

# “Hjärnvägar i förskolan”

## Enhancing Preschool Children’s Attention, Language and Communication Skills

An intervention study with  
423 children (4 & 5 yrs.)  
98 educators  
28 preschool units

**Vetenskapsrådet 2015-2018**

**Project-leaders**

Hillevi Lenz Taguchi, education  
& Tove Gerholm, linguistics



# Intervention study with pre-och post-tests of children's development and learning

A

Investigative learning  
in group  
SEMLA



B

Individual learning  
for body and mind  
DIL



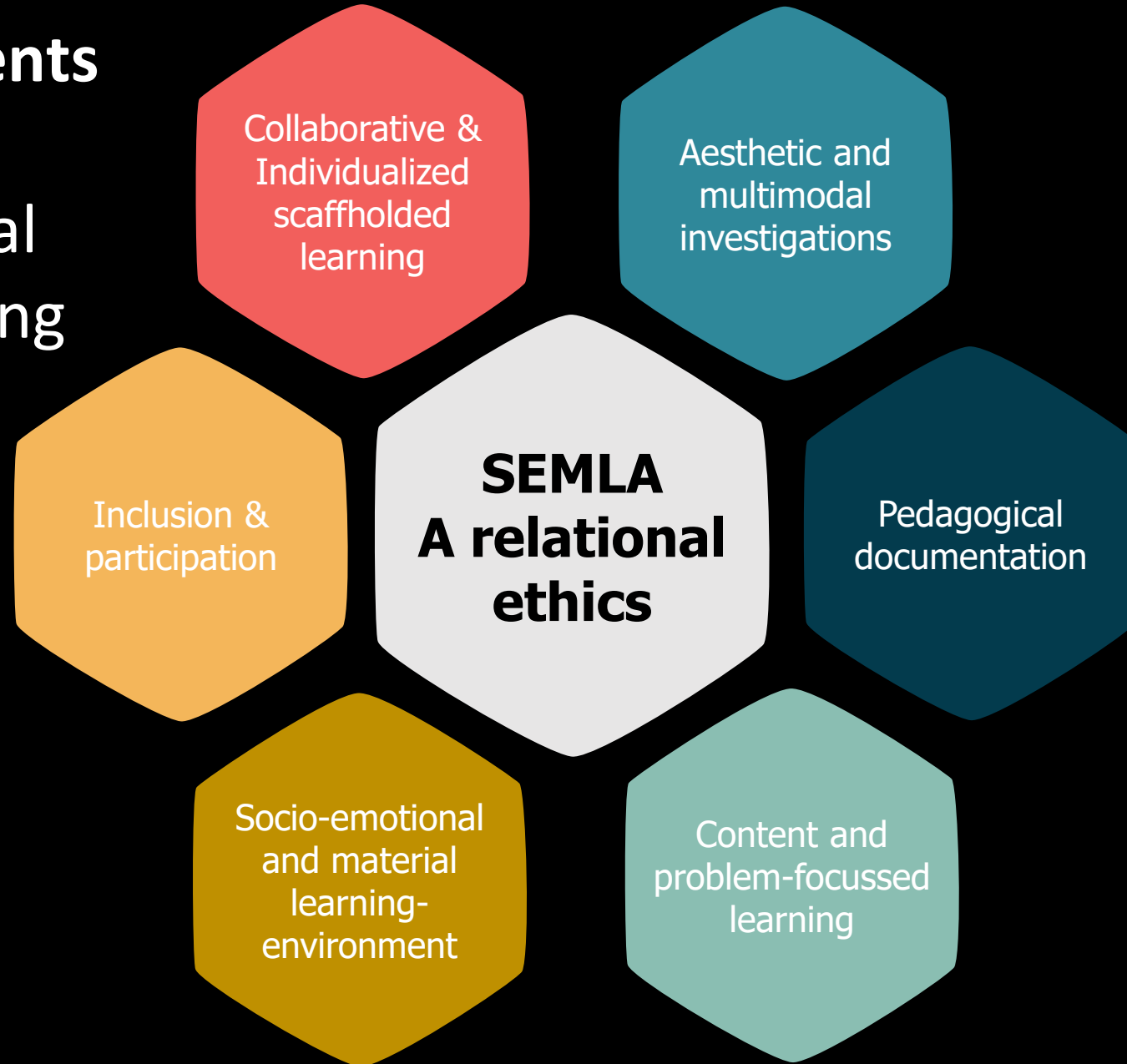
Controls

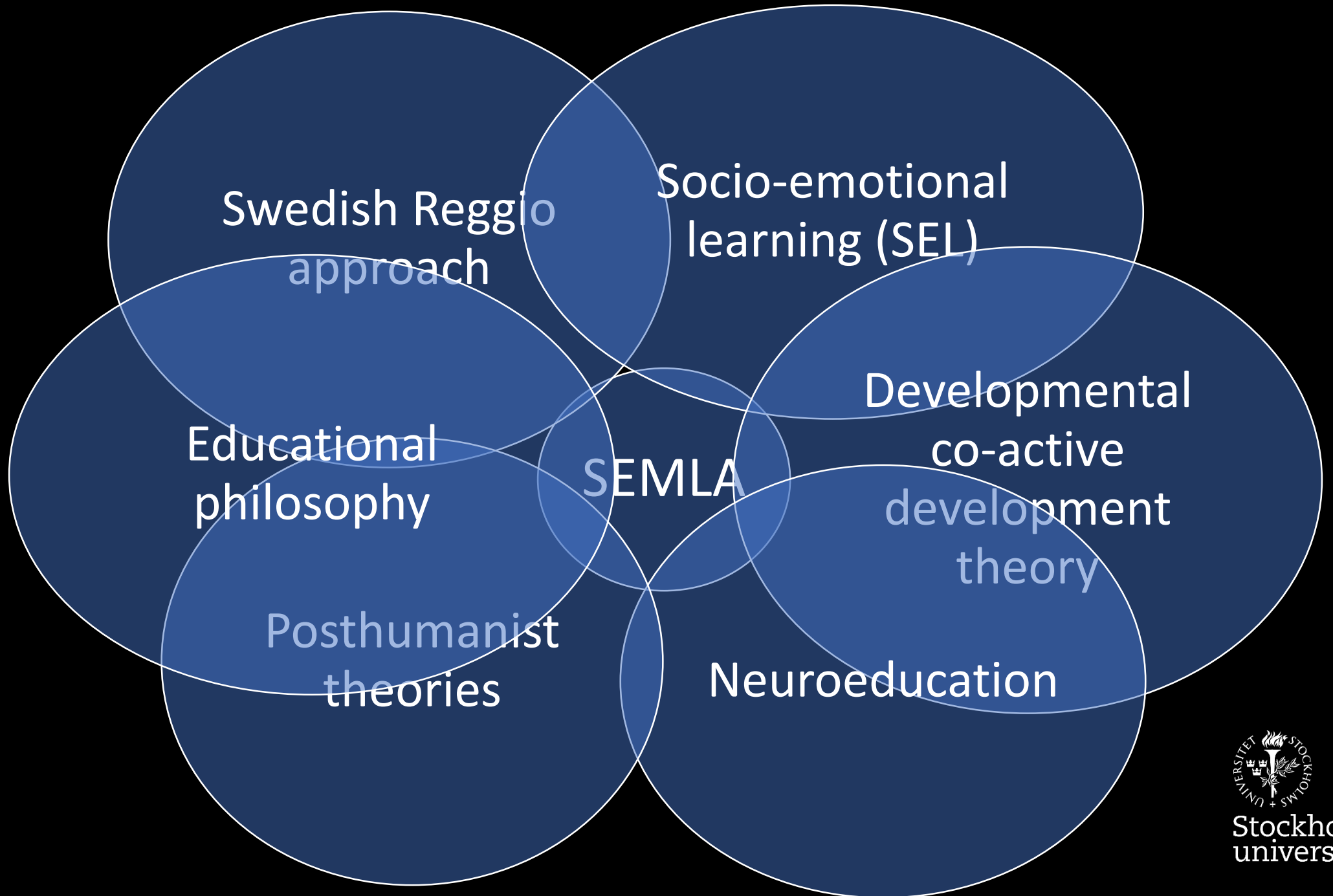
Business as usual plus  
evaluating pedagogical  
environment



