Varied Human-Like Gestures for Social Robots: Investigating the Effects on Children's Engagement and Language Learning

Original paper by J. de Wit, E. Krahmer, A. Brandse, P. Vogt

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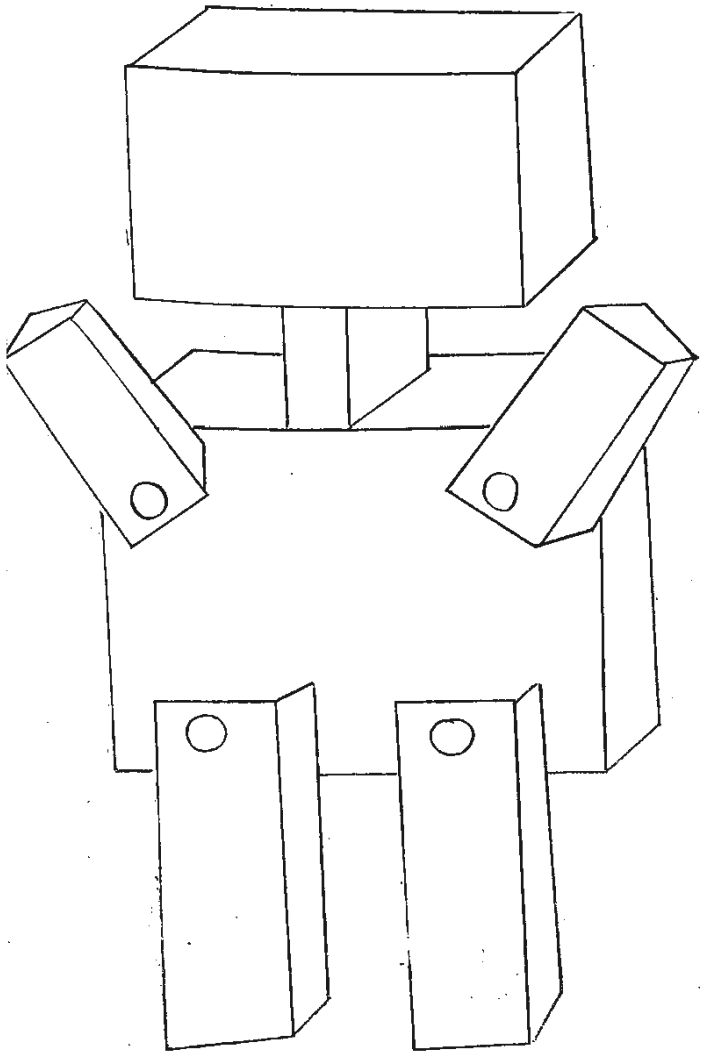

