

Lessons for Sweden from top-performing education systems

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What did I do?

- Approached schools 'under the radar'.
- Stayed with teachers. Taught with them where possible.
- Spent
 - 3-4 weeks in each country
 - 3 weeks inside schools
- Interviewed teachers, students, parents and policy makers.
- Identified themes and commonalities from these conversations, my own observations, other research, and TALIS and PISA data to inform my book – *Cleverlands*.



What is PISA? Should we care what the results are?

- The Programme for International Student Assessment.
- Measures children's performance in **reading, maths and science** at the end of compulsory schooling (**age 15-16**).
- Tests the **application** of skills - you cannot do well in these tests through rote learning alone.

CLIMBING MOUNT FUJI – a unit from the field trial

CLIMBING MOUNT FUJI

Mount Fuji is a famous dormant volcano in Japan



CLIMBING MOUNT FUJI – QUESTION 1

Mount Fuji is only open to the public for climbing from 1 July to 27 August each year. About 200 000 people climb Mount Fuji during this time.

On average, about how many people climb Mount Fuji each day?

- A. 340
- B. 710
- C. 3 400
- D. 7 100
- E. 7 400

CLIMBING MOUNT FUJI – QUESTION 2

The Gotemba walking trail up Mount Fuji is about 9 kilometres (km) long.

Walkers need to return from the 18 km walk by 8 p.m. Toshi estimates that he can walk up the mountain at 1.5 kilometres per hour on average, and down at twice that speed. These speeds take into account meal breaks and rest times.

Using Toshi's estimated speeds, what is the latest time he can begin his walk so that he can return by 8 p.m.?

How does Swedish education compare internationally?

Things to be proud of.

A yellow five-pointed star with a blue outline, containing the text 'English as a foreign language'.

English as
a foreign
language

A yellow five-pointed star with a blue outline, containing the text 'Civic knowledge'.

Civic
knowledge

A yellow five-pointed star with a blue outline, containing the text 'School enrolment'.

School
enrolment

PISA 2018

Reading

Mean score	Comparison country/economy
555	B-S-J-Z (China)
549	Singapore
525	Macao (China)
524	Hong Kong (China) ¹
523	Estonia
520	Canada
520	Finland
518	Ireland
514	Korea
512	Poland
506	Sweden
506	New Zealand
505	United States ¹
504	United Kingdom
504	Japan
503	Australia
503	Chinese Taipei
501	Denmark
499	Norway
498	Germany
495	Slovenia
493	Belgium
493	France
492	Portugal ¹
490	Czech Republic

11th →

Mathematics

Mean score	Comparison country/economy
591	B-S-J-Z (China)
569	Singapore
558	Macao (China)
551	Hong Kong (China) ¹
531	Chinese Taipei
527	Japan
526	Korea
523	Estonia
519	Netherlands ¹
516	Poland
515	Switzerland
512	Canada
509	Denmark
509	Slovenia
508	Belgium
507	Finland
502	Sweden
502	United Kingdom
501	Norway
500	Germany
500	Ireland
499	Czech Republic
499	Austria
496	Latvia
495	France