Stockholm  
University

# The 7 components of SEMLA: Social-Emotional Material Learning







# How to live and transport yourself in the municipality in 100 years?

*STEAM: science, technology,  
engineering, arts and mathematics*



*"These robots can  
clean and cook... and  
are very friendly."*

Content and  
problem-focussed  
learning



*climate change*

*sustainability*

*"Back to  
nature?"*

*responsibility*

*care*

*Subsistence*

*Digital natives?*

*Where are we headed?*





Learning *with* creative construction materials,  
as well as digital devices and friends...

Socio-emotional  
and material  
learning-  
environment

surprise  
wonder  
creative confusion  
attention  
challenge  
problems

A quiet place to look up facts, think, write  
and make drawings...

*"In the future we can  
live under and above  
the water surface..."*

Things to measure with...

Fuel for the brain...

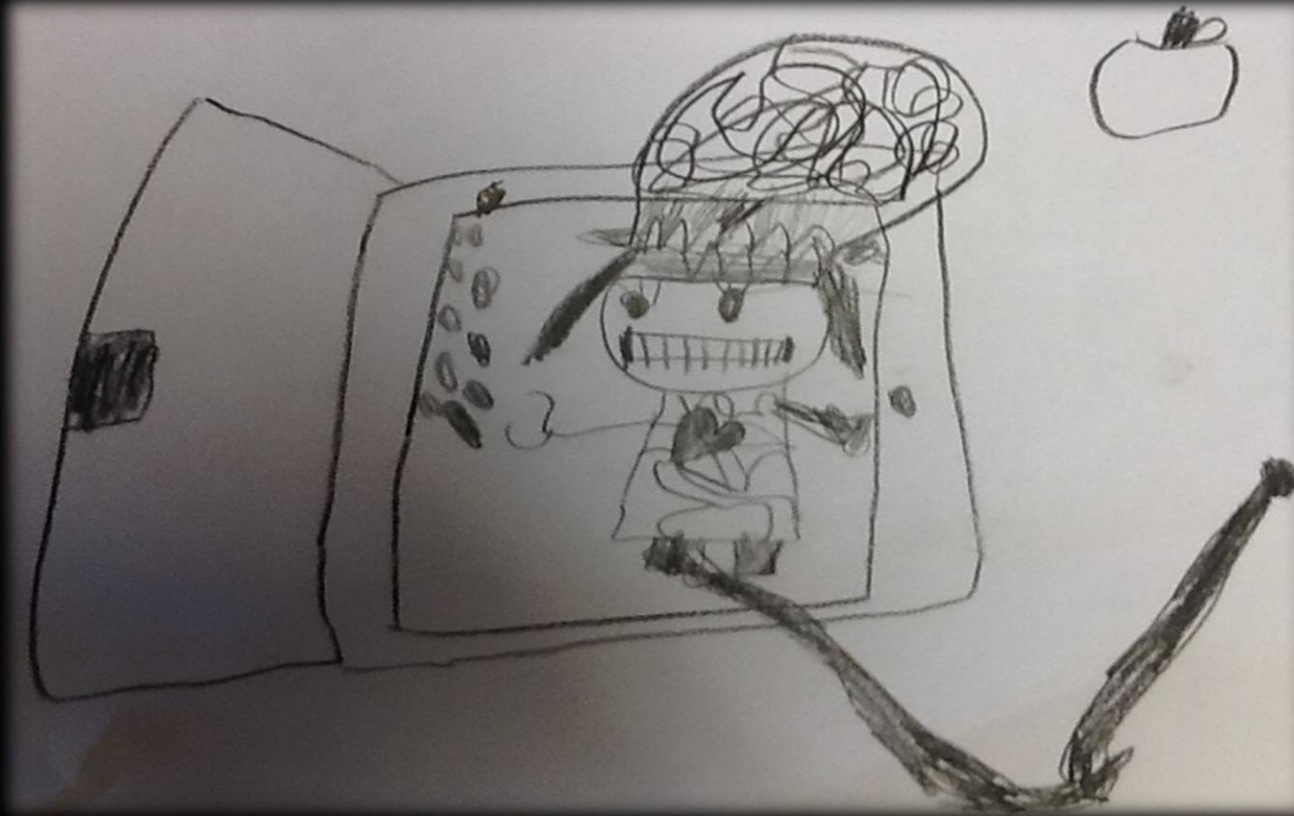


# Individual ideas and projects as part of group processes...

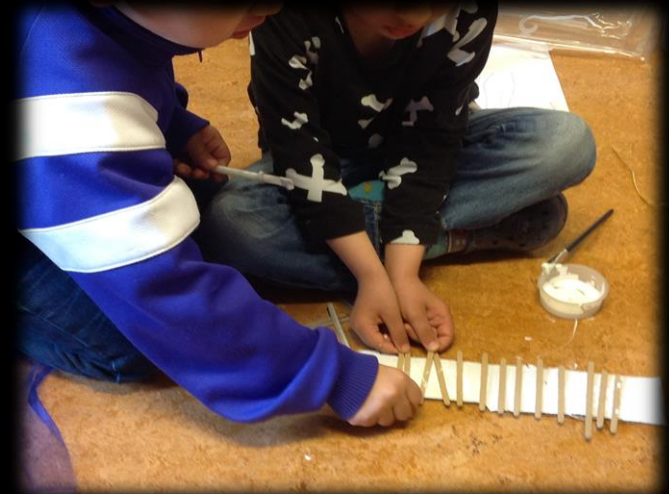
Inclusion &  
participation



*"My elevator has solar cells on the roof and music and a disco ball inside."*



*How to control a machine using your mind: "Just thinking of red apples will make them pop out of the pipe..."*



*"We are constructing a staircase with many steps..."*

# Scaffolding, not only as something taking place between human beings but as being distributed:



The environment and materials  
as scaffolding...



Earlier experiences  
scaffolds...

A problem or  
question scaffolds:

*"How does a  
wheelchair work?"*



Friends and teachers scaffolds...

Collaborative &  
Individualized  
scaffolded  
learning




YouTube clips and other  
media scaffolds and pose  
questions...



# Dancing like birds...

...to play and move in-between different modes and forms of expressions.

A photograph of a young child with dark hair, wearing a grey long-sleeved shirt and a purple cape, standing in a museum or gallery. The child is looking up at a large, white, stylized bird sculpture mounted on a light-colored wall. The bird has its wings spread wide. To the left of the child, there is a large, yellow-tinted image of a flock of birds in flight. The floor is a reddish-brown color.

