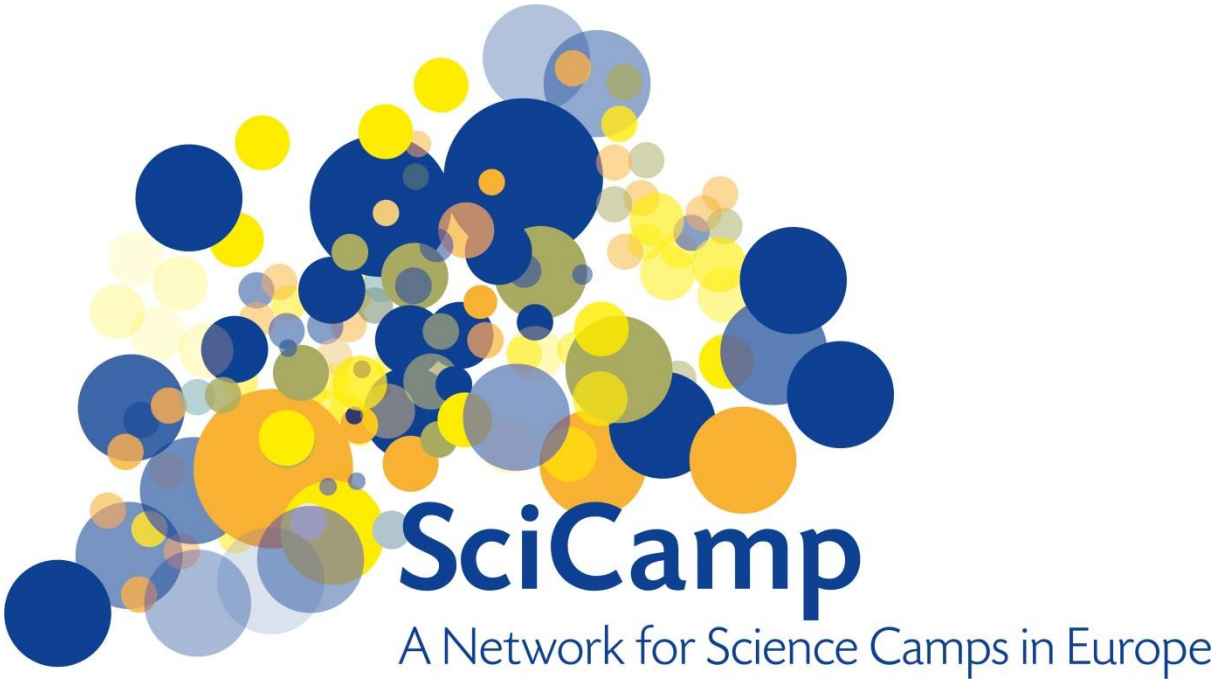


# Evaluation

Morten Rask Petersen & Linda Ahrenkiel, SDU

# Aims of the project – What did we say we wanted to do?

1. Connect different camp organizers to form a strong connection among European countries, exchange best practice and research on development of these camps.

2. Connect summer camps to local companies with technical and science products as well as regional universities, technical universities and other academic institutions working in the STEM field.

3. Extracting practical ideas and research based results from the science camp inquire based programs to bring them to classroom practice in schools located to the science camps regions.

