The Nordic Physics Tale: a travelling scientific dissemination project teaching science to children with an artistic approach

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Plan

- 1. Context
- 2. Writing the fairytale
- 3. Practical implementation
- 4. Conclusion
Plan

1. Context
   - The idea
   - Scientific fairytale
   - Facts

2. Writing the fairytale

3. Practical implementation

4. Conclusion
The idea

- Growing lack of interest for Sciences among young generations
  - Surveys (TIMMS, PISA)
  - Experienced teachers feedbacks
  - ...

Fairytale

Morality

Science?
Scientific fairytale

- Scientific fairytale
  
  Imaginary story featuring fantasy characters or objects, conveying morality scientific contents

Teaching methods

- Avoid technical language
- Implicit content
- Engagement of audience

Knowledge

Consolidation phase

Narrative
  (fairytale, drama, ...)

Paradigmatic
  (textbook, traditional lecture, ...)

1. Context
2. Writing the fairytale
3. Practical Implementation
4. Conclusion
## Facts

<table>
<thead>
<tr>
<th>Age of pupils</th>
<th>7-11 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborators</td>
<td>2</td>
</tr>
<tr>
<td>Period</td>
<td>March – June 2014 (+ two months preparing and closing the project)</td>
</tr>
<tr>
<td>Budget</td>
<td>Approx. 45 k€</td>
</tr>
<tr>
<td>School classes</td>
<td>68</td>
</tr>
<tr>
<td>Schools</td>
<td>17</td>
</tr>
<tr>
<td>Counties</td>
<td>7</td>
</tr>
</tbody>
</table>

850 pupils have had their first physics course

www.fysikkeventyr.no
Plan

• 1. Context

• 2. Writing the fairytale
  - The story
  - Scientific content

• 3. Practical implementation

• 4. Conclusion
The story

Scene 1: The forest

Scientific content

The Sun-Earth system
The story

Scene 2: The frozen lake

Scientific content

- Phase transition of water (Liquid ↔ Solid)

- Conservation of momentum
The story

Scene 3: The mountain

Scientific content

The avalanches
The story

Scene 4: The sea

Scientific content

Bernoulli effect
The story

Scene 5: The north

Scientific content

Archimede's principle
Plan

• 1. Context

• 2. Writing the fairytale

• 3. Practical implementation
  - Performance on stage
  - Discussion with children
  - Experimental activities on classrooms

• 4. Conclusion
Performance
Scene 3: The mountain -> Monsters = **Avalanches**

**Scientific method**

1. Observations  
   - Snow? Avalanche?

2. Modeling  
   - Avalanche in the classroom?

3. Experimenting

4. Concluding

**Types of snow**
- Fresh snow, Fragmented particles, Rounded grains, Cup-shaped crystals, Wet snow
- Fresh snow ↔ Flour
- Cup-shaped ↔ Sugar
- Slope ↔ Shoes box
Plan

• 1. Context

• 2. Writing the fairytale

• 3. Practical implementation

• 4. Conclusion
  - Feedback forms
  - Perspectives
Feedbacks forms

Our questions

Which phenomena did you see?

Where can we make physical experiment?

Could you give other physical phenomena from the everyday life?

Children’s answers

- Different phases of water
- Flying with wings with wind's help
- Stream of water

- Outside
- In the nature
- In a laboratory
- In a classroom
- At home
- Everywhere

- Gravity
- Northern lights
- Thunder or lightning
- Earth quake
- Volcanic eruption
Perspectives

- The competition: a physics course for polar bears
  - Engagement of the audience
  - Requires planning organization → part of the curriculum

- A teaching duty for scientists
  - Original way of teaching
  - Reducing the gap science development and society

- Development in other countries
  - Mixture of knowledge and culture

Thank you