



Faculty of Science



The role of informal learning institutions in teaching climate change

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Why take the students of out school?

- New form of representation
- Artifacts, objects, experiments, context



- Input for dialog
- Affection
- But not always the case



Literature review

- No clear-cut findings – depends on execution
- Consensus about preparation, structure, and follow-up – before, during, after
- Choice and control (ownership)
- Corporation with classmates

(i.e. Rennie & McClafferty, 1995; Griffin & Symington, 1997; Axelsson, 1997; Falk & Dierking, 2000; Anderson et al., 2003; Griffin, 2004)



Literature review

- Shooting at the teachers
- Museums also have responsibilities
- Guided tours are sedative – do not support learning and reflection
- Teacher- and task-oriented
- Mainly questions requiring only lower-order thinking skills
- Limited opportunities for meaningful learning

(Tran & King, 2007; Tal & Morag, 2007)



What can the museums offer?

- A new and context-rich environment
- But why take the formal setting into the informal institutions?
- Why expose students to transmission, activities with predefined goals, guided tours, close-ended work sheets?
- Exactly what educational researchers argues against for the formal settings
- How can this new and context-rich environment be put into play?



Communication



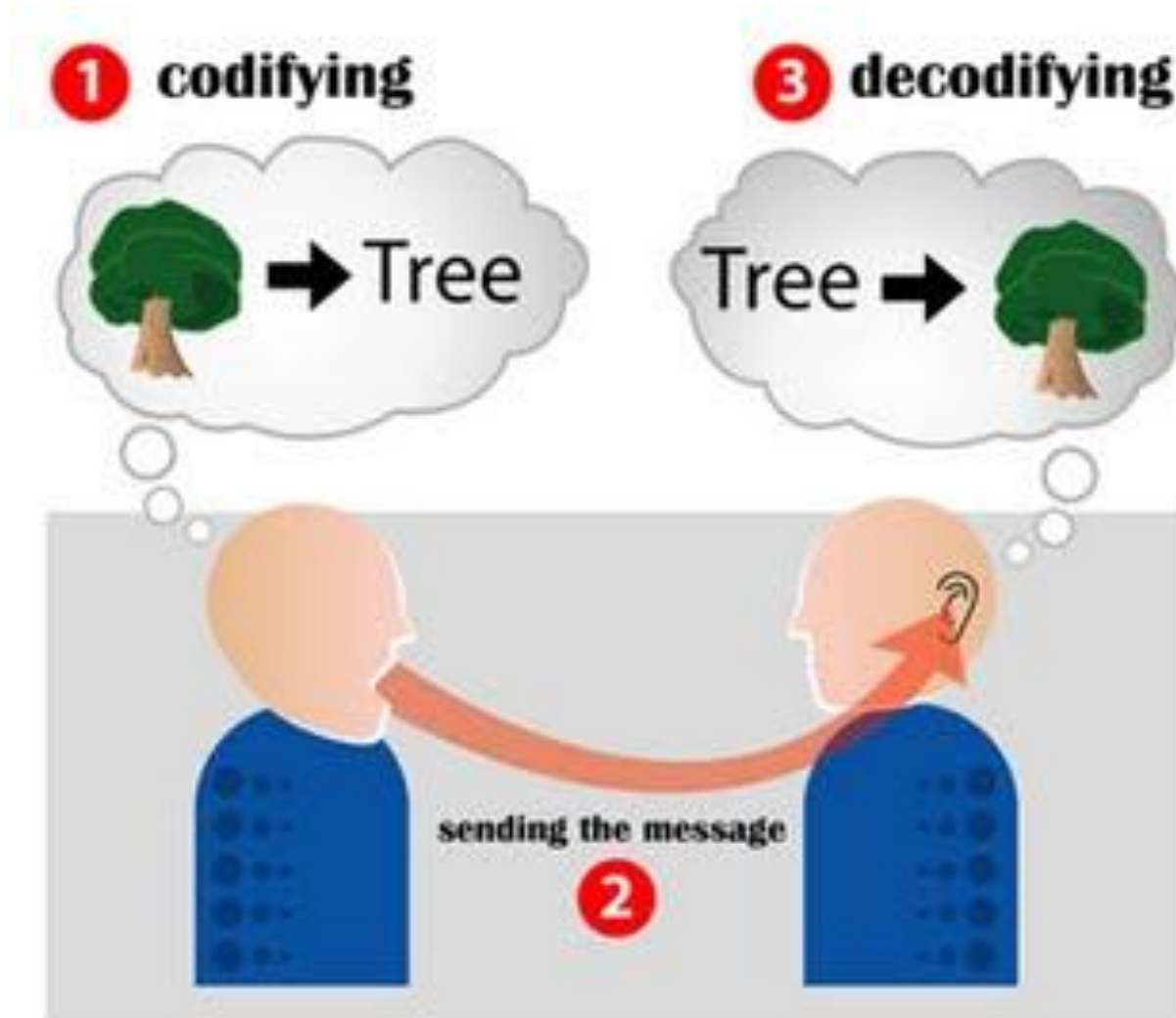
Communication \neq students take in the message

