Lust och engagemang
Utbildning för en hållbar framtid
14-15 November 2017

ESD
Skolans uppdrag
Utbildningens funktion och samhällets utveckling
Energin, Miljön och Hälsan

Anders Jidesjö (PhD)
Linköpings Universitet, Sweden
anders.jidesjo@liu.se

ROSE - Sweden http://www.roseproject.no
the Relevance Of Science Education

IRIS-International http://iris.fp-7.org
Interests & Recruitment in Science
EU's SEVENTH FRAMEWORK PROGRAMME
Science in Society

Factors influencing recruitment, retention and gender equity in science, technology and mathematics in higher education

http://www.knutprojektet.se

Föreställningar om skolans uppdrag (Läroplanen och kursplanerna…mm…)

Föreställningar om lärande

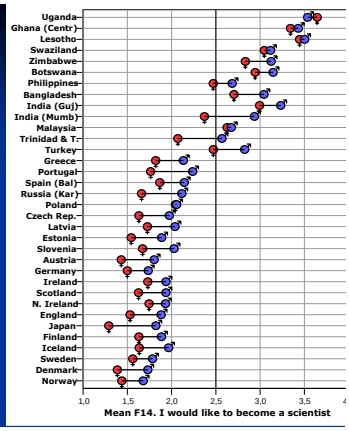
Föreställningar om kunskap (katalog, analog, dialog)

Föreställningar om utbildning

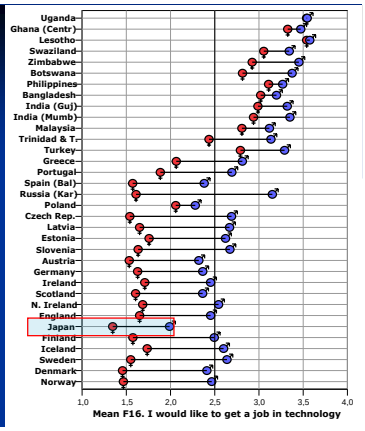
Föreställningar om ämnen

Föreställningar om åtgärder (betyg, prestationer (PISA, TIMMS), nationella prov, kollegialt lärande…)

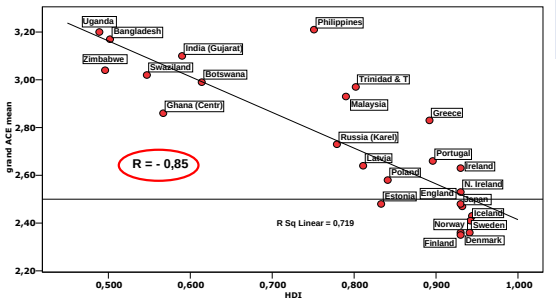
I would like to become a scientist

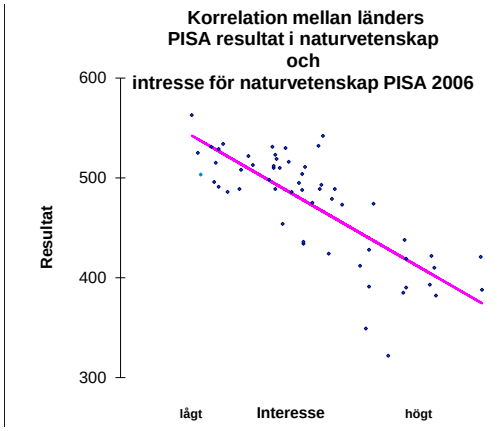


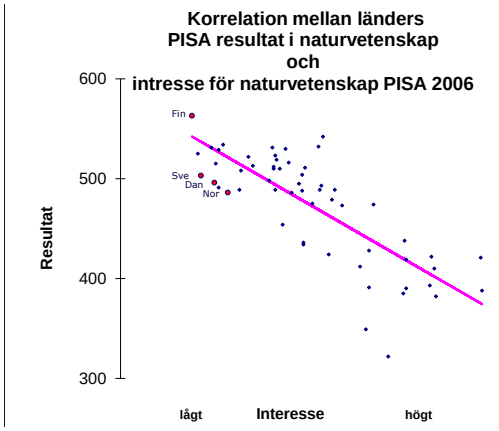
I would like to get a job in technology



Grand mean of all items on Interest vs. HDI (Human Development Index)