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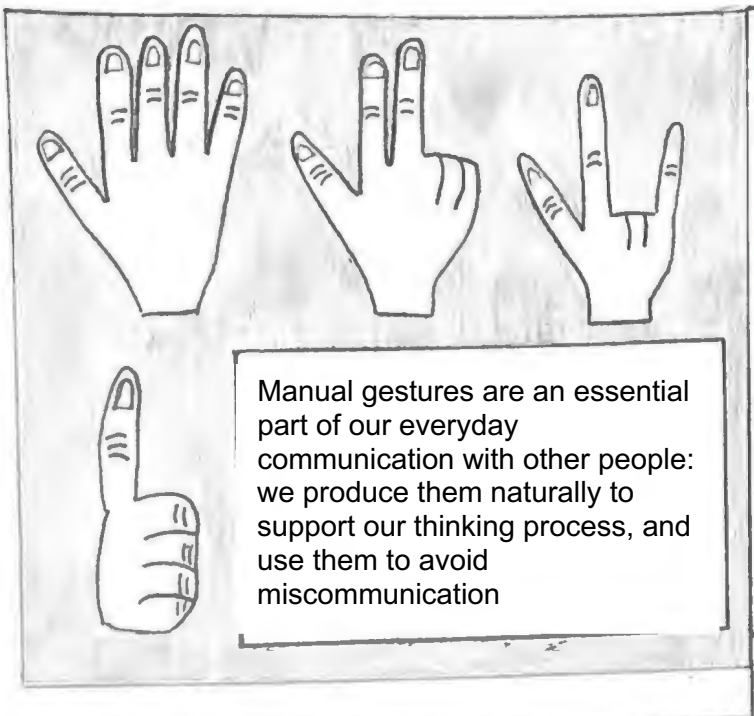
