



Computational Thinking Education for Diversity and Inclusion

Sharing Practices on Computational Thinking Education

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16 Institutions from Six Countries



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Computational Thinking Education for Diversity and Inclusion



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Rey Juan Carlos

CGL

Cologne Game Lab

Institute for
Game Development & Research

Technology
Arts Sciences

TH Köln

Linnæus University



TREETREE2



Life Sciences and
Facility Management

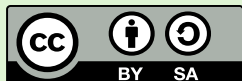


MIK &
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Sociaal werk & Kinderopvang



STICHTING
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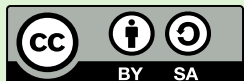
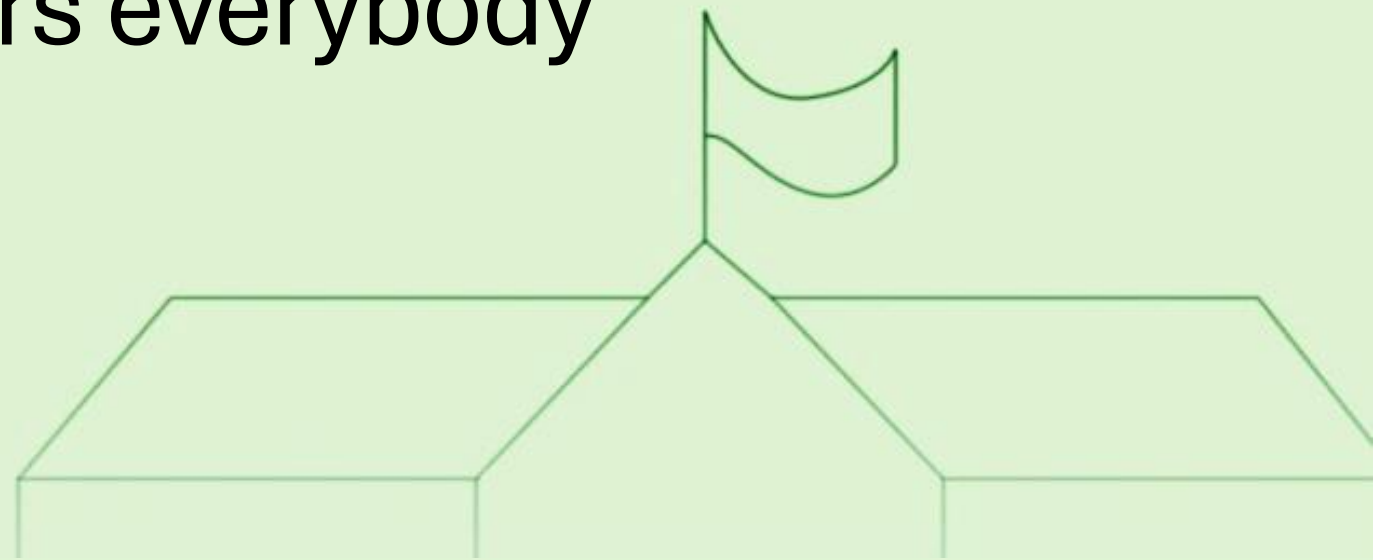
Computational Thinking Education with Immersive-playful Environments and a focus on Diversity and Inclusion for Early Formal Education pre-schools – primary schools (~ age 5 ~ 9)



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Computational Thinking Education for Diversity and Inclusion