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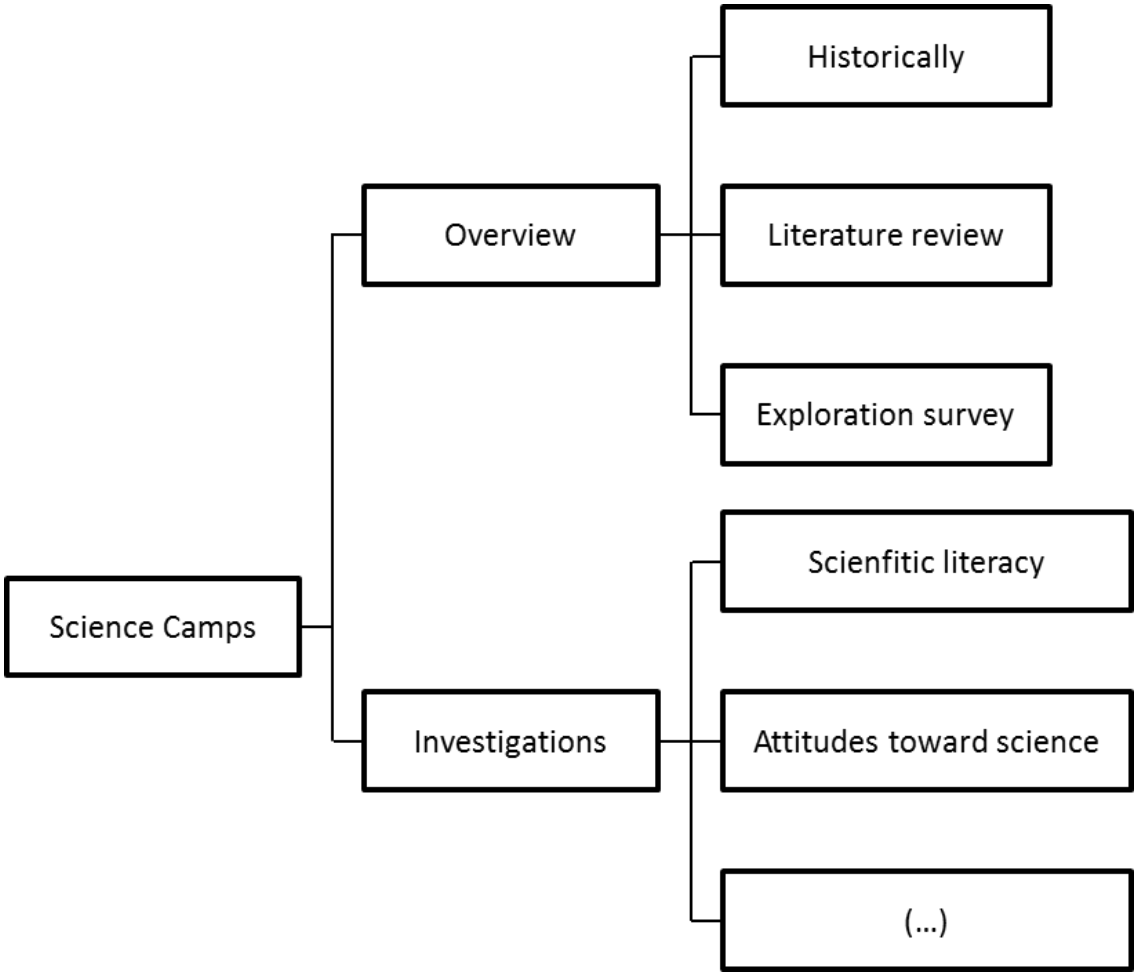
# Evaluation of the project – Did we do we wanted to do?




Ahrenkiel, *in prep.*

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# Evaluation of the project – Was it succesful? According to what parameters?

Motivation

Interest

Scientific Literacy

Participants affected

Collaboration organized

Science camps in Europe

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# Scope and strategy

The presentation will focus on:

1) How are participants affected?
2) How is collaboration organized?

This has been investigated in case studies

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# How are participants affected

Examplified with case studies:

1) **Scientific Literacy: Science camps for lower secondary school in Denmark**
2) Motivation: Science camps in Germany and Turkey
3) Retrospective interview with participants.
4) Cases from the members of the Scicamp consortium
5) …

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# Preliminary results: Gruop level

**Outline of science camps impact on students' scientific literacy on group-level.**

Each dimension (product, process and method, and social institution) in scientific literacy is given by mean in pre-test and post-test, and the p-value.

| *Dimension (Normalized values)* | *Pre-test (n=115) (mean ± STD)* | *Post-test (n=115) (mean ± STD)* | *Wilcoxon Singed Rank Test (p-value)* |
|---|---|---|---|
| Product | 0,38 ± 0,10 | 0,54 ± 0,16 | 0,000 |
| Process and method | 0,71 ± 0,20 | 0,90 ± 0,17 | 0,000 |
| Social institution | 0,50 ± 0,19 | 0,54 ± 0,18 | 0,003 |

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# Preliminary results: individual level

**Outline of science camps impact on students' scientific literacy on individual level.**

*Each dimension (product, process and method, and social institution) in scientific literacy > 0 (True) indicates a positive impact on students' scientific literacy.*

| *Product > 0* | *Process and method > 0* | *Social institution > 0* | *Quantity (%)* |
|---|---|---|---|
| False | False | False | 2 |
| True | False | True | 24 |
| True | False | False | 10 |
| False | False | True | 2 |
| False | True | True | 0 |
| False | True | False | 1 |
| True | True | False | 7 |
| True | True | True | 54 |

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# How is collaboration organized?

Exemplified with case studies:

1) Data from the exploration survey of existing science camps in Europe
2) **Survey among DK science camp teachers focusing on collaboration within a team (PLC)**
3) …

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# How is collaboration organized?