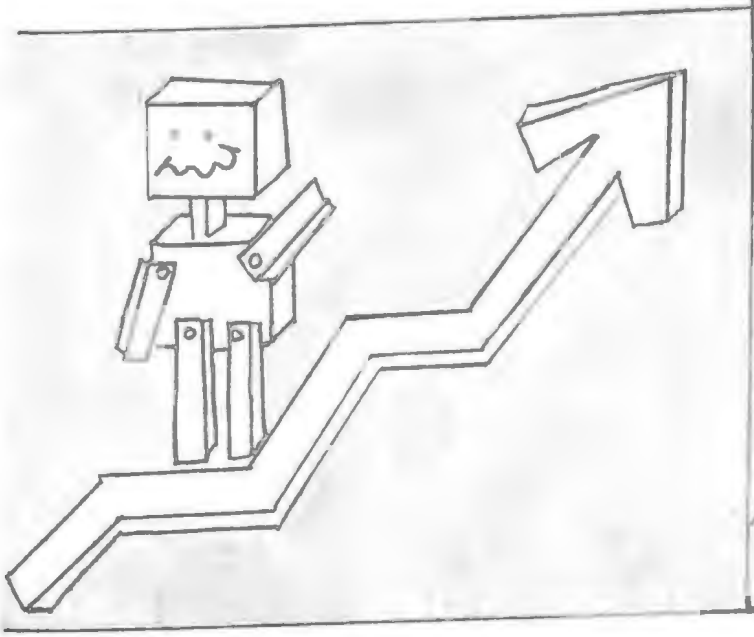
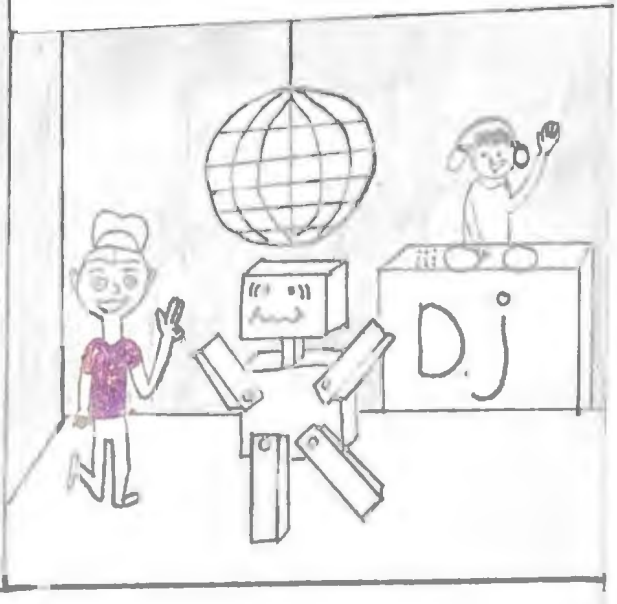
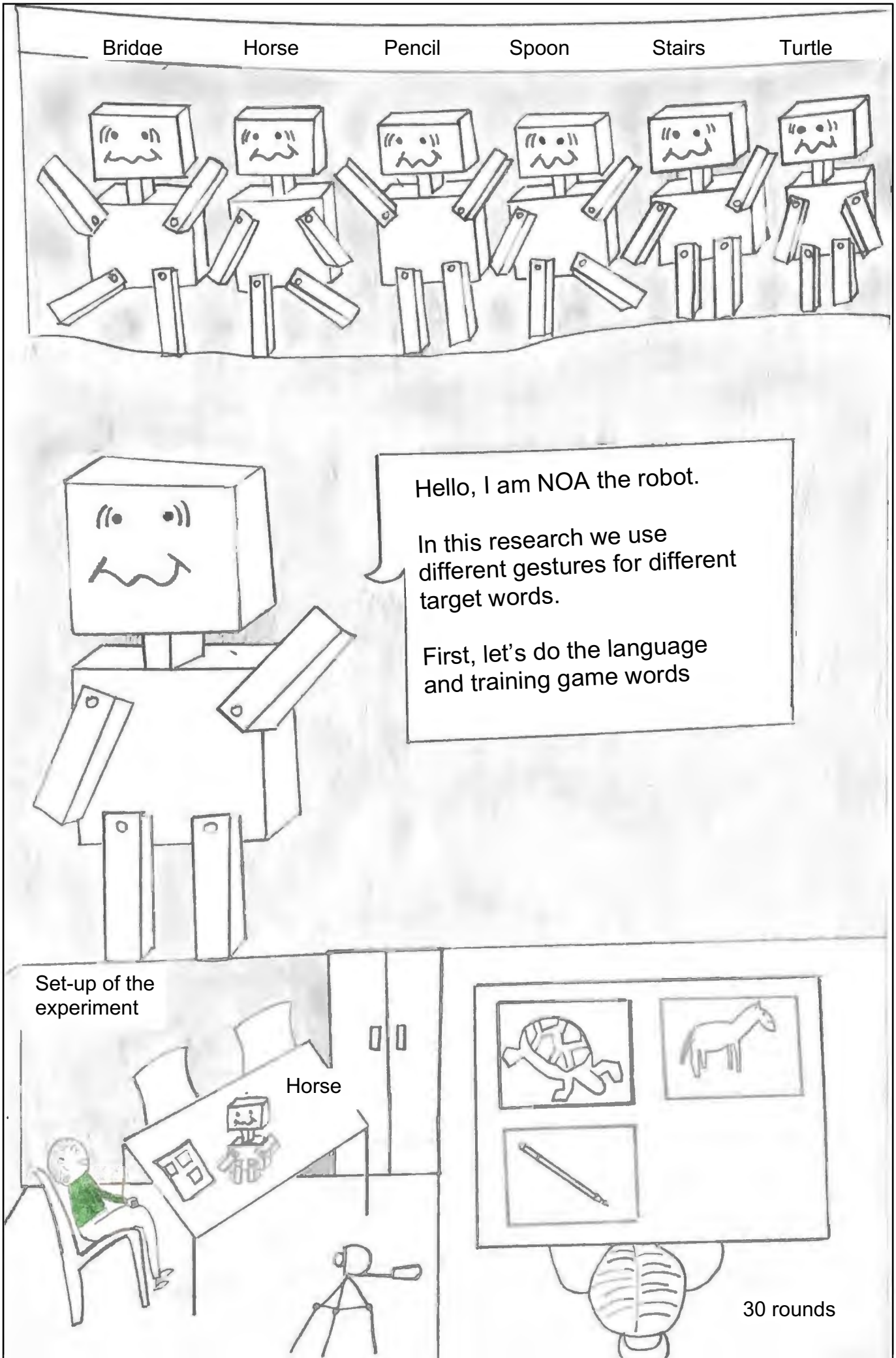