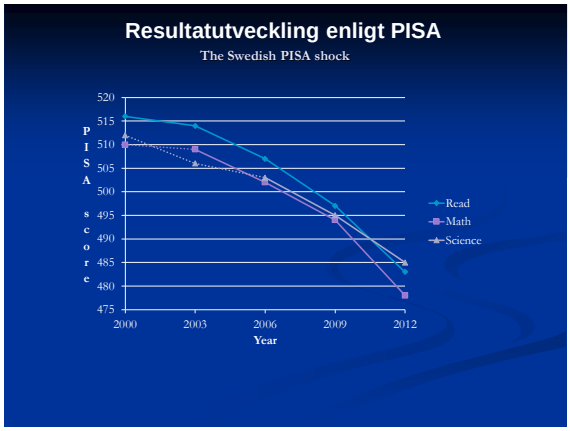


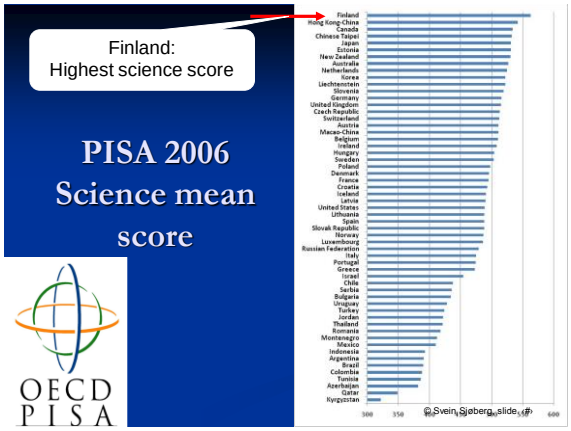


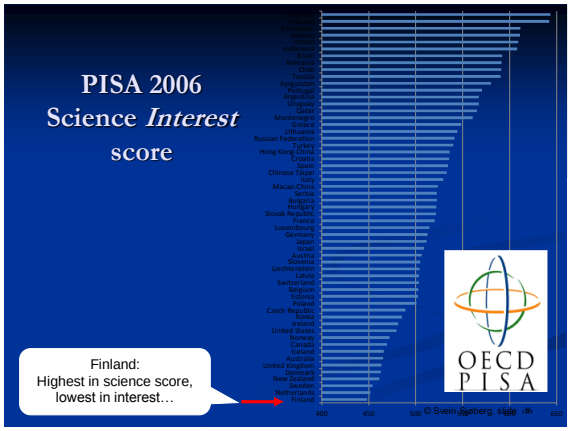


Hur blev debatten?

Bilder och motbilder


Resultatutveckling enligt PISA
The Swedish PISA shock
PISA score
520
515
510
505
500
495
490
485
480
475
2000
2003
2006
2009
2012
Year
Read
Math
Science

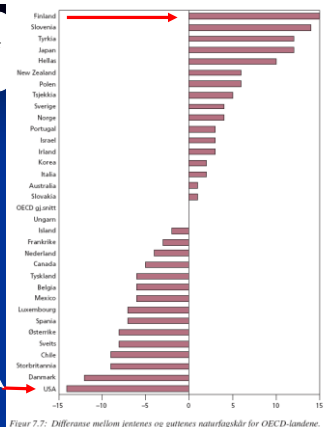

Finland:
Highest science score
PISA 2006
Science mean
score
OECD
PISA
© Svein Sjøberg, slide


PISA 2006
Science Interest
score
Finland:
Highest in science score,
lowest in interest…
OECD
PISA
© Svein Sjøberg, slide

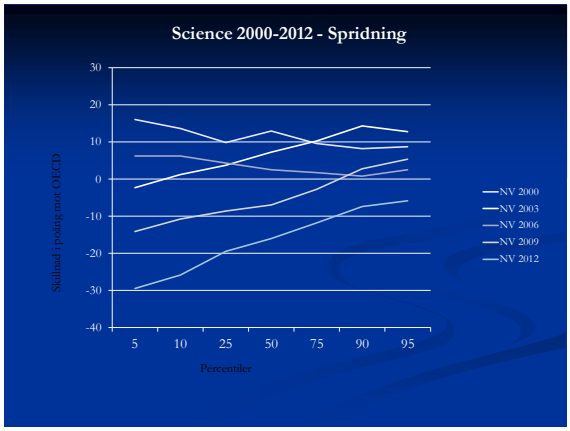
Finland:
Largest gender difference in favour of girls, also in science

