Investigation of Computer-Aided Instruction for Use with Infants and Young Children

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POSTER ABSTRACT

While the methods of teaching infants and very young children to read and do mathematics are becoming increasingly popular, these methods are becoming increasingly outdated and may not work as effectively in this changing world. There are several advantages in using computer-assisted instruction (CAI) for older children and adults [1,3], therefore advantages may exist for using CAI in teaching infants and very young children as well. It also has been shown that it is viewed as a positive experience [4], and that it is suitable for individual learning needs [5]. However, Kulik and Kulik concluded that more well-designed research is needed before any real conclusions about the effectiveness of CAI can be draw [7]. Blecha list common design problems with CAI software: tedious keystrokes, unnecessarily repetitive operations, software that is difficult to use, and minimal pedagogical value of programs that hide the inner workings of models [2]. Harrington concludes that CAI programs lack any advantages over printed materials and do not take advantage of the feedback potential of computers [6]. We intend to investigate these advantages through our research and intend to answer the following questions:

- In what ways can a computer provide advantages for the process of teaching infants or small children that traditional methods cannot?

- Existing technologies for teaching infants on the computer are still based primarily on methods used with physical materials, with only slight modifications. In what ways could they be improved to better utilize the unique properties and abilities of computer software and hardware?

- Are there any non-traditional input-output methods or other hardware considerations that might be of better use for teaching infants or small children in the household?

- What advantages could direct interaction between the child and the computer provide?

- What advantages could CAI provide for the parents in teaching young children as well?

In order to answer these questions, we will conduct research to gain information on the household domain and parent users, or those that are implementing the traditional methods and the existing computer methods, in terms of environment, tasks, usability, usefulness, and effectiveness. We will also explore what novel methods exist and how they are being used in CAI. Based on this preliminary field study, we will design and develop interactive software that will utilize traditional and novel methods for teaching small children. In addition, we will explore a few hardware alternatives that might lend themselves for better use in the household domain and with small children than a traditional personal computer. We intend to conduct an evaluation on our hardware and software solutions. We hope to gain direct feedback from parent volunteers using our system and compare that with the systems they are currently using. This project is currently a work-in-progress for a Senior Honor's Project and any ideas or suggestions for this work are welcomed.

1. REFERENCES

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