In a digitized world
Computational Thinking
empowers everybody



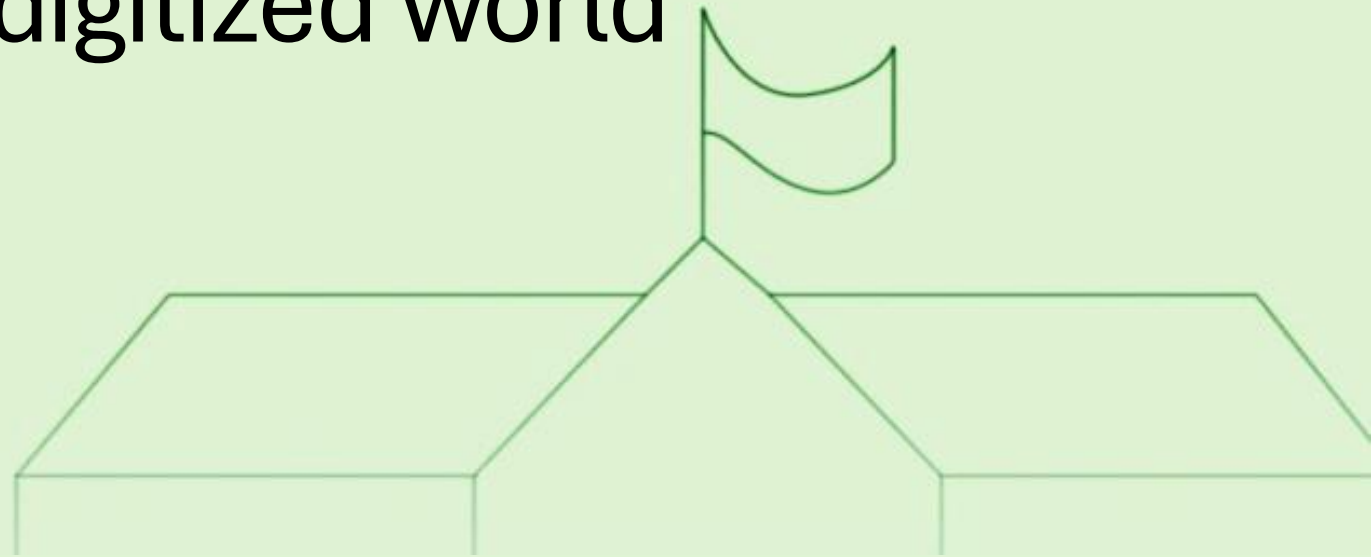


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Computational thinking

is the skill of *taking control*
in a highly digitized world





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Computational thinking education cannot leave anybody behind!



Computational Thinking

Programming

- Abstraction
- Algorithmic reasoning
- Systematic thinking
 - pattern recognition, composition, de-composition
- Design
- Problem solving



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Computational thinking education can and should start early

