

Inquiry Based Science Education in the Joint science exam in Denmark

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**"I think they will become better
citizens with this test form"**

Hans Henrik Møller Velling

Natural science out of subject rooms

Moving the subjects out of the room and into reality:

Out of the house:

School in the woods for 1 ½ days – West Combustion - The marsh

Relate to actual and current events:

Litvinenko - Fukushima - Donau - Deepwater Horizon - Kuwait

Inquiry Based Science Education

Investigation and problem-oriented science education

- Explore
- Investigate
- Evaluate
- Conclude
- Communicate

Teaching towards the joint natural science test

	Broenshoej Skole	Skovbrynet Skole
The test Form	24-hour preparation The student tested for 20 minutes	24-hour preparation The student tested for 20 minutes
The test Presentations	1-4 open questions supplemented by physical effects	Based on an article with natural science content
Teaching methods	Multidisciplinary approach to common issues	Interdisciplinary Problem Based method

The evaluation of students learning outcome both schools

- Compared to the three subjects objectives
- Compared to the science competencies:
 - Having knowledge of
 - Be able to understand
 - Exert
 - Act
 - Critically evaluate

nature, science and technology in the diversity of contexts in which they are - or can be included

PISA

Definition of Scientific Literacy

- Explain phenomena scientifically
- Evaluate and design scientific enquiry
- Interpret data and evidence scientifically

The experiences

Students Evaluation Skovbrynet School

- A positive view of science
- Able to be critical of issues with natural academic content
- Able to act responsibly in relation to issues of natural subject matter
- Able to use scientific proof materials
- Able to identify scientific issues
- Able explain science

The experiences

Student Evaluation Broenshoej School

- "I think that the interaction between the various disciplines made it easier to understand the things I had a hard time dealing with"
- "I preferred interdisciplinary examination - since I have some subjects that are stronger than another subject, and you had the opportunity to pass the exam ... If I were doing only the physics it wouldn't have gone well, but since I could draw on biology and geography I was immediately more at home – it was therefore a more pleasant exam experience "