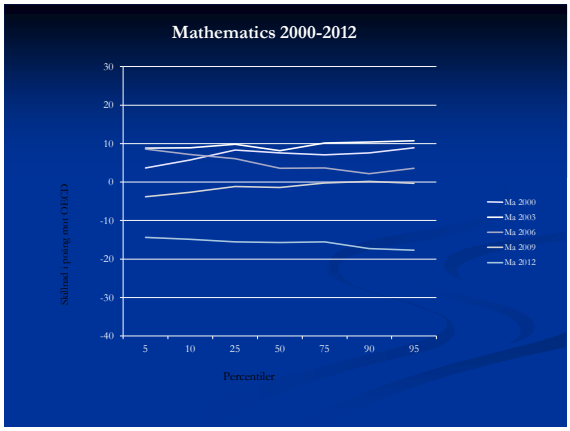
PISA-paradox: Gender difference *science* score

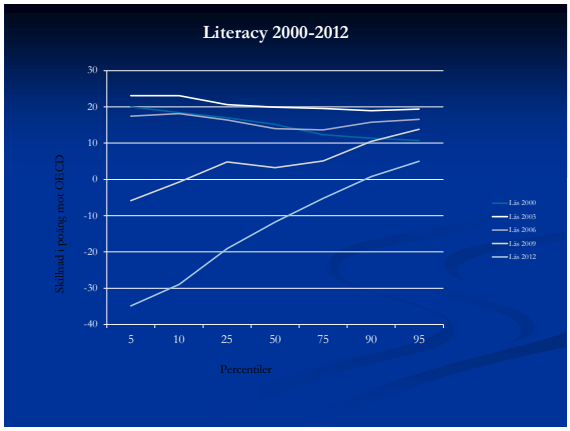
USA
Largest gender difference in favour of boys

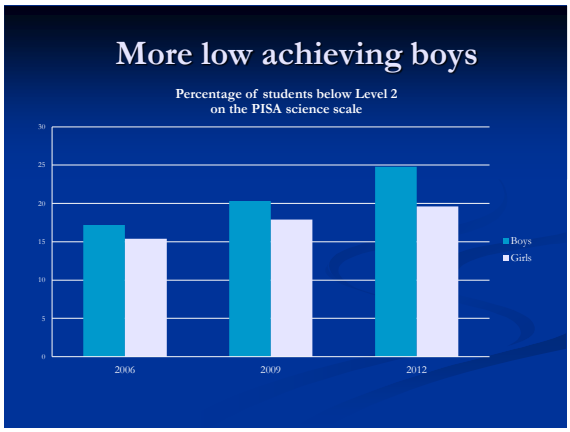


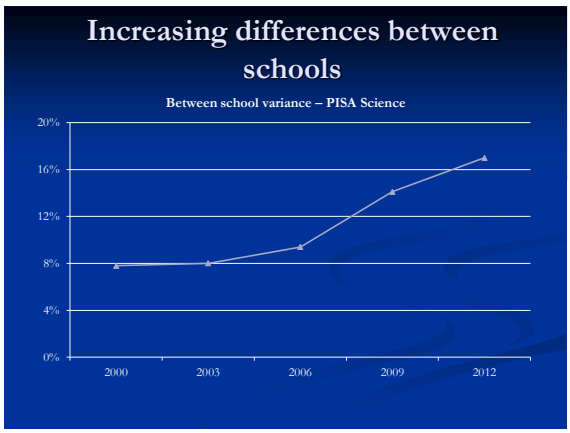
Figur 7.7: Differanse mellom jentenes og guttenes naturfagskår for OECD-landene.






Literacy 2000-2012
Skillnad i poäng mot OECD
30
20
10
0
-10
-20
-30
-40
5
10
25
50
75
90
95
Percentiler
Lis 2000
Lis 2003
Lis 2006
Lis 2009
Lis 2012


More low achieving boys
Percentage of students below Level 2 on the PISA science scale
30
25
20
15
10
5
0
2006
2009
2012
Boys
Girls


Increasing differences between schools
Between school variance – PISA Science
20%
16%
12%
8%
4%
0%
2000
2003
2006
2009
2012

Vi ska använda ett årtionde för att stämma av!

Har vi hjälpt oss själva att sätta in spärrar?

Har vi tänkt efter vart vi vill?

Kika på något exempel

Ingen kan göra allt, men alla kan göra något

Hur ser materialflöden ut?

Hur ser livscykelanalysen ut för en produkt?

