두리누리 - 미취학 아동과 부모 간의 원격 의사소통을 위한 디자인

Doori Noori - Designing for Non Co-located Communication Between Working Parents and their Preschoolers

레예스 마리아

KAIST 산업디자인학과

석 다니엘

KAIST 산업디자인학과

배석형

KAIST 산업디자인학과

Reyes Castro, Maria Jose

Dept. of Industrial Design, KAIST

Saakes, Daniel

Dept. of Industrial Design, KAIST

Bae, Seok-hyung

Dept. of Industrial Design, KAIST

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1. Abstract

Households with dual incomes are increasing. Parents from this type of household rely on a guardian or daycare center to care for their preschool-aged children while they are at work. As a result, parents and their children spend little time together during the weekdays. Yet, parents and children want to feel emotionally connected even though they are non co-located. In this paper we introduce Doori Noori (Figure 1), an electronic postal system to be used by preschoolers and their parents.
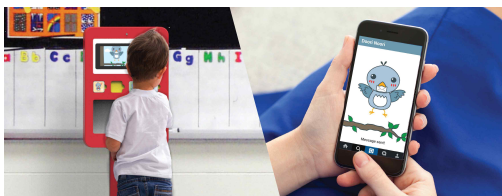
[Figure 1] Doori Noori is a system meant to be used while the child is at preschool (left) and the parent is at work (right).

2. Introduction

Parents of dual-income families with children between the ages two and five choose to leave their children under the care of preschools or child care centers, which results in a decrease of contact time. Insufficient contact time evokes feelings of worry about the other from both parties. Moreover, conventional ways of communication such as cellphones, personal computers (PCs) or tablet PCs are not an option for children of such a young age.

A number of devices specialized in parents-preschooler communication have been developed. Devices such as Onigiri Machine [Lee], Globetoddler [Modlitba et al.], Toaster [Raffle et al.] and Sharetable [Yarosh et al.] permit communication through photos, audiovisuals or other interactive activities while the parents are at work and their child is at home.   Still, there remains a need for establishing effective communication between working parents at work and their children at preschool.

In this paper, we present the design of an electronic postal service system to be used by parents and their children of preschool age. This system includes a physical device with its integrated software and a mobile application. This design allows the exchange of postcards with photographs for remote non-real time communication in the work and preschool settings.

3. Related Works

Several works have been done in order to solve the issue of communication at a distance between parents and their children. Onigiri Machine [Lee] has shown a need for a clever way for working parents to know and emotionally connect with their children. Devices like Toaster [Raffle et al.] emphasizes the need for reciprocal communication between children and their family. Sharetable [Yarosh et al.] and Globetoddler [Modlitba et al.] focus on the need of tangible elements from the child perspective in reciprocal communication, in order to keep them engaged with the system for long-term use.

Nevertheless, previous works do not consider that preschoolers spend most of the day at a daycare and that working parents are busy while at work and therefore need an efficient way of communication.

4. Formative Study

Individual interviews were held with four parents in an attempt to understand the everyday problems of working parents of preschoolers. The parents in the interviews expressed a big desire to communicate with their children, but they also showed hesitation towards providing electronic devices to their young children to do so.

A group interview session was conducted at KAIST Eorin-ijib (KAIST Preschool) with the director as well as a teacher and a parent. From this interview, we mustered details related to the placement and safety of the device, the role of the teacher in the system and considerations regarding the different age groups in the daycare.

A survey was administered to 24 families whose children are currently enrolled at KAIST Preschool. From the survey we tried to corroborate certain aspects about the daily-to-day life of the families and also we tried to get the parents thoughts and reflections about different proposed methods the device will use for connecting them with their children.

5. Design

The system was designed based on nonverbal reciprocal communication, since both the child and the parent preferred it that way as opposed to verbal and/or non-reciprocal communication. In the family surveys, both parties said that a feeling of relief can be achieved by looking at each other's faces. As such, the system works as an electronic postal service where parents and children can exchange postcards with their pictures on them.

For the children there are tangible elements involved in the process (Figure 1). Previous researches have shown that children prefer tangible interactions as it stimulates them to maintain interaction for a long-term. The parents would communicate through the application on their phone or PCs, which have been reported as convenient method for parents from the individual interviews. Also, in the family surveys, parents reported that one message per a day is enough and it is hard for them to reply multiple times because of their work. To support their situation, the communication system let parents and teachers to schedule regular times to send and receive the message.

On the scheduled time, the teacher will distribute a name tag to each child with the sender's (the child) and the receiver's (the parent) information. As shown in Figure 2, they will place the name tag in the green slot and trigger the process. A character named Beedoo will guide the children through the process. Younger children may need assistance from the teacher. The child will take pictures with the embedded camera and decide which picture to send. The child will select a stamp from the four options: love, hug, kiss, and hello (Figure 2); in order to complete the process. After the stamp is placed on the yellow slot, the message will be sent to the corresponding parent, and the parents will receive the message on the app.
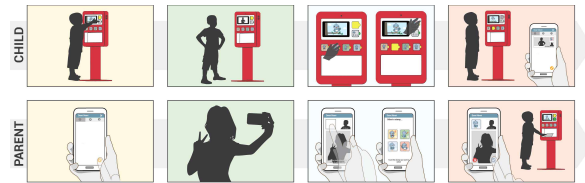
[Figure 2] Scenario of the usage of the system.

Once the parents receive the message, they can send a reply. The parent will take a picture, select a favorite stamp through the application, and send the message to their child. The device at the preschool will print the postcard on A6-sized photo paper. The postcard contains the picture and stamp as well as a picture of the receiver, which would help the teacher to find the child to give the message.

6. Evaluation

A usability test was conducted with two preschoolers and their mother. The participants were given a short introduction about the system and asked to use it, the session was recorded by video. The test was conducted at the home of the children instead of the preschool because the test was held in order to evaluate the simplicity of the system, in which case the place of usage is not relevant.

7. Future Work and Conclusion

With Doori Noori, we tackled non co-located communication between parents at work and their children at preschool. As a result from our research, the main criteria for the system was simplicity and convenience, as well as possessing tangible elements from the child'ss side. Future research opportunities include topics such as studying the effectiveness of different methods of non-verbal communication for children. In addition, applying such type of communication to other contexts.

We presented a design which functions as an electronic postal service. We expect this device to contribute to the increase of reciprocal, one-to-one communication of working parents while at work and their children at preschool.

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