as parents equip already toddlers with digital,
smart, and intelligent devices

hardly any of which are directly programmable

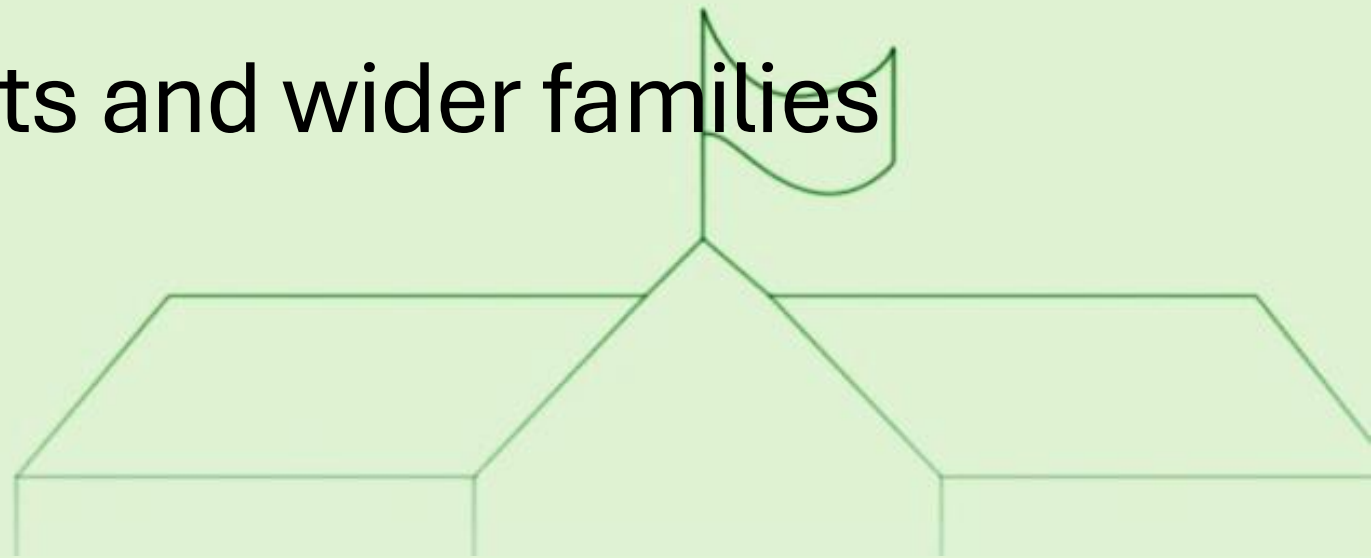


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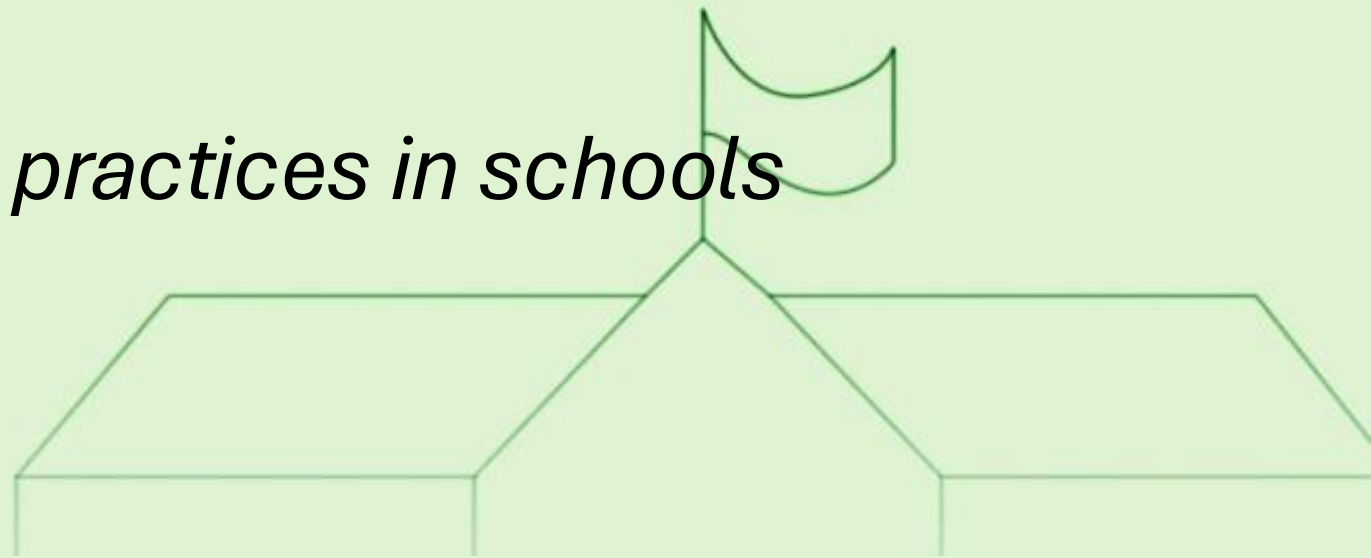
Teachers & educators need better support beyond programming

and so do parents and wider families



For the youngest in school system
robots and games
appear most appropriate

given to existing practices in schools



Challenges with robots also games and STEM tools



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- Mechanics
- Electronics
- Software



- Attention span
- Achievement time
- Conceptual complexity
- Motoric skills and abilities