Aesthetic and  
multimodal  
investigations

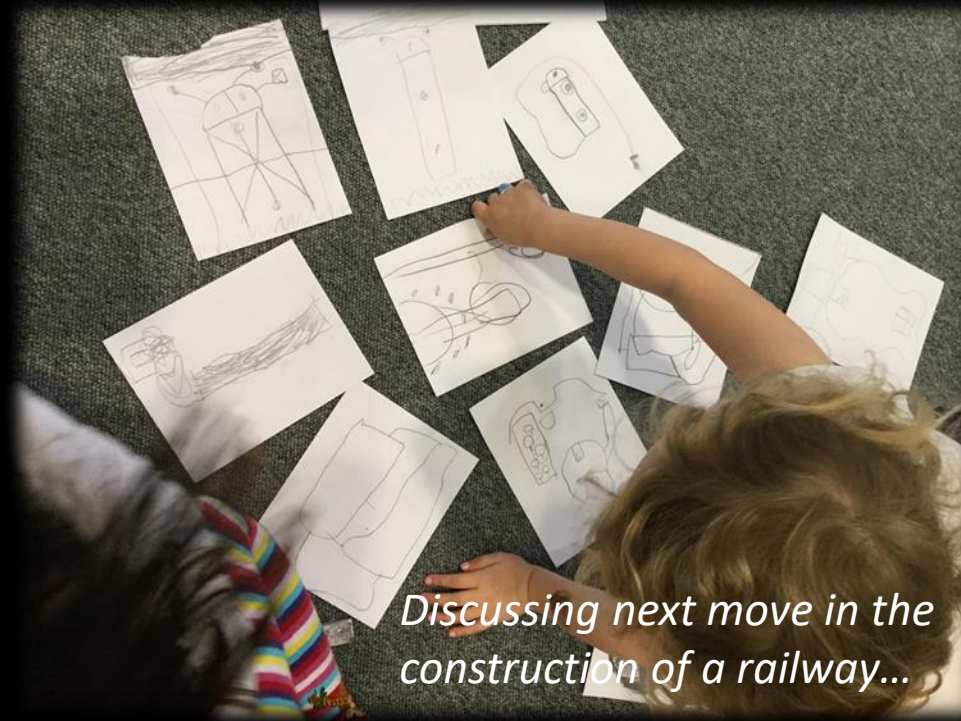


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# The educators draw attention to ethical issues...

...acknowledging children's mutual respect and individual integrity.

