

# School grounds as sites for learning

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# Outline of my presentation

**Secondary school** – interview studies

*Teachers' and students' experiences of outdoor learning (focus on mathematics)*

**Primary school** – observations of different school ground practices

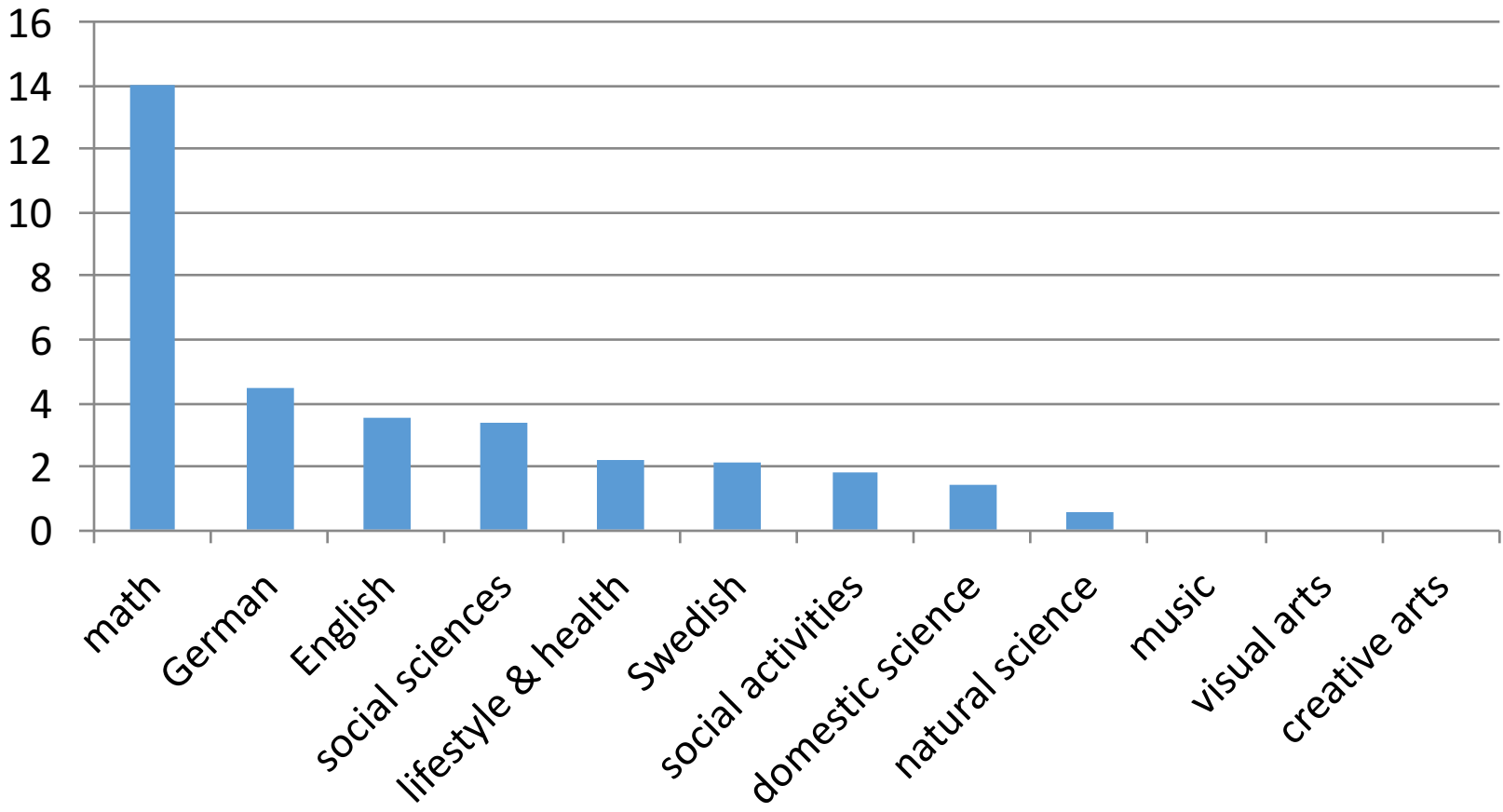
# An outdoor intervention project

All teachers (n=40) at a Swedish junior high school participated in an outdoor education course (7,5 ECTS points).