The experiences

Grades in Denmark

12

10

7

4

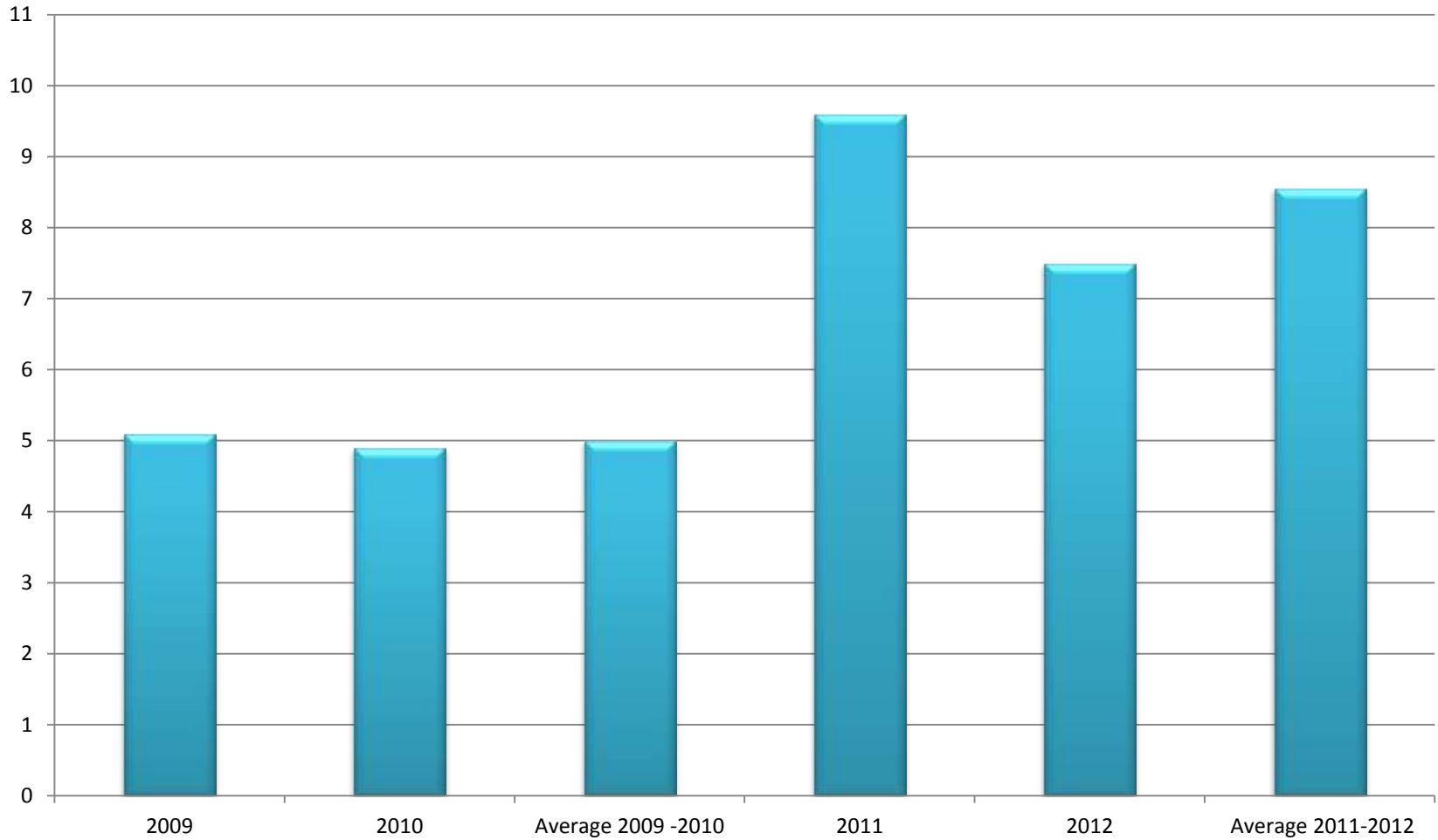
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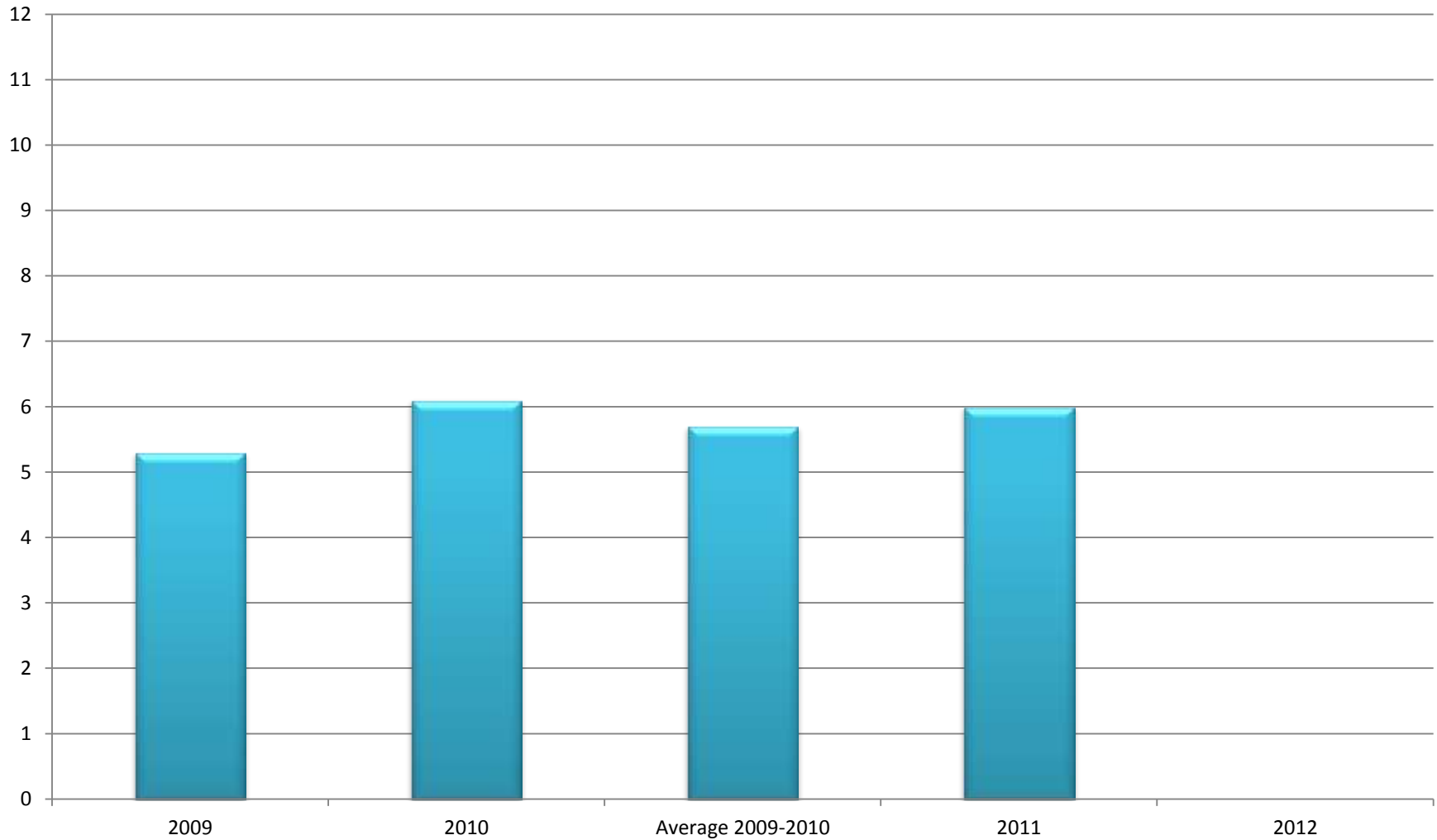
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Skovbrynet Skole grades

Oral



Broenshoej Skole grades



The experiences

External censor feedback:

"All students could use science methodology at their own level "

"The students' reasoning ability are impressive"

"The students were very much able to be critical of the methods and materials they used. Such a maturity I have never before experienced."