Northern Lights on TIMSS and PIRLS 2011
Differences and similarities in the Nordic countries
Why Northern Light?

• The Nordic countries form a unique “laboratory” for educational research because we share a common culture, but at the same time have chosen different educational systems

• Wish to use the rich data material from Nordic participation in international studies to:
  • Shed light on similarities and differences between the Nordic education systems
  • Learn from each other
  • Use results for further education policy development

• Provide a basis for joint Nordic initiatives both for school development and further research and analyses

• Target groups
  • Ministerial level and educational authorities both at national and regional level
• The Northern Light reports are funded by the Nordic Ministerial Council
• Editorial group consisting of members from each Nordic Country, led by Hallvard Thorsen from The Norwegian Directorate for Education and Training
• Authors for each article contracted by the editorial group. The editorial group also acted as reviewers for the articles
• Articles mainly based on TIMSS and PIRLS, but also other relevant studies. Each article should contain analyses of at least two Nordic countries
• The Northern Light report was presented at a large Nordic Conference in Oslo in May
### Nordic participation in IEA studies

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<th>Country</th>
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<th>NO</th>
<th>SE</th>
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<td>ICCS, TIMSS, PIRLS</td>
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International studies – strengths and weaknesses

• Reliable trend measures of learning outcomes – comparisons over time across countries at a system level
• Opportunity to assess learning outcomes in relation to pupil’s background, learning environment and school organisation
• Do not analyze causal relationships
• Analyses should be performed in a cultural context
International studies form part of a broader national knowledge base

- National test data
- Comparative international studies
- National evaluation programs
- Data from school practice
- National data from the quality assurance system

Teaching and learning in school
Development in Norway – based on all studies combined

*Figur 1: Resultater over tid for PISA, TIMSS, ICCS og PIRLS. Merk at resultater ikke kan sammenliknes på tvers av studiene.*
Some Nordic characteristics

• High degree of decentralization
  • But national curricula

• High emphasis on equity
  • But signs of increasing segregation?

• High level of educational resources and high teacher – pupil ratio

• High degree of autonomy

• Results around international mean (with the exception of Finland)
Northern Light – Policy questions

- What is the relationship between school performance and policy variations?
- How is reading literacy taught in Nordic classrooms, and how is this influenced by the curricula?
- How can we improve mathematics teaching in Nordic classrooms?
- How do teachers’ attitudes, beliefs and practices influence pupils’ learning outcomes?
- What characterizes the top performing pupils, and how can we stimulate more pupils to perform at the highest levels?
Articles and authors

• Top- and low performers
  Pekka Kupari, Kari Nissinen, Sari Sulkunen – University of Jyväskyle

• School performance and policy variations
  Kajsa Yang Hansen, Jan-Eric Gustafsson & Monica Rosén - University of Gothenburg

• Classroom teaching and practices
  Ragnar F. Ólafsson and Júlíus K. Björnsson

• Strengths and Weaknesses in the Nordic Education systems
  Mathematics: Liv Sissel Grønmo – Universitetet i Oslo
  Reading: Louise Rønberg & Jan Mejding - Aarhus University, Department of Education (DPU)
Findings from the articles
Materials and approaches in reading instruction

- The formation of the curriculum influences teaching and learning in the classroom.
- National objectives must correspond with empirical research on reading development.
  - The Finnish curriculum is to a greater extent based on empirical research.
- Reading comprehension is not a general ability. Students need experience with a variety of text types. Each specific subject area needs to work with students’ reading comprehension by teaching text structure, vocabulary, and comprehension strategies.
- Formative observations and assessments of students’ progress are necessary as a means to monitor learning and adjust teaching strategies.
Policy variations: Findings and conclusions

There are systematic but complex patterns of school and classroom differences among the three countries:

- Finland: No school differences, large classroom differences
- Norway: Intermediate school differences, small classroom differences
- Sweden: Large school differences, small/intermediate classroom differences

Both segregation of living and school choice are important, but the mechanisms seem to differ between countries. This may reflect both demographic differences and differences in educational policies.

The large classroom differences in Finland was an unexpected finding that requires further investigations.
Characteristics of top and low performers

• **Gap between low and top performers seems stable**
  • School cannot even out the impact of background and differences in basic skills at school start

  ⇒ *support for struggling students still insufficient?*

• **What to do with top performers?**
  • Teachers and parents may overlook them since everything goes fine => implications e.g. for school enjoyment?
  • Mild interest from adults’ side and lack of challenges may hinder reaching full potential

Questions raised:
• Need for individualized pedagogical solutions, how about resources?
• Need for continuing professional development of teachers, how about resources?
Trends in students’ achievement in Norway, Sweden and Finland in lower secondary school in TIMSS from 1995 to 2011

Students in Norway and Finland have the same age, while students in Sweden are one year older.

In Grade 4 we have trend data for Norway, Sweden and Denmark. An increase in achievement in Norway and Denmark from 2007 to 2011 – no change in Sweden.

Comparing primary school students with the same age in 2011 – conclusion:
Norway (549) and Finland (545) on the same level, Denmark (537) a little lower, Sweden (504) much lower
Mathematics Performance and School Emphasis on Academic Success (SEAS)

Background:
Norway and Sweden have had a different development in learning outcomes. This is analysed based on background questionnaires in TIMSS 2011

- SEAS has had a positive influence on mathematics achievement in both Norway and Sweden
- The increase in SEAS from 2007 to 2011 in Norway can explain the observed increase in mathematics performance in Norway from 2007 to 2011
- For Sweden, no significant change was found in SEAS from 2007 to 2011, implying that this factor cannot be used to explain the decrease in Sweden from 2007 to 2011
Teacher practices and attitudes in European countries

• Can identify clusters of countries with comparable characteristics
• Country groupings and dimensions broadly replicated across datasets and questionnaires
• Eastern vs. Western Europe dimension
  ➢ Nordic, Mediterranean, Germanic, Anglo, Eastern European country groups
• Significant cultural differences related to e.g. homework, teaching methods, assessment and feedback
  ➢ How does this affect learning outcomes?
Northern Lights – some highlights

• The national curriculum is reflected in the actual teaching and learning in the classroom, and should be based on empirical research.

• Individual approach and support from both teachers and parents is of crucial importance
  • Particularly important for pupils at risk
  • “top performers receive little support?”

• Language development and understanding is important for learning

• Increased focus on “SEAS” can partly explain the positive development in Norway
