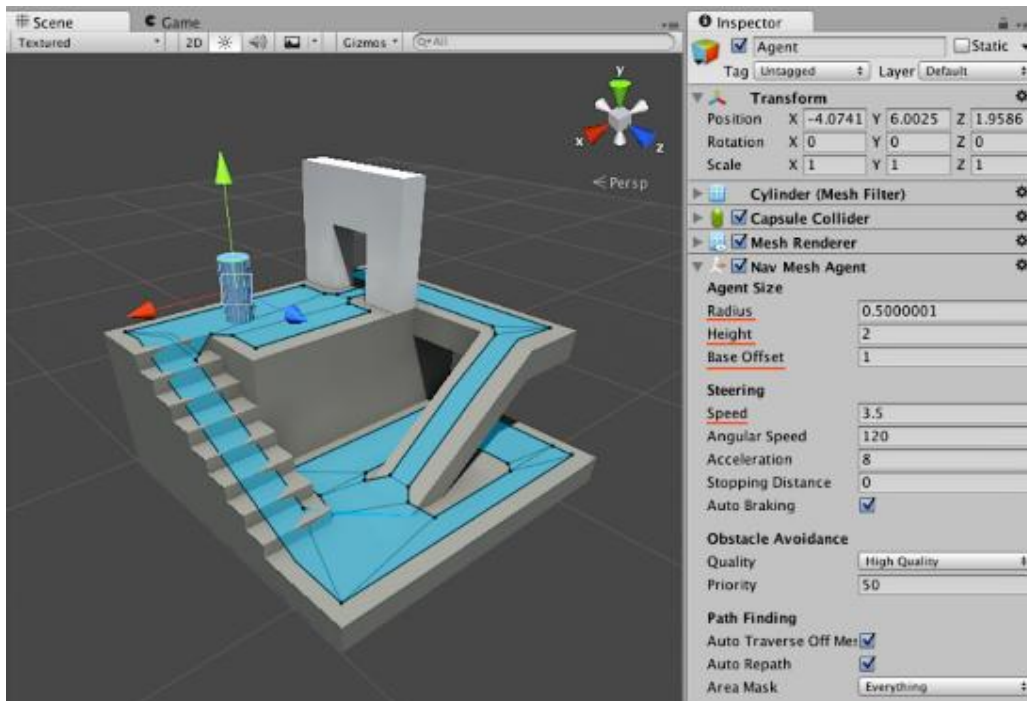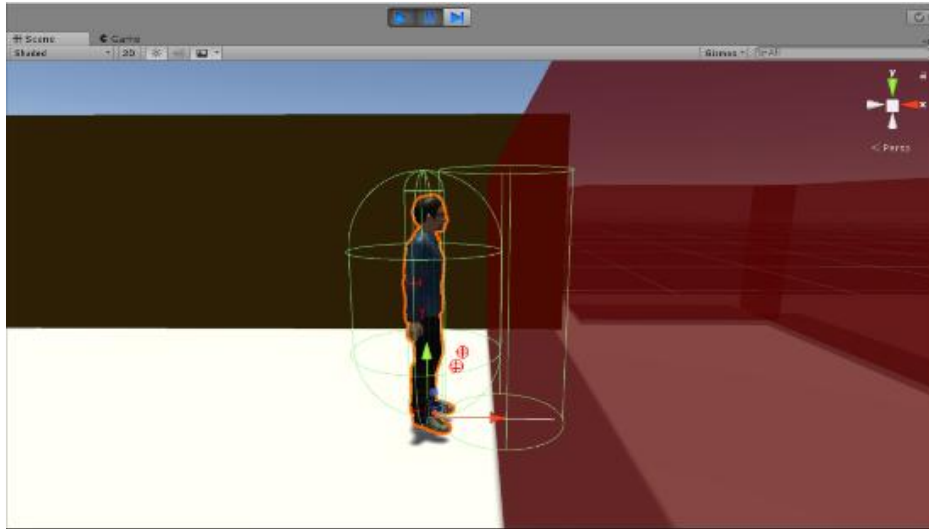
Figure 3. UI Interface