Image: BeAndge

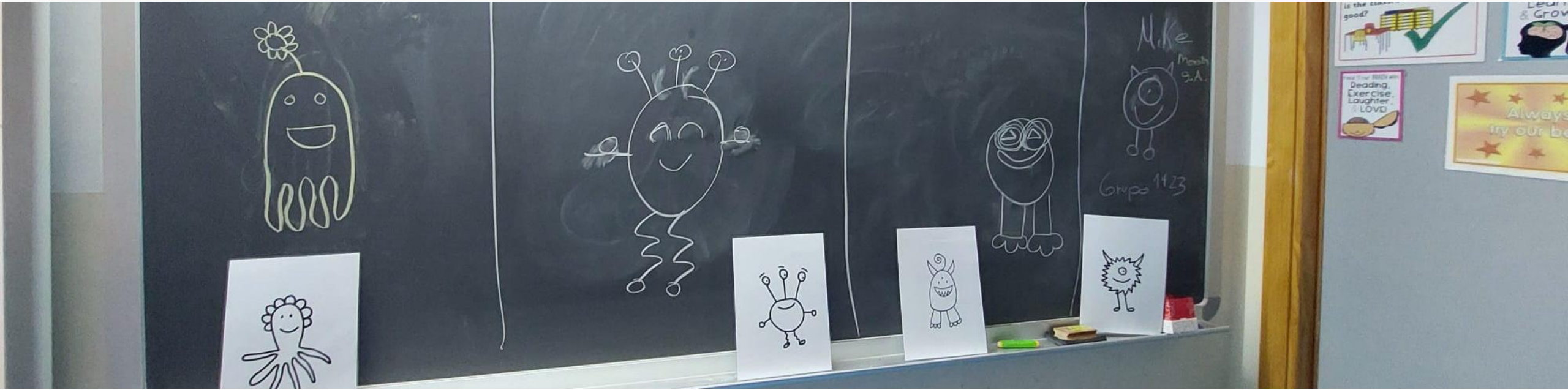


Our key objectives



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1. Create educational designs for classroom activities
2. Equip and support teachers & educators
3. Provide information for parents

- Tangible
- Observable
- Multi-modal
- Immersive
- Collaborative



- 1. Exploration of educational practices and tools*
(teacher & teachers in training workshops)
- 2. Condense and translate educational practices into classroom activities*
(create working material for teachers)
- 3. Implement and evaluate the classroom activities in schools*
(classroom application in partner schools)

A large green arrow pointing both up and down, with the word 'Sharing' written vertically inside it.