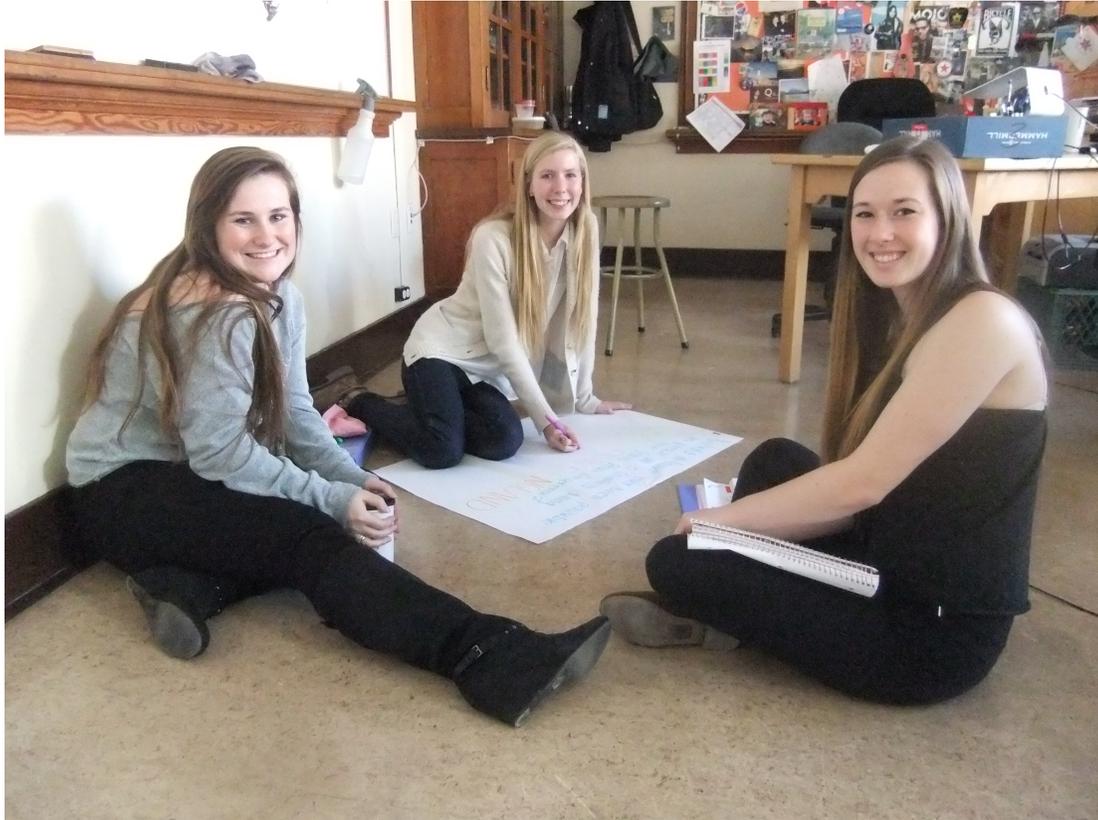
17th →

Science

Mean score	Comparison country/economy
590	B-S-J-Z (China)
551	Singapore
544	Macao (China)
530	Estonia
529	Japan
522	Finland
519	Korea
518	Canada
517	Hong Kong (China) ¹
516	Chinese Taipei
511	Poland
508	New Zealand
507	Slovenia
505	United Kingdom
503	Netherlands ¹
503	Germany
503	Australia
502	United States ¹
499	Sweden
499	Belgium
497	Czech Republic
496	Ireland
495	Switzerland
493	France
493	Denmark