## The case of Professional Learning Communities

| Collaboration form | Description |
|---|---|
| **Sharing** | Teachers inform each other and share materials |
| **Synchronising work** | Teachers coordinate their work together |
| **Joint construction** | Teachers use individual knowledge in order to enhance joint knowledge in the group |

After Ahrenkiel & Petersen, *in press*

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# Constructing a science camps means:

1) The guiding structure is the content and topic of the camp
2) Teachers identify core issues in this content
3) Together they use their conceptual and pedagogical knowledge to design lesson plans and experiments
4) The process is iterative

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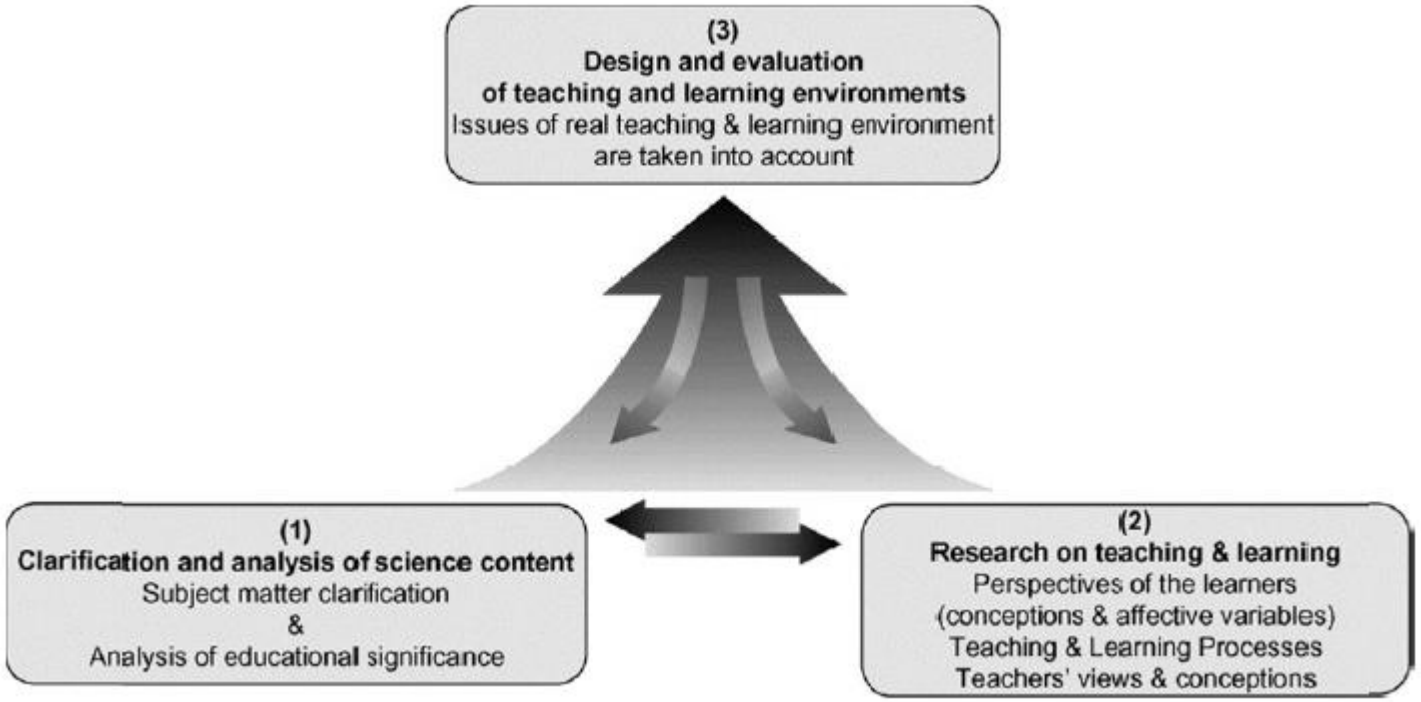
# A practical example of Educational Reconstruction




Duit, Gropengießer, Kattmann, Komorek & Parkmann, 2012

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# Summary of the cases

1) It is *not* a waste of time to join a science camp
2) Students can gain both content knowledge, procedural knowledge and societal knowledge during a camp
3) We can not say that it is better than ordinary teaching *but* …

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# Summary of the cases

4) Students get a more holistic approach to science and scientific literacy
5) Teachers collaborate on a high level in PLC
6) New materials are developed that can contribute to future teaching
7) Fun and learning is not *either-or* it is *both-and*

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# Evaluation of the project – Was it succesful?

**According to student and teacher parameters the answer is:**

**Yes ☺**

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# Thank you for your attention

**Any questions can be adressed:**

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