



Development of Gesture Recognition Education Game for Elementary School Students Personality Education

Sunghee Hong^{1,2(✉)} and Eunhye Kim²

¹ Major in Human Art & Technology, Morden Dance, Shinhan University,
Uijeongbu-si, Republic of Korea
hongsungh22@hanmail.net

² Major in Dance Sports, Department of Faculty of Liberal Arts, Shinhan University,
Uijeongbu-si, Republic of Korea
gracedance@hanmail.net

Abstract. The purpose of this study is to develop a game of education for children. By experiencing personality education game, participants respect their parents and learn to give consideration to their friends. Elementary school children feel joy when they can help a hard friend, and they are rewarding for themselves. But not all of the children who participated did it in a polite and polite way. A child who was proud of his polite behavior was very fond of writing it in his personality notebook. It is a difficult learning method to form good relationship with good behavior and friends while learning children's textbooks. Gesture recognition-based interface is a game that allows children to learn actively. It is an effective game tool that can be actively used to record daily action contents in a notebook. The game is divided into three types and it is done in 18 ways. The game is conducted in random form with a total of 100 points for 5 min with the narrator's explanation. Game music is used for children's songs. The game is the result obtained after the local governments of Korea. The behavior of the children depends on the animated picture problem. When they agree with the correct answer, as a means of complimenting audiovisual feedback, and they get a score for correct behavior. In cognitive learning that used this game, children were interested in the active behavior of their image on TV, and they were more interesting than teaching classes in traditional classrooms and actively engaged in learning classes. Children are interested, It's a good learning tool to raise awareness.

Keywords: Personality education · Seonbi-spirit practice manual
Gesture-based interface · Kinect

1 Introduction

Educational methods of personality education are meaningful for children to actively participate and practice. The personality education which is practiced by the Seonbi, known as virtuous scholar, spirit of Korean traditional culture is divided into 6 kinds. Personality education should be made so that children can act and decide by themselves

in daily life habits, but it is not easy to do so. Therefore, this study was developed as an educational game to help children learn the personality education in their own using Kinect and motion image. It is the outcome of behaviors that children think in intellectual and moral aspects, such as personality education, and those outcome should be carried out by children in natural way. Educational games allow students to learn through the methods of beneficial games that they can learn through self-directed learning, so that they can carry out their habit of practicing themselves in daily life. Children need to have basic learning knowledge about personality education, so they can get higher score in game. The effort for learning becomes a factor of challenge and conflict. The more children immerse in the game, the higher the concentration and the higher the score. You can compare the score difference in scores and records in the game.

In the case of existing educational edutainment games, only the amusing part is emphasized, and necessary for learning is developed in accordance with commercial intention. It is difficult for adults in reality to have basic courtesy, consideration, humility and politeness in daily life, and finally to practice justice. The situation in this reality will be more difficult for children. Personality education game is a learning education for children to instinctively express and execute in reality. The purpose of this study is to help children actively learn gesture through physical body in relation with school, family and friends through the game of personality education game.


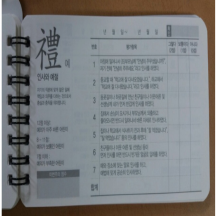
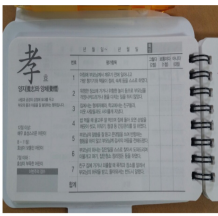
2 Educational Gesture Recognition Game Using KINECT

The KINECT used in this study uses the gestures of the hands and feet of the body without a separate controller such as a keyboard, mouse, or joystick. In the game, the child proceeds with the description of the game on the TV screen after the child selects the progress of the game. By using the motion image and the computer graphic screen with the camera, the correct answers are obtained by moving, typing, greeting, using hands or feet to the correct answer item in the presentation screen for each question. In the game, it proceeds by moving the body along the image of the computer graphic screen. Use Kinect's camera to let the participant's moving gesture appear on the game screen. This makes it easier to use the chromakey technique with Kinect. The purpose of this study is to practice the personality education behaviors learned through the content of study in children's daily life activities.

3 Game Program Scheme

The contents of education used in personality education were the 'Personality Education Practice Manual' which was enacted in Korea as 'Personality Education Promotion Act'. There are 18 ways to classify the game into three categories as "Anja Yookhun" of Oriental Humanistic Spirit of Ancient Teacher (1243), <Hyo, Choong> <Ye, Shin>, <Kyung, Seong>. The learned activities of the game in daily life are confirmed by the child to write in the 'self-examination notebook' (see Table 1). The game items (from 1 point to 5 points) checked in the notebook are recorded as scores.