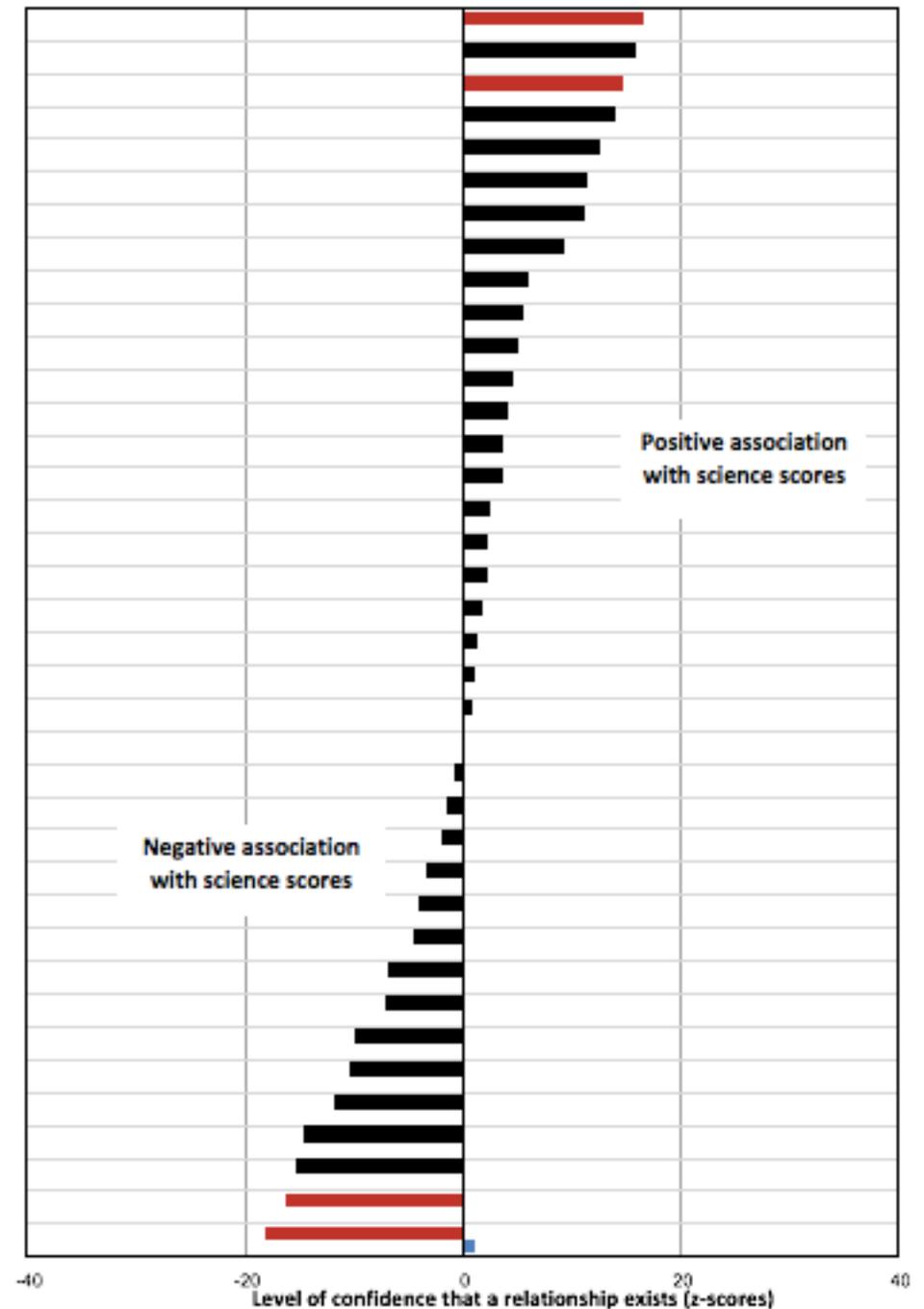
19th →

The 'big picture' on pedagogy and PISA



Why focus on pedagogy?

In 2015, teaching practices (in red) explained more variance in PISA Science scores than any other factor – more than socio-economic background, more than disciplinary climate, more than the language students speak at home.



Index of **student-oriented** instruction

- The teacher gives **different work** to classmates who have difficulties learning and/or to those who can advance faster.
- The teacher assigns **projects** that require at least one week to complete.
- The teacher has us work in **small groups** to come up with joint solutions to a problem or task.
- The teacher asks us to **help plan** classroom activities or topics.

