

Transforming Early Childhood Education – The Finland Way



Towards child-centered and play-based pedagogies:

Insights from Finnish early science education

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Children are masters of wondering



Majority of children's questions are science related



Why science for young children?



Children benefit from early science education:

Learning outcomes, attitudes, and motivation are positively affected by the early introduction of science

(Piaget & Inhelder, 1958; Carey, 2004; Zimmerman, 2007; Mantzicopoulos et al., 2008; Nayfeld et al., 2009; Patrick et al., 2009).

Positive emotions and feelings of competence



“Emotions that are associated with learning situation affect later motivation and learning outcomes.”

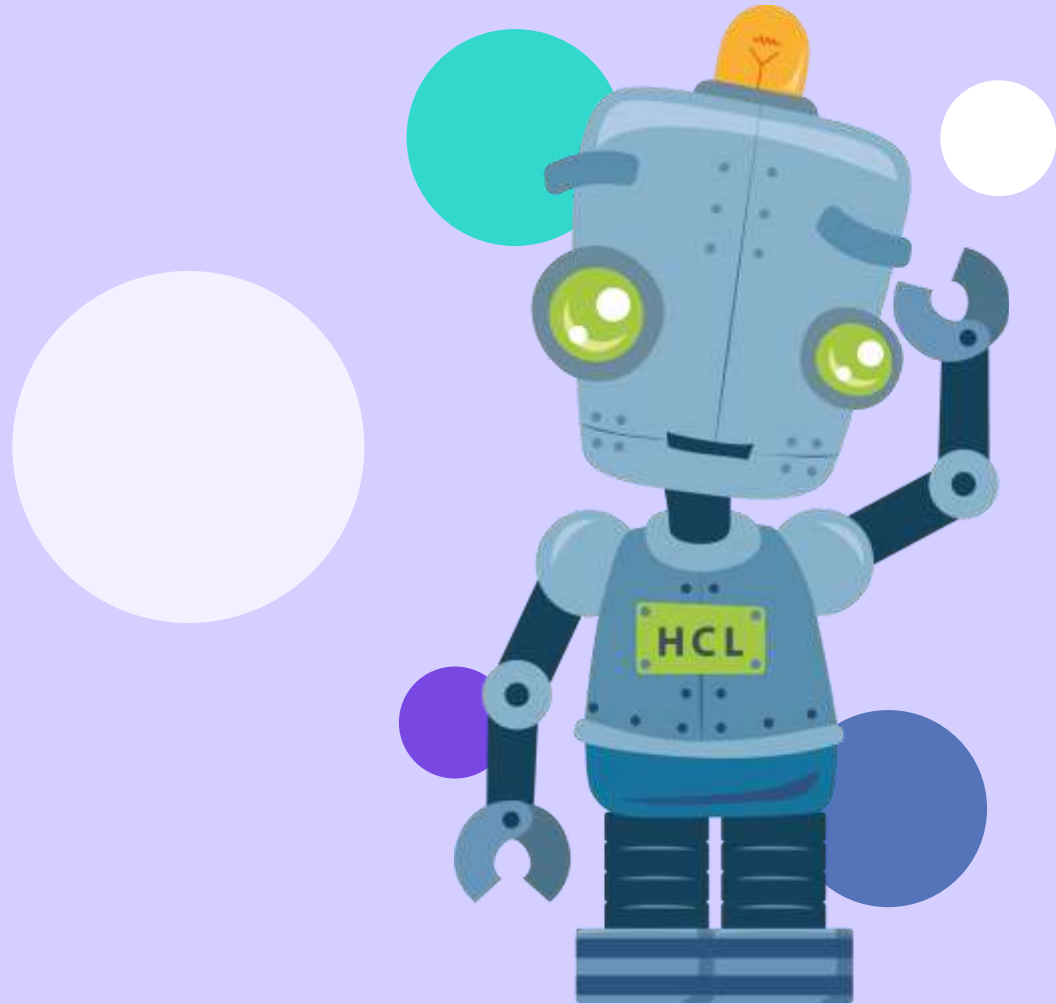
(Pekrun, 2002a)

Scientific vocabulary



“Early acquisition of scientific language helps children to learn scientific concepts later in the school.”

(Eshach & Fried, 2005)




Science for young children, how?



Play makes science meaningful for children

(Vartiainen & Kumpulainen, 2019)

- Play is vital for young children to understand scientific phenomena in a meaningful way
 - Young children start to understand new concepts by acting with objects and phenomena, trying what it is possible to do with them and how they react to different manipulations
 - Children need imagination and play to build mental models of scientific phenomena
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Children learn hands-on: an inquiry approach



- Inquiry approaches are based on the ideas of how scientific knowledge is produced
- It draws on social learning theories: new knowledge and skills are developed through social interaction with peers and with persons with more developed skills and ideas

(eg. Minner et al., 2010)

- The learning process is affected by the context, learner's previous experiences, interests and cultural backgrounds

(Rogoff, 1990)

Children learn through play



Play as a starting point for inquiry



Inquiry as a play



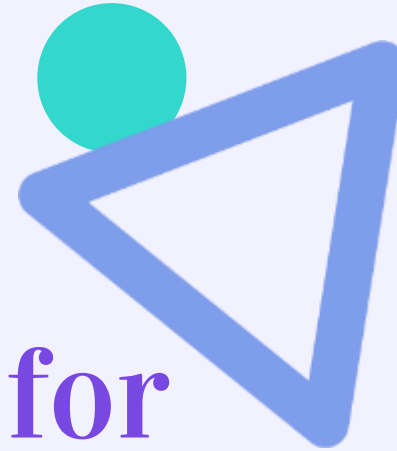
Playing with science



Challenges that prevent science in kindergarten

- Teacher's feeling of low competence
- Lack of equipments and materials
- Insufficient learning environment





A warm thank you for
your attention!

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