…flöden som vår välfärd vilar på

Exemplet elektronik

Resurser från exempelvis Kongo

Flöden tillbaka till exempelvis Ghana och Kina

Det vi kallar återvinning…hur ser det egentligen ut?

Elektronikskrot utgör cirka 5% av avfallet idag globalt
och är den snabbast växande fraktionen (ca 20-50 miljoner ton/år)

Elektronik innehåller en hel del – Därför intressant att återvinna

I avfallsprocesser och återvinningsprocesser
frigörs substanser och görs tillgängliga för miljö och liv

Elektronik är idag del av globala miljöproblem

Begränsad kunskap hur ämnena sprids

Man uppskattar att så lite som ca 10% av avfallet går till specialiserade anläggningar (som kontrollerar emissioner)

Resten exporteras

Finns idag ingen existerande och fungerande metod för att ta hand om elektronikskrot

Miljö- och hälsorisker de mest framträdande problemen

Inriktning mot verkliga problem

Stimulerar till kritiskt tänkande och handlingsberedskap

Det är dramatiskt att fatta beslut, när man får göra själv, träna detta redan från början!

Genom deltagande!

Vi stirrar på produkt: Betyg, prestationer...

Nu kommer utmaningen att ***också*** tänka kring processen!

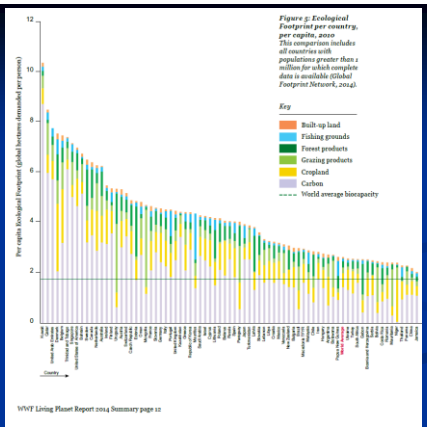
What, how and why Education?

Literate individuals → Literate society

1900 — 1950 — 2000

Classic education
Subjects and methods

System approach?
Moral?
Complexity?
Sustainability?
Uncertatinty? Etc.



0,08%

A study was carried out in Sweden 2014

To lay an empirical foundation for discussing education for sustainable development
Especially in the reporting of national status in the UN context in Nagoya, Japan, November 2014.

Some key findings and challenges

Success: What has been done?
Two main observations / results
(empirical)

ESD implementation in Sweden is of a structural rather than operational nature. These structures constitute a potential for further action.

International trend in implementation, research and networks.

Shortcomings: What has not been done?
Two main observations / results
(empirical)

Communication problems,
the absence for meeting places between practitioners and researchers
difficulty of measuring learning outcomes
and the lack of shared understanding of what ESD is all about.

Teacher education is almost portrayed as the
"black sheep"
in the ambition to assist in the work with implementing ESD in Sweden.

In my interpretation these views have to do with making ESD operational and manageable.

Possibilities: What could be done?
Three main observations / results
(empirical)

Most actors do not believe that the school curriculum is a big problem. The crucial issue seems to be the actual on-the-ground implementation.

The findings support the importance of establishing strong relations between education, working life and society.

Many actors point at the areas of energy consumption, the use of natural resources, environmental effects and health issues as most important content areas to cover.

Summary, main observations and conclusions

On order to make ESD more operational for day-to-day teaching and learning practice, practitioners and education administrators alike should do well to reflect and decide on the following central ESD aspects:

- Complexity
- Measurability
- Coherence between purpose, goal, content and assessment
- Learning and teaching
- Man and nature: Focus more on the use of resources instead of its consequences
- Economy: Bring in its material and ethical dimensions
- Adapt the ecological, economic, social and cultural aspects to different contexts
- Work on a narrative that captures the motive for ESD
- The contribution to important contexts from different school subjects
- Relations between the national and international
- Production and consumption

Förändringar tar tid

Young people's perceptions of school science?

The Draw-a-Scientist Test Unvails a not too positive Stereotype of Scientist

Alternativ inriktning?

Energin, Miljön,
och...
…
Hälsan

Låt kontexterna organisera
Inte ämnena

Studera inriktningarna

Reflektera

Välj några exempel

(Mänskliga aktiviteter – Skolämnena)

Information
Research
Business
School – Education

More smiles on our faces!

1900 1950 2000

International understanding!

Enjoyment of life
Participation
Trust
Empowerment