Sharing

- 1. Exploration of educational practices and tools*
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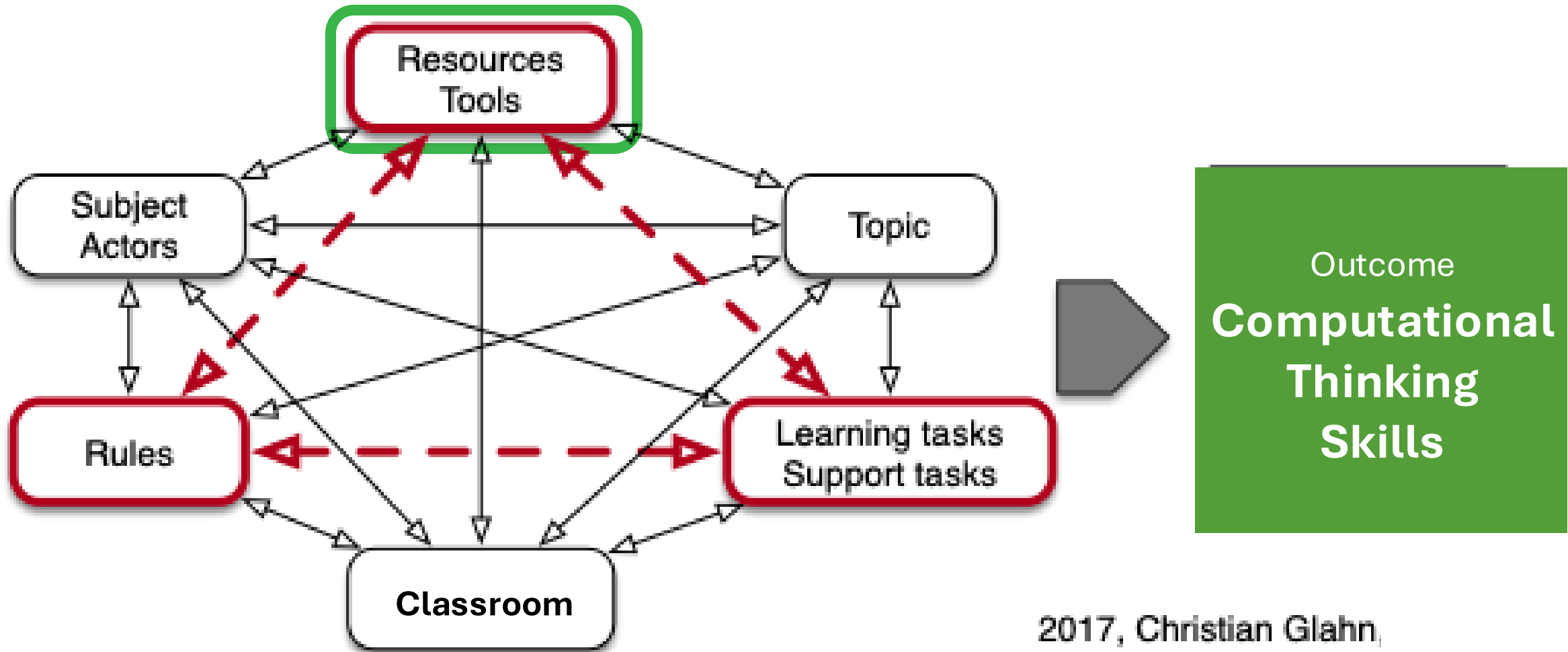
Sharing

Design considerations for classroom activities



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2017, Christian Glahn,
based on Engeström



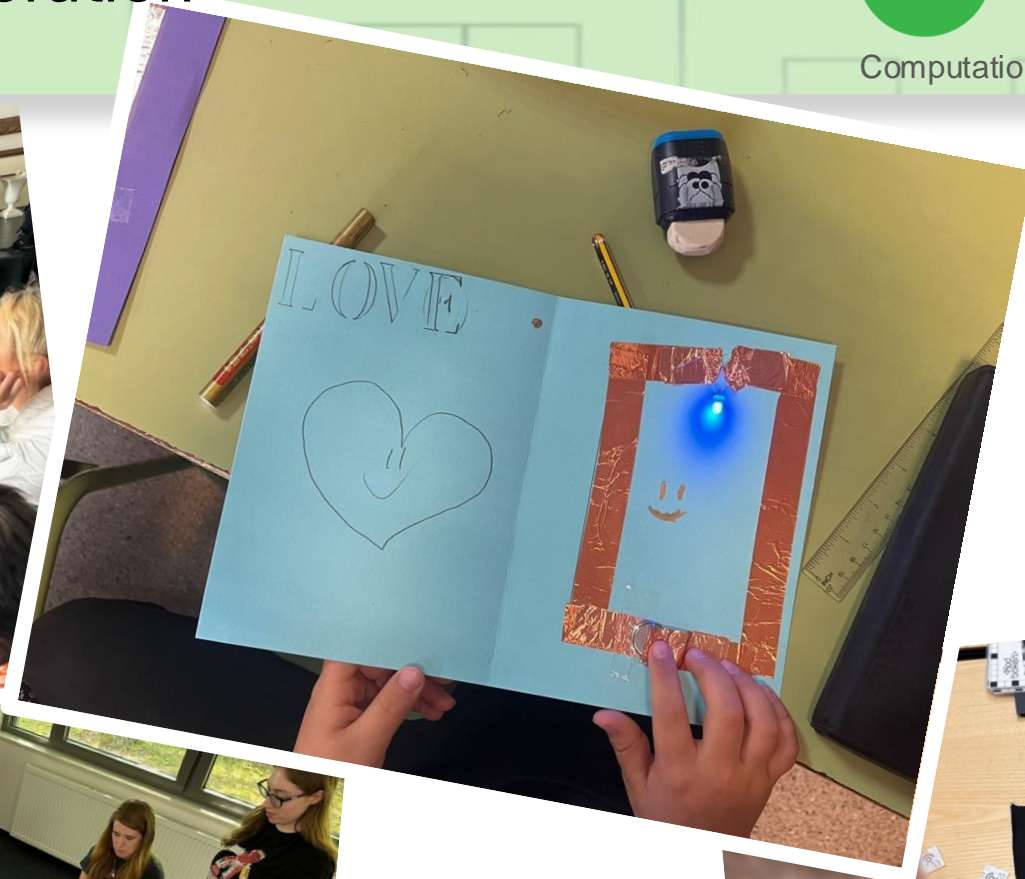
- Easy to build and use – Low or no entry barriers
- Continuous complexity (no-code ↔ various code styles)
- Conceptual flexibility (different learning objectives)
- Playfulness (experimentation and exploration)
- Cross curricular

