

# Action competence and exposure

How can they support inclusiveness, active learning and future orientation in I SEE?

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# Roots of action competence

- Developed in the 90s at the Danish Pedagogical University by Karsten Schnack, Søren Breiting, Kirsten Nielsen, Bjarne Jensen and Finn Mogensen
- Response to inefficacy of environmental education as academic schooling or behavior modification

# The problem

- Environmental problems represent challenges to democracy and humanity with implications for individuals and society
- Presentation of environmental problems in education leaves students feeling anxious, worried and guilty
- Anxiety is often undiscussed and unaddressed in pedagogy
- An appropriate pedagogy would create citizens capable of acting on a societal and personal level
- Acting means not only making better decisions but more being able to envision alternative ways of development and participate in those actions

# The action competence approach

- Competence = being able, and willing, to be a participant
- Action = behavior, activities, movements, habits—but *intentional* (student has agency) and *conscious* (student understands and acts on motives and reasons not mechanisms and causes)
- Action competence is an educational ideal, not a specific competence

# For example: Henderson Creek

- Roth, W.-M., & Lee, S. (2004). Science education as/for participation in the community. *Science Education*, 88, 263-291.
- Starting point: scientific literacy as social practice, not as an individual characteristic nor a single normative framework for rationality but one of many resources to be drawn on in collective decision-making processes
- Citizen science or science for all compromised by school science continuing to be presented as value-free and skills-focused, frequently to the exclusion of poor, minority and female students

# Henderson Creek, continued

- A call placed in a local newspaper for community participation in investigating possible pollution in a creek
- A student in a seventh grade class suggests that their class participate
- Teachers start by analyzing the call and the situation with the students, with attention to history and diverse stakeholders
- Students and teachers develop proposals for investigation of the problem

# Henderson Creek, continued

- Teachers tend to propose scientific analysis and notice that girls and First Nations students withdraw
- Teachers step back and ask students to represent the creek in their own way; audio, video, photography, interviews, drawings emerge
- Modes for investigation discussed then employed in close collaboration with community actors
- Students finally create a report representing the issue from multiple perspectives and proposing solutions, which are ultimately accepted and conducted—“legitimate peripheral participation“

# Lessons learned

- Acknowledging the limits of traditional science, legitimizing marginal approaches
- Value of direct participation over in-school mock science which reproduces the separation of school science from everyday society
- Confronting controversial issues as opportunity for „profoundly creative and imaginative activity tempered by a scrupulous honesty in the face of experimental evidence“
- School science not as *preparing for* but as *engaging in* everyday community science

# How can exposure change a life?

- Life course: transformed environments can influence lives and developmental trajectories. (Elder, 1995)
- Leventhal, T., & Dupéré, V. (2014). Exposure to Neighborhood Affluence and Poverty in Childhood and Adolescence and Academic Achievement and Behavior, *Applied Developmental Science*, 18:3, 123-138.
- Hypothesis: Timing of exposure to affluence (educated professionals, quality institutions, role models) significantly influences children's educational attainment and social, emotional and behavioral development.
- Results: Early childhood and cumulative (both early and adolescent) exposure result in increased academic achievement and internalized behavior.

# Combining action competence and exposure in I SEE

- To imagine alternative futures where science is relevant, exposure to divergent possibilities and engagement in authentic citizen science can be significant and can support students to pursue STEM careers.
- Furthermore, the combination of these approaches can be key to inclusive education.
- Risks? Criticisms? Thoughts?