Pedagogical  
documentation



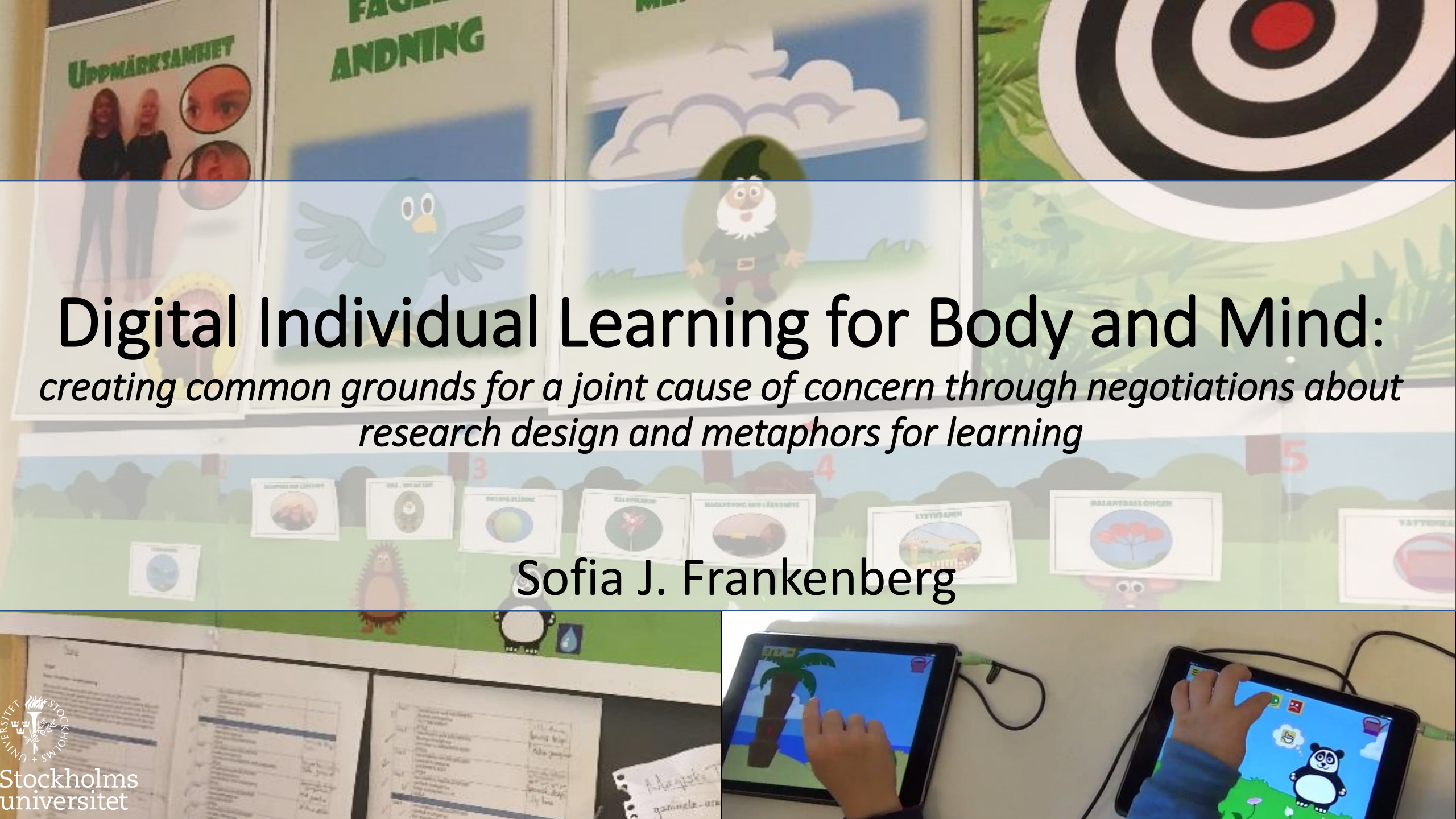




Multiple epistemologies  
and methodologies...

**SEMLA**  
**A relational  
ethics**





# Digital Individual Learning for Body and Mind:

*creating common grounds for a joint cause of concern through negotiations about research design and metaphors for learning*

Sofia J. Frankenberg

# Digital Individual Learning: Specific Individualized Training to Enhance Skills

CogMed  
JR.



- Executive functions
  - Working memory
  - Inhibition
  - Flexibility
- Early math skills
  - Number recognition
  - Number sense
  - Manipulate numbers 1-9

Magical  
Garden



## ***Theory of Change:***

*Through each individual child's repeated interaction with the digital interface during an extended period of time, brain networks will develop and strengthen with measurable effects on neurological and behavioural tests.*



# MAGICAL GARDEN

- Developed by Educational Technology Group (ETG) Lund University and Linköping University
- Collaboration with “the AAA-lab” Stanford University
- For preschool children 4-6 years.



Teachable Agent



- 1) Watch
- 2) Try
- 3) Show TA
- 4) Help TA

# Digital Individual Learning for Body and Mind





# Creating Meta Cognitive Understandings about the learning body

- By talking together with children about the learning body
- To develop self-regulation skills (McClelland et al 2015)
- To develop talking strategies using specific, pre-designed metaphors (Kendall-Taylor & Haydon, 2014).
- MANUAL BASED





# DIL for Body and Mind as Metaphores



- Based on the Brain Train materials developed at the Brain Development Lab. at Oregon University, USA and were developed in close collaboration with them.
- Use the same design as the Magical Garden game.

# Body and Mind Exercises





# Negotiating a good fit!

Thinking

Feeling

Acting



# Det mobila hjärnvågslabbet



Barnen är väl förberedda  
Beslutet att delta i flera steg:

1. Föräldrar
2. Barnen med pedagogerna
3. Barnen hos oss

Omdöme: spännande eller inte alltför  
tråkigt



# Sagor och hjärnvågor





T-shirt saying:  
*"Brainways in Preschool. Ongoing research",*  
worn by all researchers and assistants when visiting the preschools

