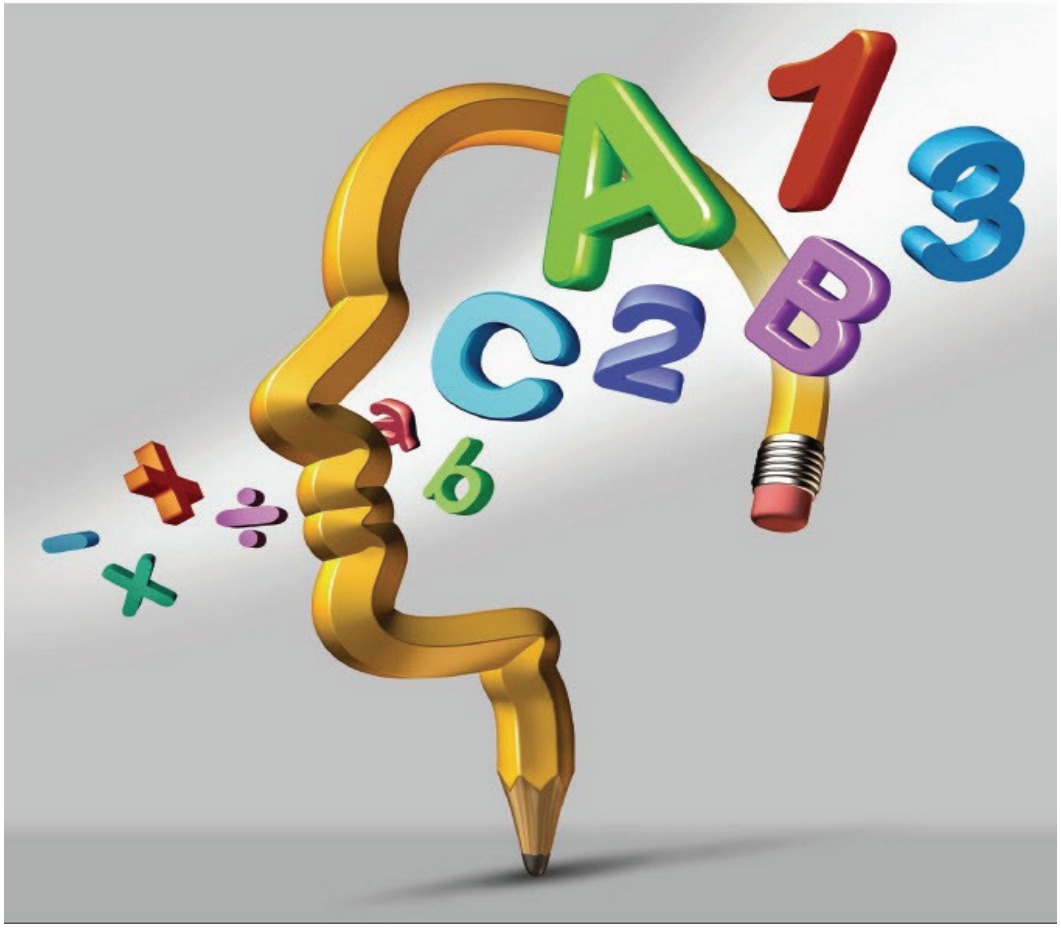
Norwegian Directorate
for Education and Training

norden

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 differencies between the nordic aducation 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