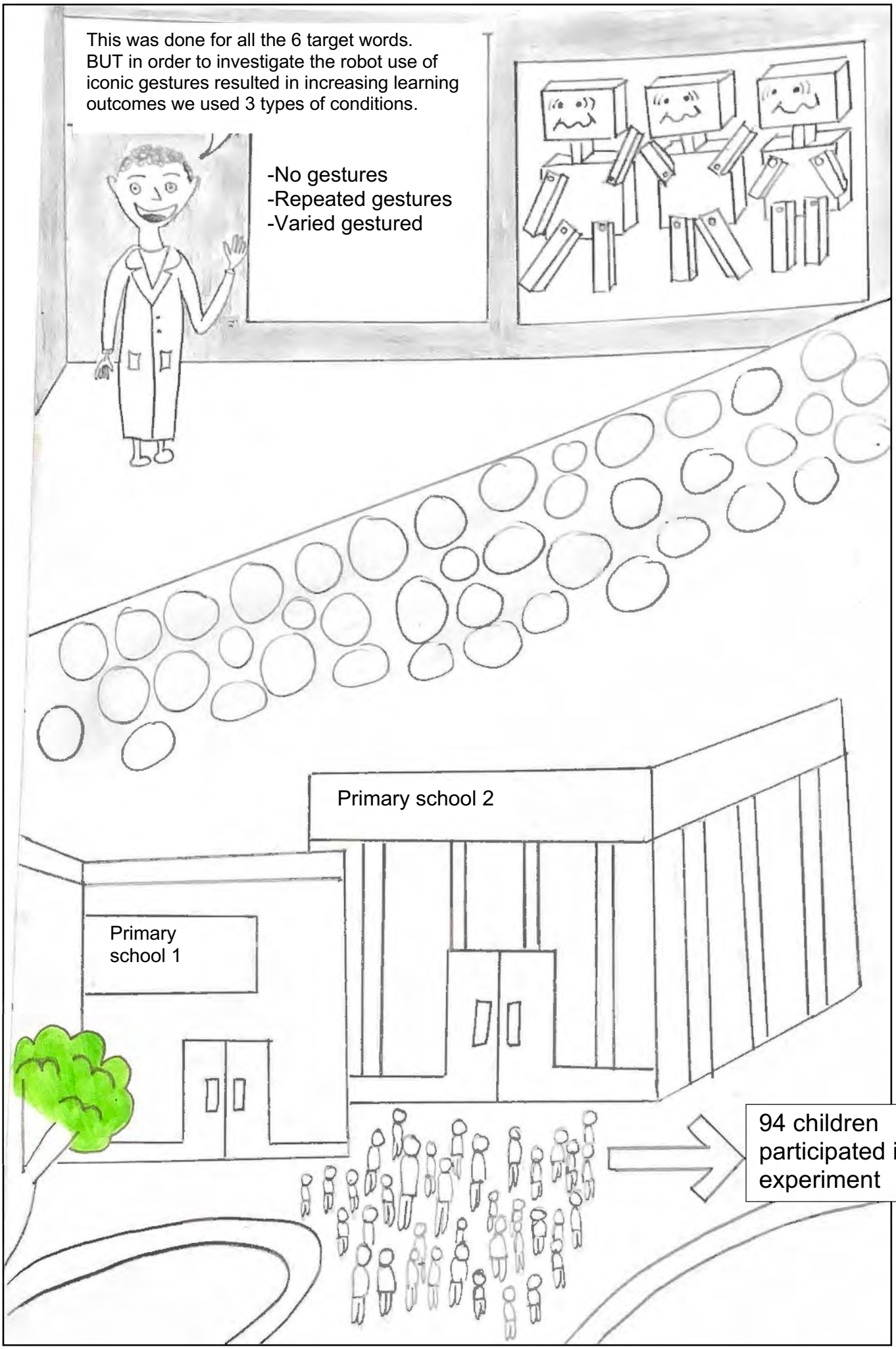


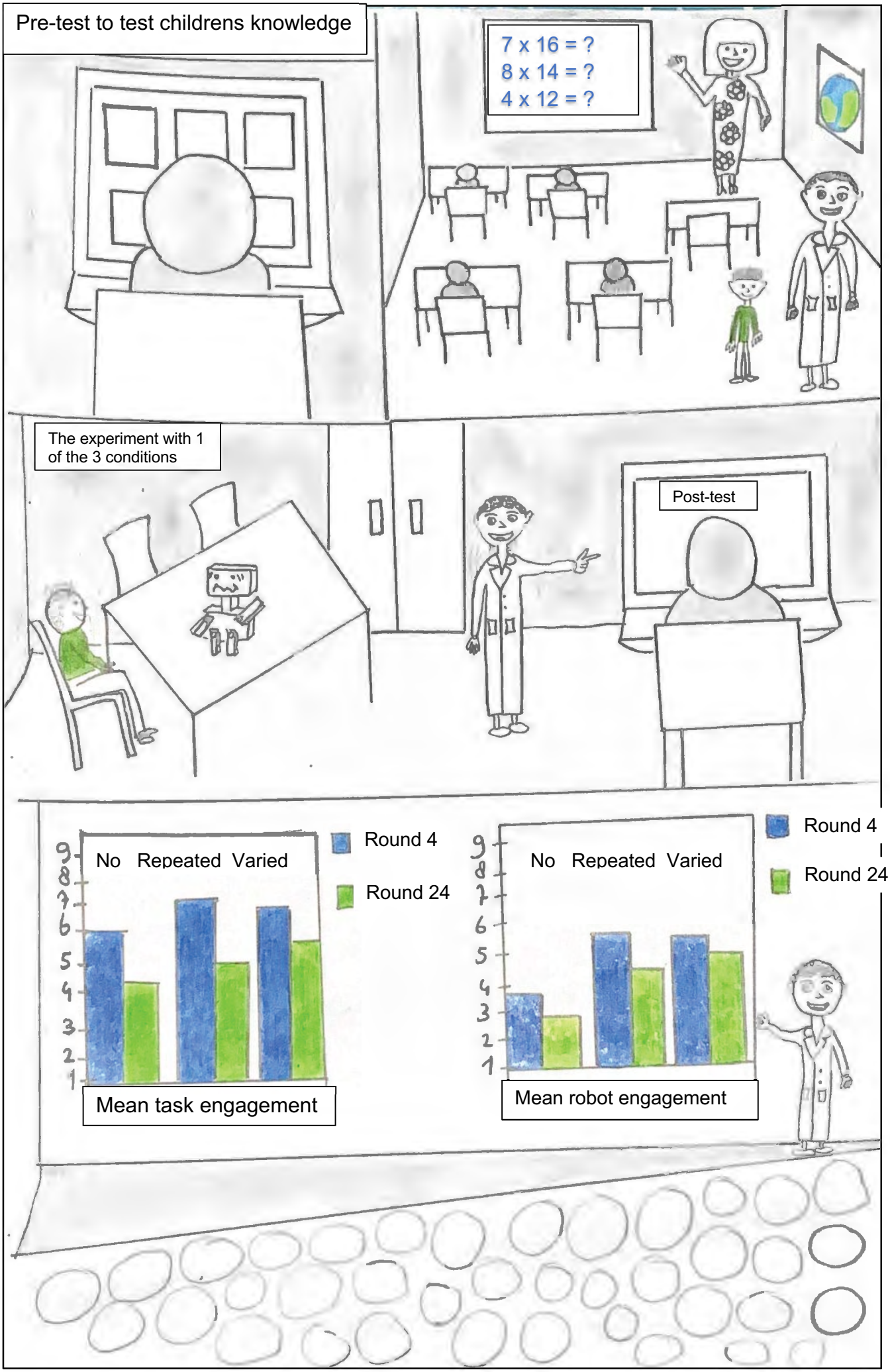


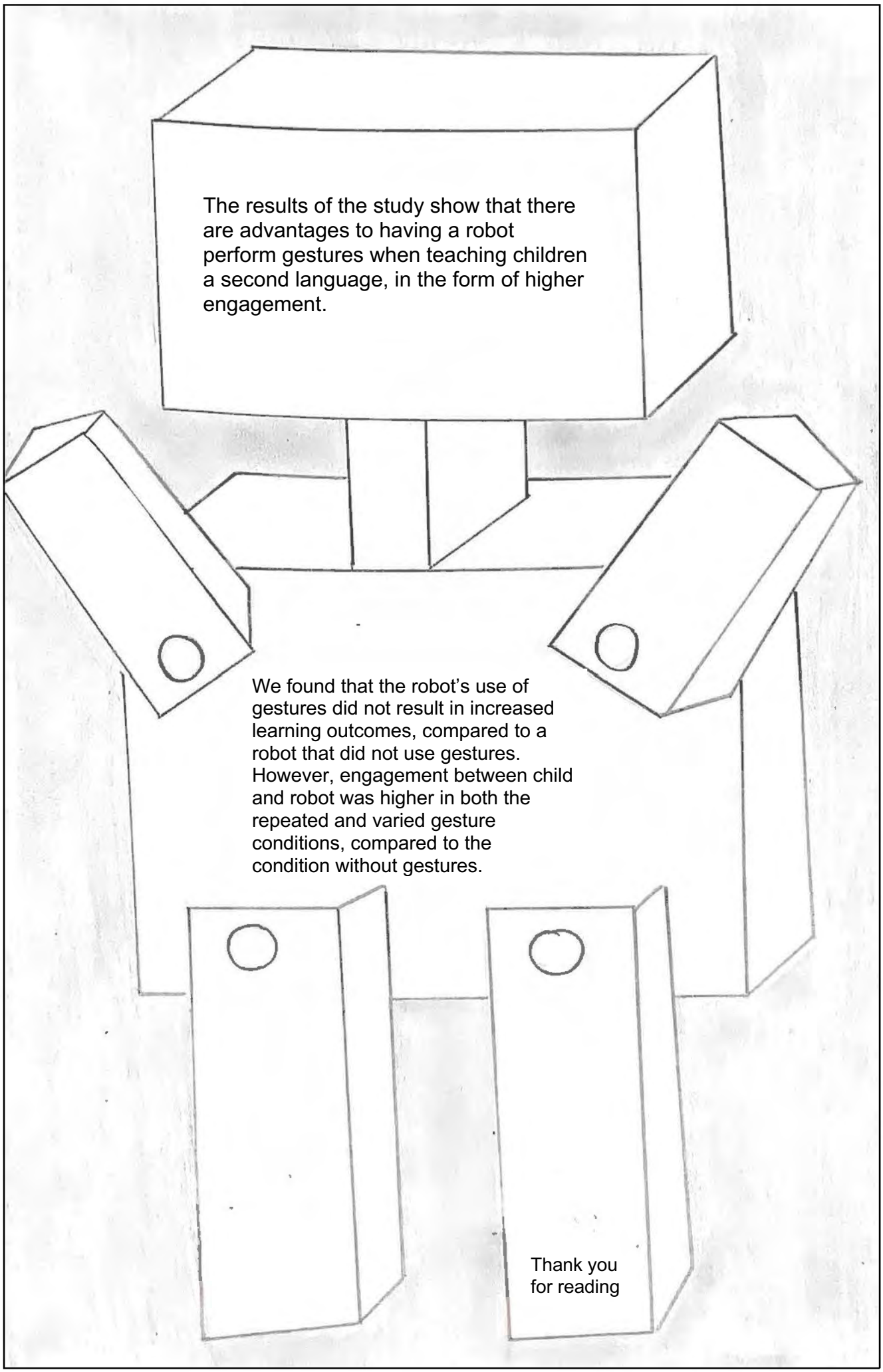
Increasing interest in research into using robots → To interact socially with humans

Hola
Hello
Hola
OR the use of robots in education
Hmm, will children learn more target words in a second language and remember them better when a robot uses iconic gestures for the target words?
Are children more engaged when interacting with a robot that produces iconic gestures for the target words?
Will children learn more target words in a second language and remember them better when a robot produces iconic gesture every time a particular target word is presented?
Are children more engaged when interacting with a robot that produces an iconic gesture every time a particular target word is presented?
Let's go find out


Bridge
Horse
Pencil
Spoon
Stairs
Turtle
Hello, I am NOA the robot.
In this research we use different gestures for different target words.
First, let's do the language and training game words
Set-up of the experiment
Horse
30 rounds


This was done for all the 6 target words.
BUT in order to investigate the robot use of iconic gestures resulted in increasing learning outcomes we used 3 types of conditions.
-No gestures
-Repeated gestures
-Varied gestured
Primary school 2
Primary school 1
94 children participated in the experiment


Pre-test to test childrens knowledge
7 x 16 = ?
8 x 14 = ?
4 x 12 = ?
The experiment with 1 of the 3 conditions
Post-test
No Repeated Varied
Round 4
Round 24
Mean task engagement
No Repeated Varied
Round 4
Round 24
Mean robot engagement


The results of the study show that there are advantages to having a robot perform gestures when teaching children a second language, in the form of higher engagement.
We found that the robot's use of gestures did not result in increased learning outcomes, compared to a robot that did not use gestures. However, engagement between child and robot was higher in both the repeated and varied gesture conditions, compared to the condition without gestures.
Thank you for reading