Each person only takes in what makes sense

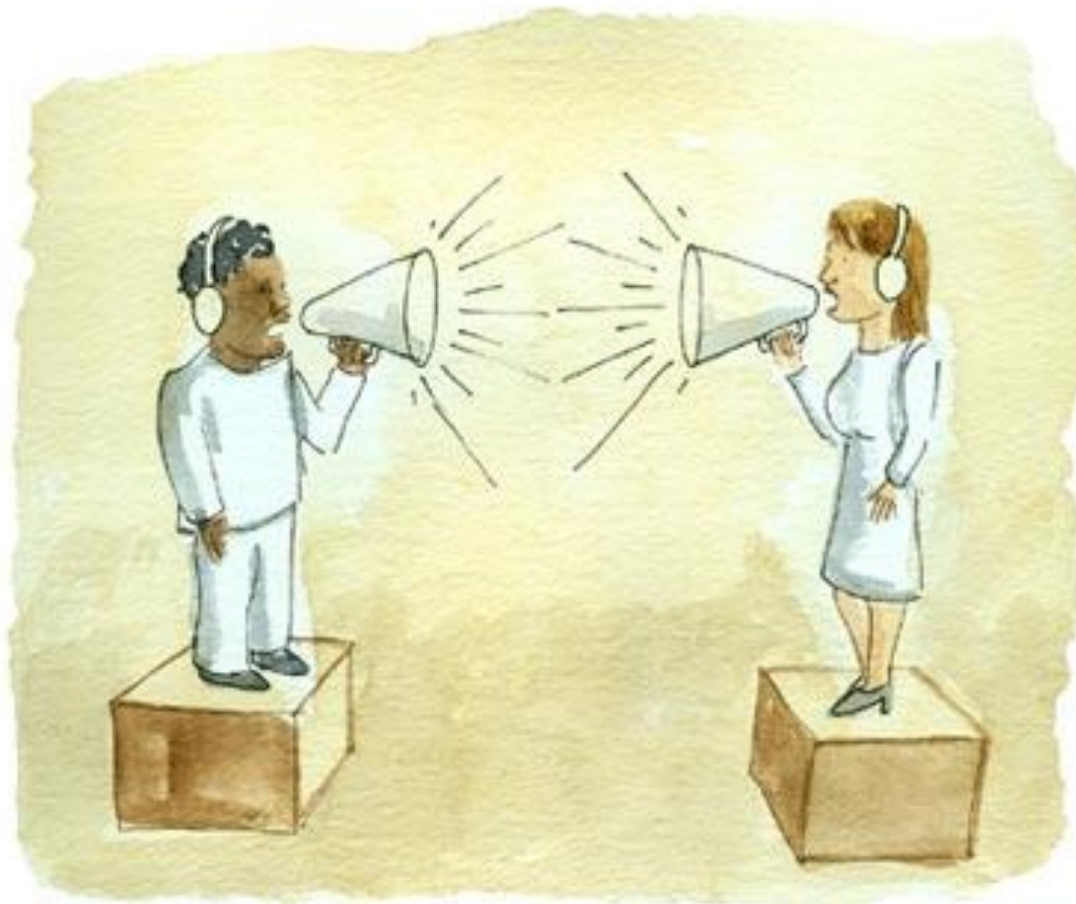
The communicator can aim at creating conditions for meaning/sense-making