Prosess

- 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

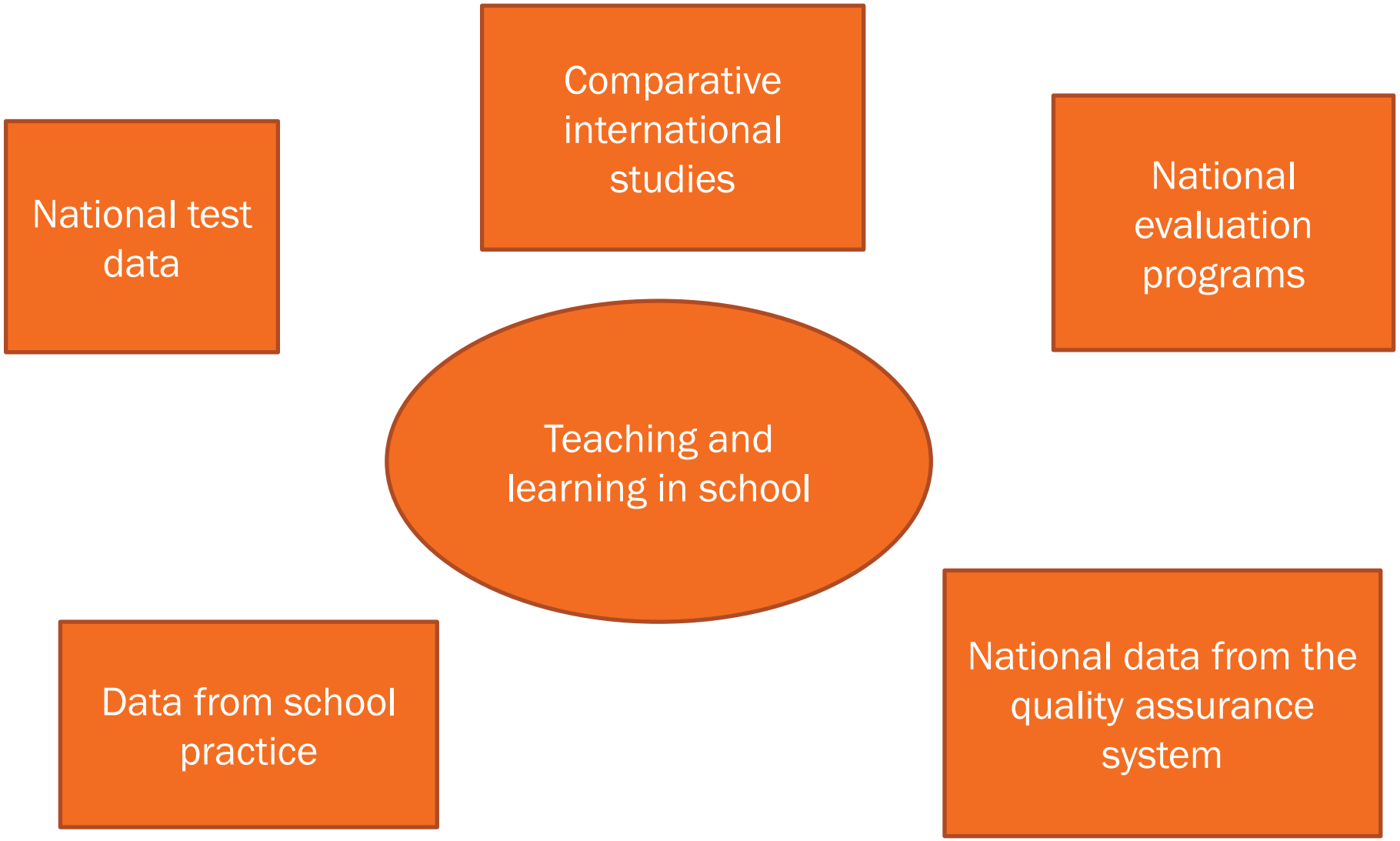
Country	DK	NO	SE	SF	IS
Institutional member	**Aarhus University** Department of Education (edu.au.dk)	**Norwegian Directorate for Education and Training** (www.udir.no)	**Swedish National Agency for Education** (www.skolverket.se)	**University of Jyväskylä** Finnish Institute for Educational Research http://ktl.jyu.fi	**Educational Testing Institute** www.namsmat.is
Current participation	**ICCS, ICILS, TIMSS , PIRLS, ePIRLS**	**ICCS, ICILS, TIMSS, TIMSS Advanced, PIRLS, e-PIRLS**	**ICCS, TIMSS, PIRLS, TIMSS Adv**	**ICCS, TIMSS, PIRLS**	