Figure 4. Part of the House

Figure 5. Nav Mesh Agent Application Part

It's the inside of the house where the game is set. A narrow house makes it easier to find objects, resulting in reduced difficulty and direct user movement. Because of this, a larger space than the actual majority of homes has been set up using the Nav Mesh Agent,

**Figure 6. The object in a game**

They are objects that will appease the baby and model it as 3D Maya to enhance the sense of reality by applying textures. From a first-person point of view, users should find and bring back contextual objects whenever babies cry. At the same time, he should fill the gauge himself so that the game does not end. Objects are randomly placed in a designated location, found and picked up by hand, adding familiar pleasure to the sound of advertising. When you bring the correct object to the baby, the small but important tips related to child care are randomly displayed in the corner of the screen. He intentionally set objects that his father frequently uses, such as beer bottles, game consoles, and laptops, as obstacles, so that if a collision is detected, the player's speed will significantly slow down, reducing the user's passive and straight movements

and increasing difficulty. It also added sound to the sound of footsteps and other actions to make them feel real.

Table 4. Obstacle List

Obstacle List
Beer
Smart Phone
Laptop Computer
Portable Game Player
News Paper
Laundry

If Dad's energy is not filled within the time limit, the game is over. In order for the user to continue the game, he or she needs to comfort the child while also replenishing his or her energy.
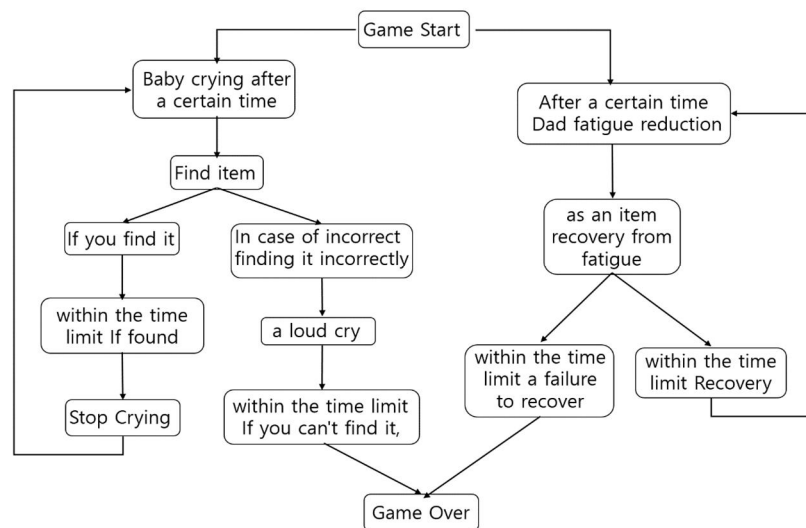
Figure 7. Childcare simulation diagram

4. Conclusion

The childcare simulation focused on fathers who were not familiar with childcare, giving them a more in-depth approach than previously released parenting content. By adding detailed elements, realism, and freedom, users can enjoy fun and interest without being bored by referring to the existing contents and related papers. Its advantage is that it has short play time and limited time and space due to its use of motion sensors. Fathers feel a sense of responsibility as the head of a child is born. This is a different level of responsibility than what you feel when you get married. Children learn and copy every little thing their parents say, and have a great influence on their growing up children. The father will not only take care of the child, but will also be an opportunity to look back on himself and mature. This is also consistent with the meaning and recognition changes of indirect participation, which is the purpose of developing content.

The study on the classification of baby crying sounds in content has now been developed to 95% of the applications involved, but the study is not yet complete. Motion recognition systems and in-game details also have room for development, and to supplement them, research and program improvements on parents and babies will need to be continued.

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