Teacher's activity exploration



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- Creative activities
- Exploratory (open-ended) activities
- Low-code, Block-based, Zero-code activities

- Collaborative activities
- Embodied activities

- Knowledge of technologies and tools
- Transferability (Level of inspiration)
- Shareability = Explainability



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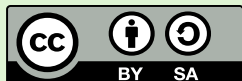
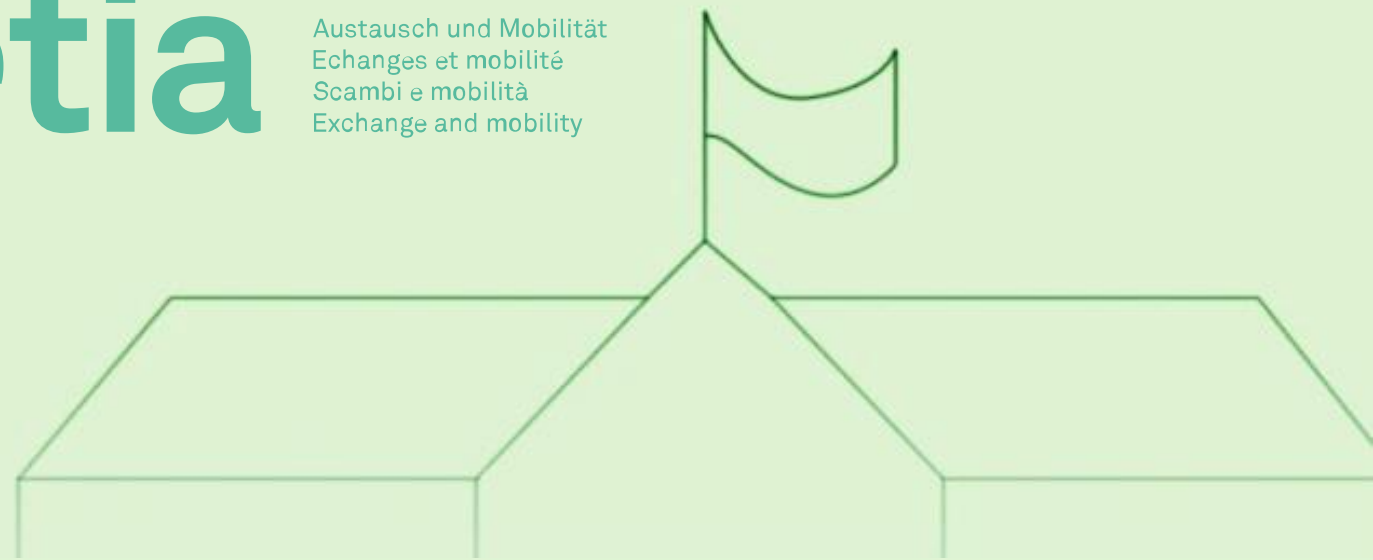
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Thank you and join us @ cotedi.eu



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