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

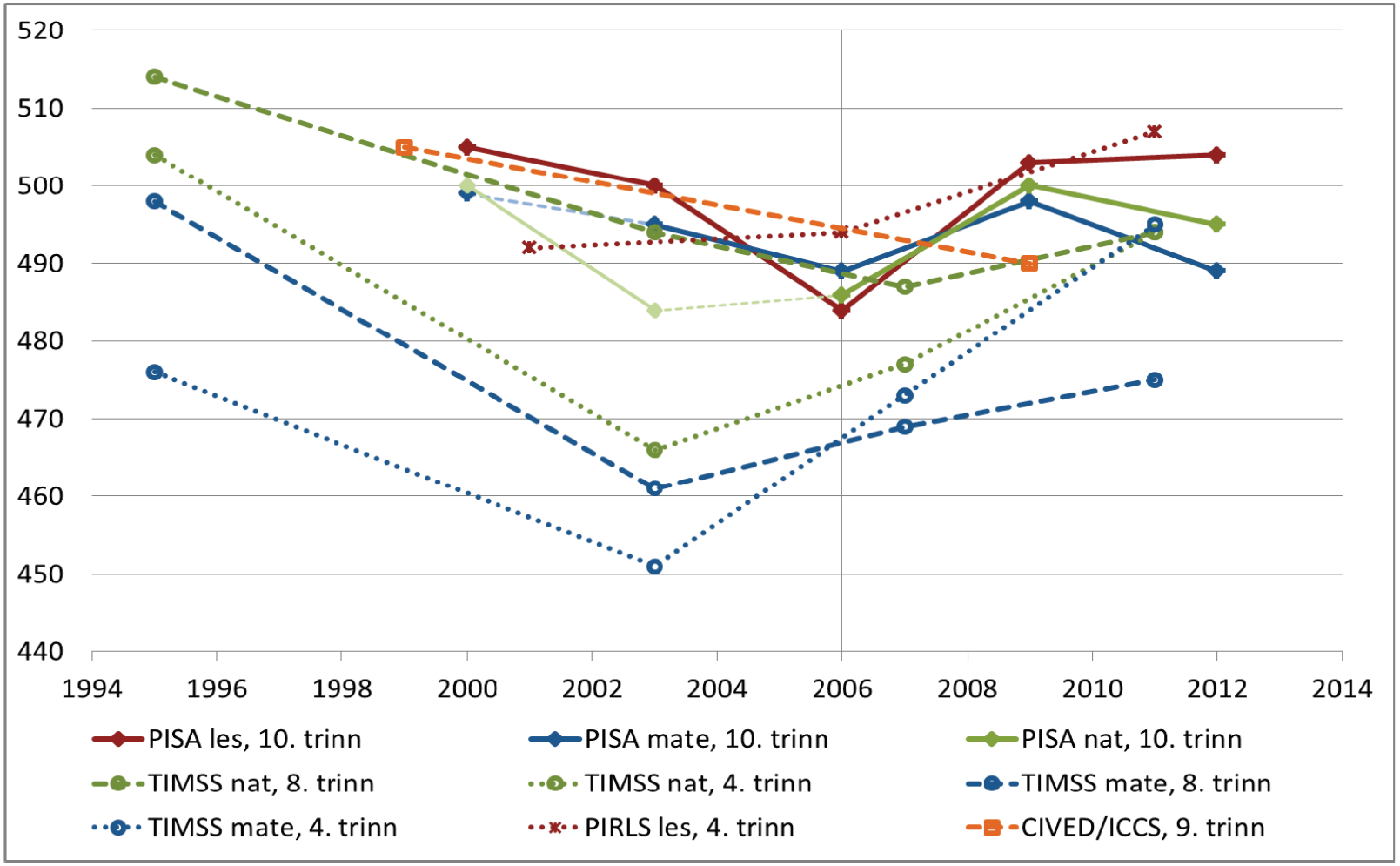
- Do not analyze causal relationships
- Analyses should be performed in a cultural context

International studies form part of a broader national knowledge base



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 unexpectred 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?*

