Envisioning the Future of Social Robots in K-12 Education

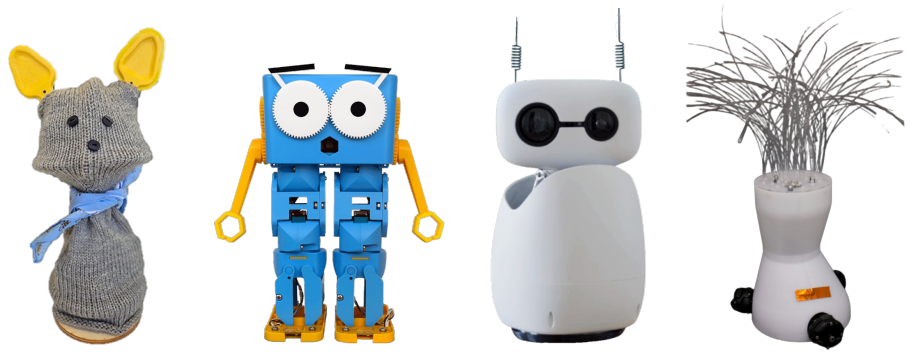
Luca M. Leisten, Social Brain Sciences Lab, ETH Zurich

1 Introduction

Children are increasingly interacting with AI, but remain largely unprepared for safe and responsible interactions (Chen et al., 2026; Sajadieh et al., 2026; UNESCO, 2021). Social robots could support children's AI literacy (Belpaeme et al., 2018; Wang et al., 2026, Williams et al., 2024), but current systems are expensive, technically complex, and lack acceptance and long-term engagement (Barakova et al., 2023; Woo et al., 2021).

This thesis investigates alternative robot designs and deployments, such as soft robots and DIY robotic toolkits, to support children's learning and AI literacy.

2 DIY Social Robots



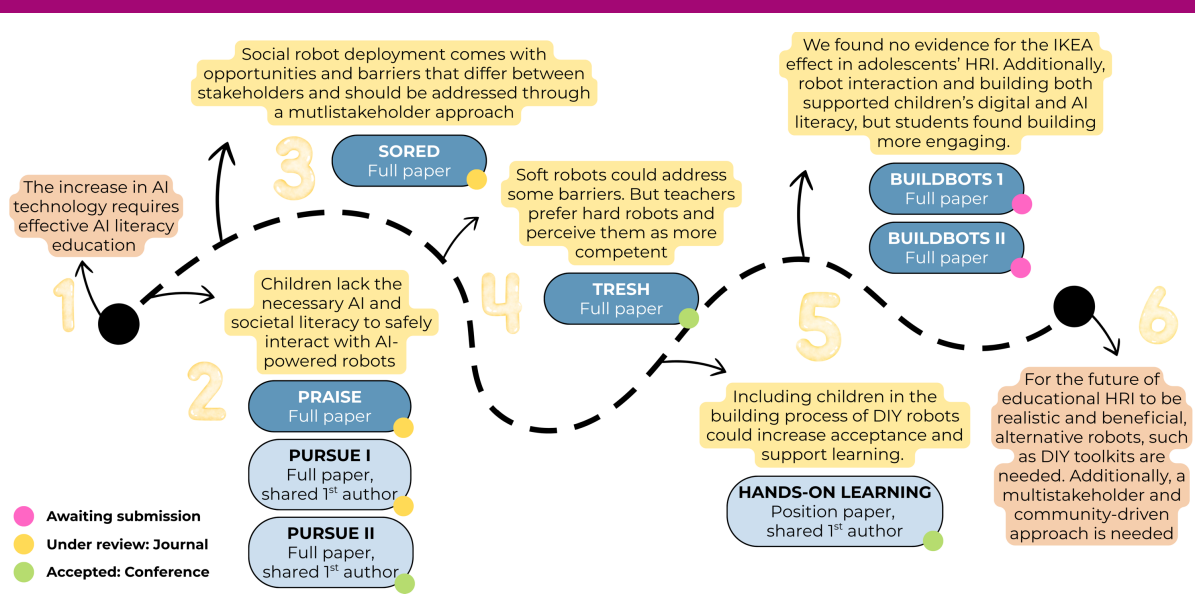
3 Methods

(1) Baseline of children's AI & Societal literacy;
(2) Barriers to robot deployment;
(3) Perceptions of alternative robots;
(4) DIY robots to support digital literacy

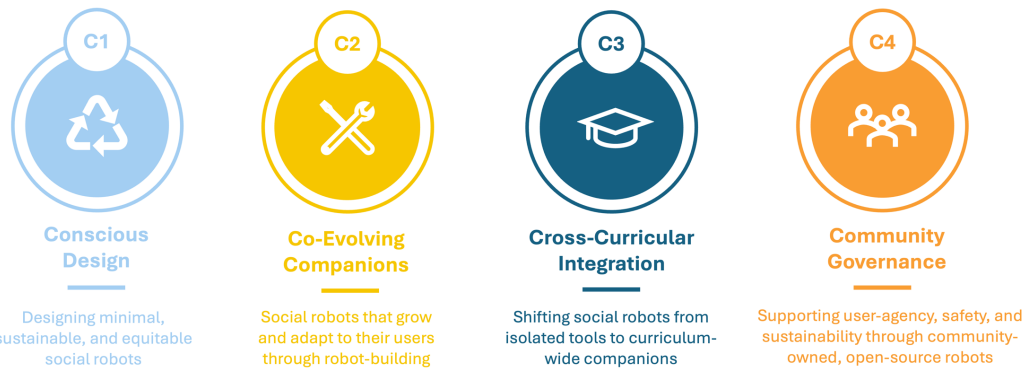
660 Children (5-18y), Teachers, Parents & Principals

Surveys, Focus groups, Interviews, Long-term experimental school deployment

4 Results



5 The Four C's for Educational Social Robots



6 Challenges

- Acceptance of minimalistic robots compared to universal, humanoid machines
- When to introduce which aspects of AI in robot-building activities? With what resources?
- Lack of evidence base for curriculum integration and difficulties of cross-curricular integration
- What elements can realistically be governed by a community that itself lacks AI literacy?

And a million more…

7 Future work

- Longer-term deployment study
- Teacher-led curriculum development
- Stakeholder training

And a million more…

Contact

lleisten@ethz.ch
lucamleisten.com
Luca-M-Leisten

Partner/Sponsor: EPFL, HAVIC LAB HUMAN ARTIFICIAL + VIRTUAL INTERACTIVE COGNITION, ROBOTICAL