Low-tension versus high-tension situations

What we'd like to happen

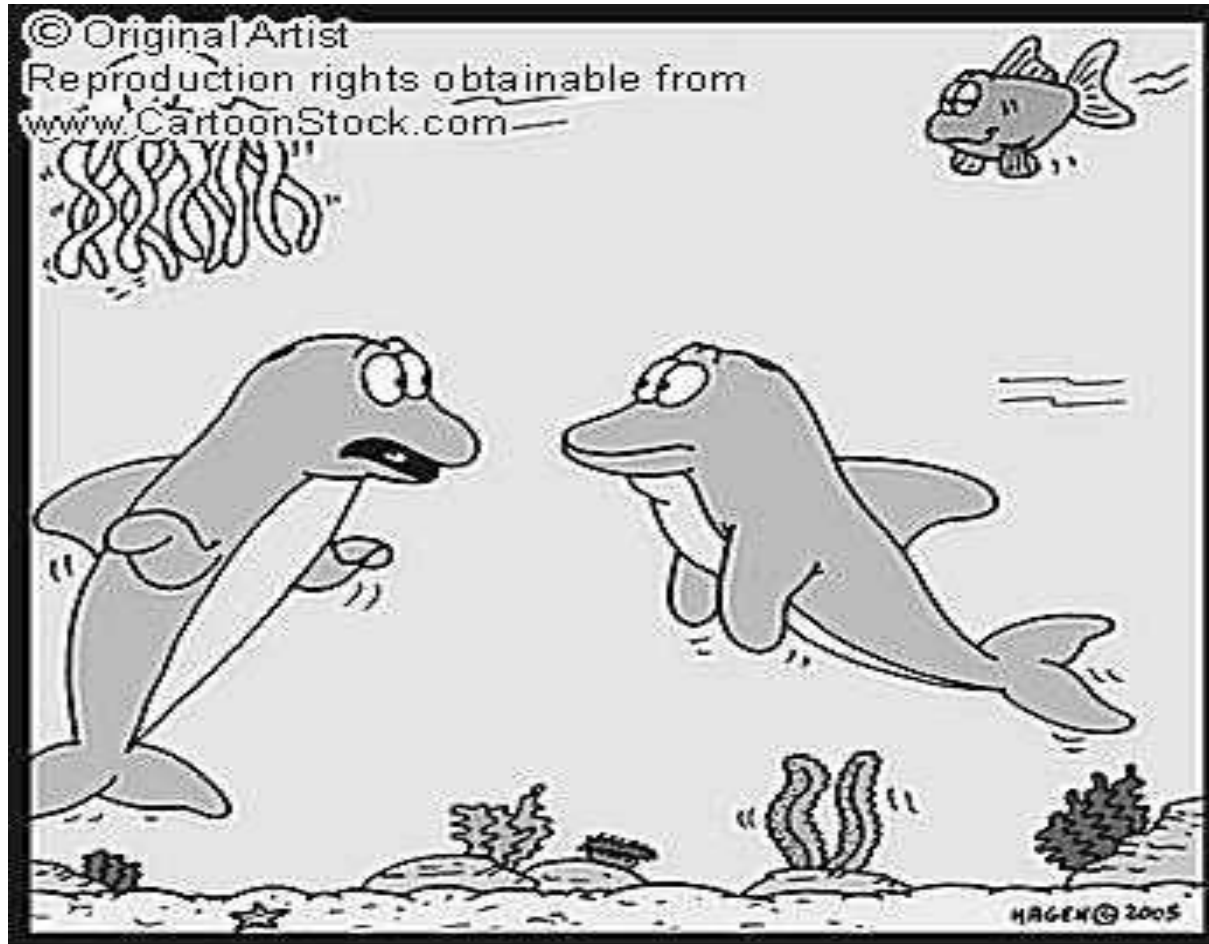


What (too) often happens



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So, some gave up on us



Frankly, I think we should stop trying to communicate with Humans: They're simply not smart enough to understand us

Creating low-tension situations

- The idea of low-tension situations applies to museums
- The strength of museums is exactly their potential to create low-tension situations
- The students could let go of their focus on grades but only if the teacher and museum let go of their narrow focus on achieving a certain goal
- Pointing to a potential for creating meaning-making conditions but also to changes in the way informal learning environments are used



The advantage over schools

- Research criticize schools and advocate for dialogic and student-centered teaching
- Difficult when the curriculum is fixed and the students may not be willing to talk about things that are not highly relevant for exams
- The informal learning environments potentially have more freedom if the involved communicators dare to let go
- But no structure is not the answer
- Not arguing for autonomous discovery learning



What kind of structure?

- One suggested structure is end-products (Dewitt & Osborne, 2007)
- Provides a structure and ensures follow-up
- The challenge is to not to create a high-tension situation
- In the FMP the predefined research questions have rather closed solutions
- This is the delicate balance and high-tension is not only bad
- Propose: dare to let go and allow museum activities to be open-ended



Current research project

- Developing an activity for upper secondary students in relation to Evolution
- Two main ideas are authenticity and dialogic teaching
- Well-known from educational theories but the focus here is the frameworks given by Olga Dysthe (1995) and Phil Scott (et al., 2006)
- Authentic questions
- Dialogic discourse
- In a balance with an authoritative discourse



Current research project

- Based on a motivational study we are developing a number of authentic questions
- The questions can be discussed on the basis of the exhibits themselves and not just from the labels
- i.e. What could the missing link between the chimpanzee and the homo-species have looked like?
- The students work in groups discussing the question joined by a museum educator who attempts the discourse balance
- We propose the teacher make follow-up



Current research project

- The follow-up is an end-product – a presentation
- Data collection methods will be field notes and photos taken with the students own mobile phones
- A future project could be a full utilisation of the mobile phone as a data collector
- The group work and presentations will not be evaluated according to achievement of specific cognitive outcomes in relation to evolution



Climate change and authenticity

- Climate change should imply plenty of authenticity
- Possibly easier than physics or chemistry
- Can you think of an authentic question?
- Focus on the basic geophysical aspects of climate in school
- Use the informal space for the unknowns, the theories, the doubts
- Students are exposed everywhere, TV, newspapers, bus commercials, movies



Concluding suggestions

- Use the informal inputs
 - in open-ended classroom discussions
 - to develop authentic questions for museum visits, e.g. the new exhibition in Copenhagen
- Allow yourself not to know where the discussion or group work ends
- Turn it into dialog
- Open-ended goals but scaffolded
- Use the informal environments as low-tension situations
- I'll report back on my research 😊



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