CoWriter : Two case Studies

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ABSTRACT

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Keywords

robot-supported educative activitiy, handwriting learning, learning by teaching

1. INTRODUCTION

2. THE COWRITER ACTIVITY

2.1 Children teach handwriting to the robot

2.2 Our approach

2.3 Learning and generating letters

2.4 robotic implementation

3. CASE 1 : DIEGO

3.1 Context

Diego is a five years old child. Her mother told us he had difficulties to learn writing at school, particulary in drawing cursive letters. Before experiments, she provided us with a homework of Diego to show explicitly his handrwiting level (fig).

From our perspective, Diego is shy and quiet. He suffers from a poor self-esteam much more than any actual trouble in writing.

3.2 Questions

The CoWriter activity needs a child engaged as interaction leader. In this study we consider the problem of long-term interactions : is it possible to sustain this engagement over several one-hour sessions ?

3.3 Experimental settings

The experiment took place in our laboratory. Our goal was to figure out an environment in order to make Diego sustaining engagement over four sessions of one hour, one session per week. We decided to introduce an appealing scenario that justifyed to the child the activity where a robot wants to learn handwriting. We used two Nao robots : a blue one (called Mimi) and an orange one (called Clem). Mimi was away for a scientific mission, and the two robots had to communicate by mails. But they decided to do it "like humans", with handwritten messages. While Mimi was good in handwriting, Clem had strong difficulties and needed the help of Diego.

The mission of Mimi consisted in the exploration of a mysterious hidden base. Each week, just before the session, it was sending a postal mail contening a picture, a curious object it found and a few handwritten words about its discoveries. The pictures was representing itself exploring a dark room of the hidden base (that was actually our laboratory's workshop). The objects where 3D printed. In fact, there where puzzle pieces of a small 3D model of Nao robot but regarding them one by one, it was not easy to guess it.

During the three first session, Clem (the other robot) was waiting for Diego with the recieved mail. It let Diego take a look to the picture and the object, and then it asked him to read the message. Finaly, Diego figured out a response and helped the robot to write it.

The fourth and last session was set as a test: Mimi, the "explorer" robot, had come back from its mission and it actually challenged Clem in front of Diego: *"I don't believe you wrote yourself these nice letters that I received! Prove it to me by writing something in front of me!"* This situation was meant to evidence the Protégé effect: by judging the other robot's handwriting, Mimi would implicitly judge Diego's skills as teacher, and in turn, Diego's handwriting.

3.4 Results

4. CASE 2 : HENRY

Description of experiments & results with Diego

4.1 Experiment design

4.2 Results

5. DISCUSSION

6. CONCLUSIONS