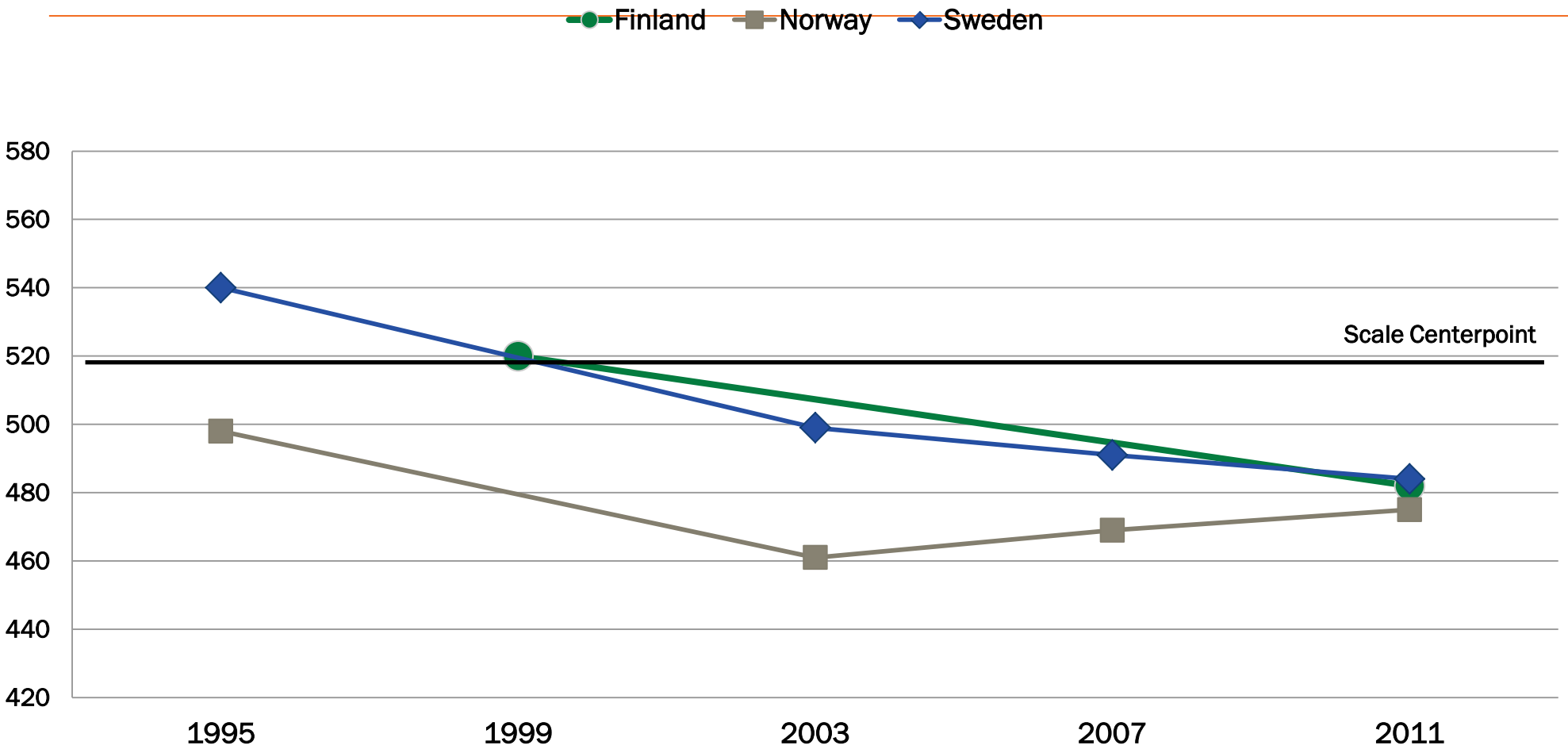
- What to do with top performers?
  - Teachers and parents may overlook them since everything goes fine => implications e.g. for school enjoyment?
  - Mild interest from adults' side and lack of challenges may hinder reaching full potential

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 characteristisc
- Country groupings and dimensions broadly replicated across data sets and questionnaires
- Eastern vs. Western Europe dimension
  - Nordic, Mediterranean, Germanic, Anglo, Eastern European country groups
- Significant cultural differencies 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

http://www.udir.no/Upload/Forskning/2014/Nlights%20TIMSS%20and%20PIRLS.pdf