Table 1. “Seonbi Spirit Manual” self examination handbook (Cover, Underprint)

Cover	One of the underprint	One of the underprint
		

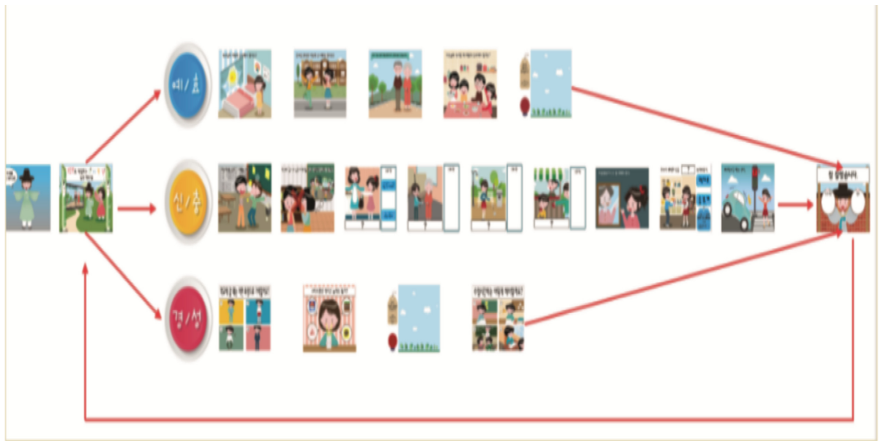
For the active participation of children, it is necessary to generate interest. The participants, children, enjoyed the game with exciting Korean traditional music. The back screen shows the scene of the computer graphics screen drawn with the children differently as the game proceed.

The first screen is the screen of “Seonbi Spirit Manual” (see Table 2). The screen prompted the child to select the type of game. Whenever the correct answers are met, feedback is given to the “success” hearing. There are three categories of games and 18 methods are used (see Table 3). It gives 5 min to play once. After 5 min of progress, the result is given as a score. The result shows all the scores with the words “I did it very well” and I hear the exciting music with auditory feedback, and it shows on the screen how many as the total score. There is no difficulty depending on the level of the game.

Table 2. Screen shots of personality education game.

Start Screen	On-going	Result
		

Table 3. Content composition and total of 18 activity images



4 Children’s Learning Courses in Personality Education Field

The personality education game designed in this study was conducted once a week for six months and it was subject to lower grades in 5 elementary schools of Yeongju city, Gyeongbuk province SOUTH KOREA. The chromakey technique, along with the graphic display using Kinect, is very useful for attracting children’s interest

The rules of the game are to move the body to get the correct answer, or to move the hands and feet to move the correct answer and avoid the wrong answer. Not only does it challenge the intellectual challenges of learning, but it also involves physical challenges, and it also requires the agility of the gestures of the fast-moving players. Sometimes it is necessary to make a decision on the answer every moment. There is no game difficulty and level, but it requires shortening the time to get score. Along with the animation effect, the composition of the story of the game led to the success of the learning and made it possible to execute immediately in lifestyle habits. This is a learning scene where you move the body to avoid wrong answers (see Table 4).

Unlike the method of learning personality education by sitting in front of the existing classroom desk, personality education learning using game gesture in the field showed the following personality to children. The child enjoyed the appearance on the TV screen using the chroma key effect. Children began to engage harder to gain higher scores through the game, as well as to motivate learning, sensing hearing feedback and score increases in the way the body moves and gestures. The gesture appeared to be a game of using the body rather than using hands and feet.

Especially, the children were more interested in the motivation for correct personality learning in real life as well as the increase of the scores recorded in the personality education handbook. The children were not hesitant in their role to greet their parents, their superiors (bowing their heads), their brothers, the consideration of their friends,

Table 4. The place where the training is conducted by the participants

and their role in helping the hard work. It can be proved that games are possible alternatives to tools of traditional learning, and it is also consistent with the claim that it results in the same learning as traditional education.

Acknowledgement. The study was funded by the National Research Foundation of Korea (NRF) grant funded by the Ministry of Science and Technology (ICT & Future Planning). It is a private-led project and is being supported by local governments. It is a research and development (R & D) program for science and technology humanities research (1460-20170220).

References

1. Lee, E., Liu, X., Zhang, X.: Xdigit: an arithmetic Kinect game to enhance math learning experience. Retrieved 14 Feb 2013
2. Kim, N.: Designing Interactive storytelling game in location-based entertainment. *J. Korean Soc. Comput. Game* **23**, 227–236 (2012)
3. Freeman, S., Eddy, S.L., McDonough, M., Smith, M.K., Okoroafor, N., Jordt, H., Wenderoth, M.P.: Active learning increases student performance in science, engineering, and mathematics. *Proc. Natl. Acad. Sci.* **111**, 8410–8415 (2014)
4. Miles, H.C., Pop, S.R., Watt, S.J., Lawrence, G.P., John, N.W.: A review of virtual environments for training in ball sports. *Comput. Graph.* **36**, 714–726 (2012)

5. Taylor, P.: Transformative steam education for the 21st century. In: Proceedings of the Australian Conference on Science and Mathematics Education (formerly UniServe Science Conference) (2016)
6. Presnky, M.: The motivation of game play: the real twenty-first century earning revolution. On the Horizon 10.1, form (2014). <http://www.marcprensky.com/writing/>