Intervention: one year

Goal: 3-4 outdoor lessons a week (class level)

Percent of lessons taught outdoors  
average: one lesson per week (4,5%)



Teachers' experiences of the educational potential of outdoor teaching

## Content/cognitive

Expand and confirm school knowledge

Shared episodic memories

On-task communication  
(math/language)

## Social

Participation

Communication/collaboration

Altered relations – good climate  
in class

## Incentive/emotional

Engagement

Enjoyment

# Regular outdoor mathematics

- 1 of 4 lessons a week during 2-3 years
- Problem solving in small groups
- Math games
  
- Interviews with 14 students in year 8 and 9

# What is mathematical proficiency?

- **Conceptual understanding** –comprehension of mathematical concepts, operations and relationships
- **Procedural fluency** – skill in carrying out procedures flexibly, accurately, efficiently and appropriately
- **Strategic competence** – ability to formulate, represent and solve mathematical problems
- **Adaptive reasoning** – capacity for logical thought, reflection, explanation and justification
- **Productive disposition** – habitual inclination to see mathematics as sensible, useful and worthwhile, coupled with a belief in diligence and one's own efficacy

(Kilpatrick, Swafford & Findell, 2001)

# Students' experiences of learning mathematics outdoors

- *Conceptual understanding* – variation and interplay between the abstract the concrete
- *Strategic competence and adaptive reasoning* – increased possibility for discussions and peer learning – problem solving skills, reasoning and self efficacy
- *Productive disposition* – increased perception of mathematics as useful and worthwhile



# Dialogue and peer-learning outdoors

*“Small-group learning is good. You learn your-self as well as learning from others”*

*“Outdoors you can spread out more and if you are two persons in each group you have to talk”*

# Class climate, participation and motivation

- Increased participation
- Improved relations
- Increased enjoyment
- Less math anxiety (one student)

# Challenges for learning

*“The whole-class instructions can be fuzzier outdoors. I think they are more distinct indoors. I understand her better and don’t have to ask – what should we do?”*

*“Indoors you have the whiteboard/.../it is anyhow easier to draw than just to talk. So, if there is something important to go through, you don’t want to do it outdoors”*

## On-task orientation – different opinions

- *“Outdoors often makes you a bit more alert and focused”*
- *“I think it is good to vary the lessons. So they aren’t the same all the time, because that makes it boring and then you don’t concentrate as much”*
- *“Maybe it is a little bit more difficult to concentrate outdoors, if something happens nearby or something”*

# Primary years – 3 shorter projects

1. Regular outdoor school, one day a week
2. 10 lessons in the park (dogs and nature school)
3. New practice – lessons on the school grounds

# Childrens' engagement!

- In regular practice as well as outdoor learning as a new experience

# Social dimensions

- Rich opportunities to develop pupil-pupil relations as well as pupil-teacher relations
- Positive learning environment – singing, hugs, laughter
- Strategy for group selection!

# The learning environment

- Variety of environments, tasks, group size, teacher's role and indoor/outdoor relation !
  
- Some conclusions



# Potentials

- Autonomy – choice and self-regulation
- Activity – on-task orientation
- Experiences of nature
- Play and learning
- Creativity and fantasy

# Challenges

- The balance of experiences of nature and scientific learning about nature
  - Everyday language vs. Scientific language
- Structured vs. open tasks
  - Instructions and objectives often unclear
  - How to build upon children's experiences and previous knowledge?
  - The balance between flexibility and lesson plans?

# Summary of results

- Pupils of all ages generally enjoy outdoor learning
- There are rich opportunities to develop social relations and a good climate in class outdoors
- Focus/On-task orientation – individual differences
  
- Significant learning opportunities
- Is it more demanding for the teachers in terms of
  - Academic competence
  - Didactic competence

# Questions and discussion

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