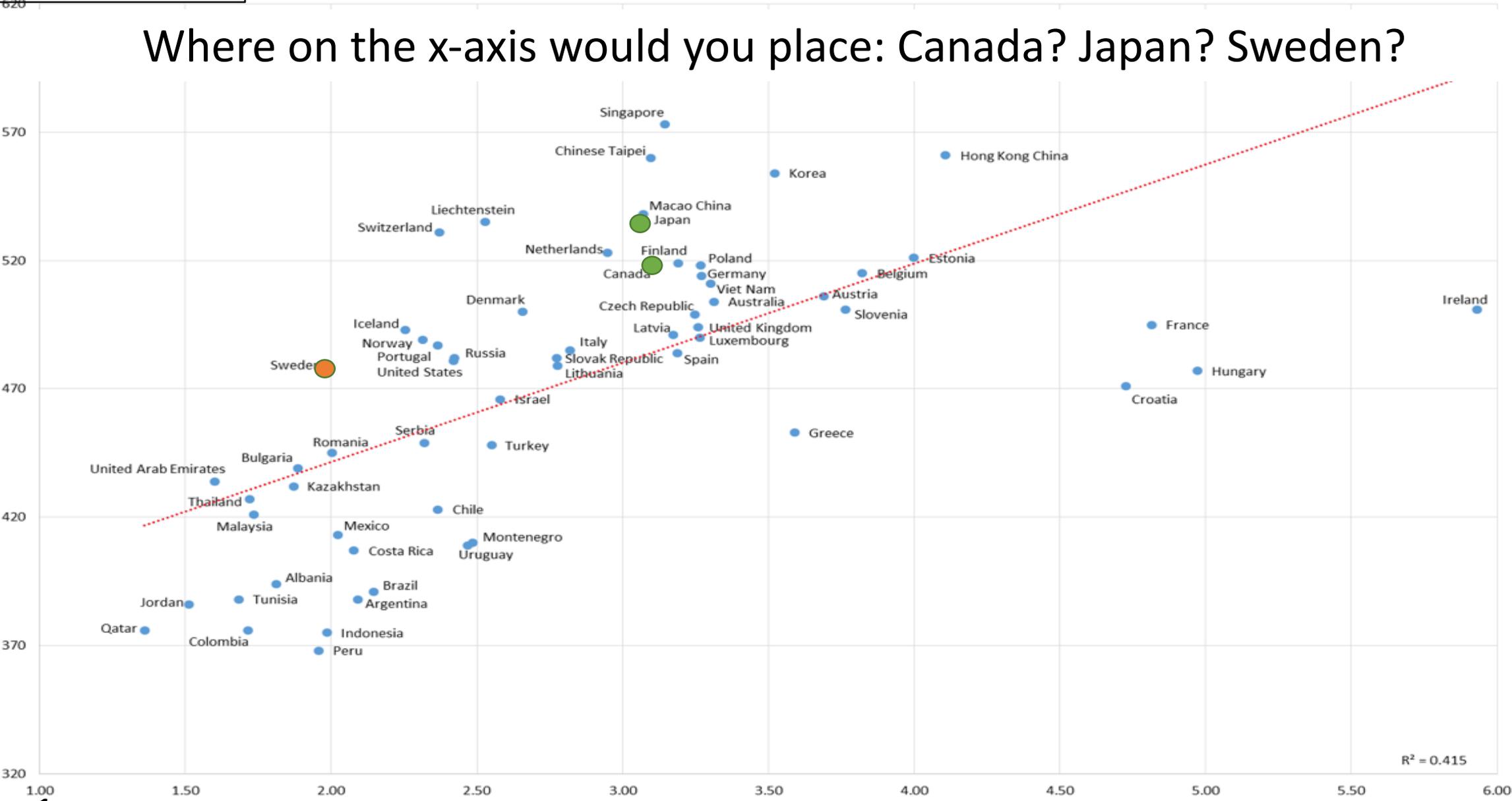
Index of **teacher-directed** instruction

- The teacher sets **clear goals** for our learning.
- The teacher asks me or my classmates to **present our thinking** or reasoning at some length.
- The teacher asks questions to **check** whether we have understood what was taught.
- At the beginning of a lesson, the teacher presents a short **summary** of the previous lesson.
- The teacher **tells us** what we have to learn.

What do you think students in Canada and Japan reported more of?

Where on the x-axis would you place: Canada? Japan? Sweden?

Mathematics score



R² = 0.415

1

2

3

4

5

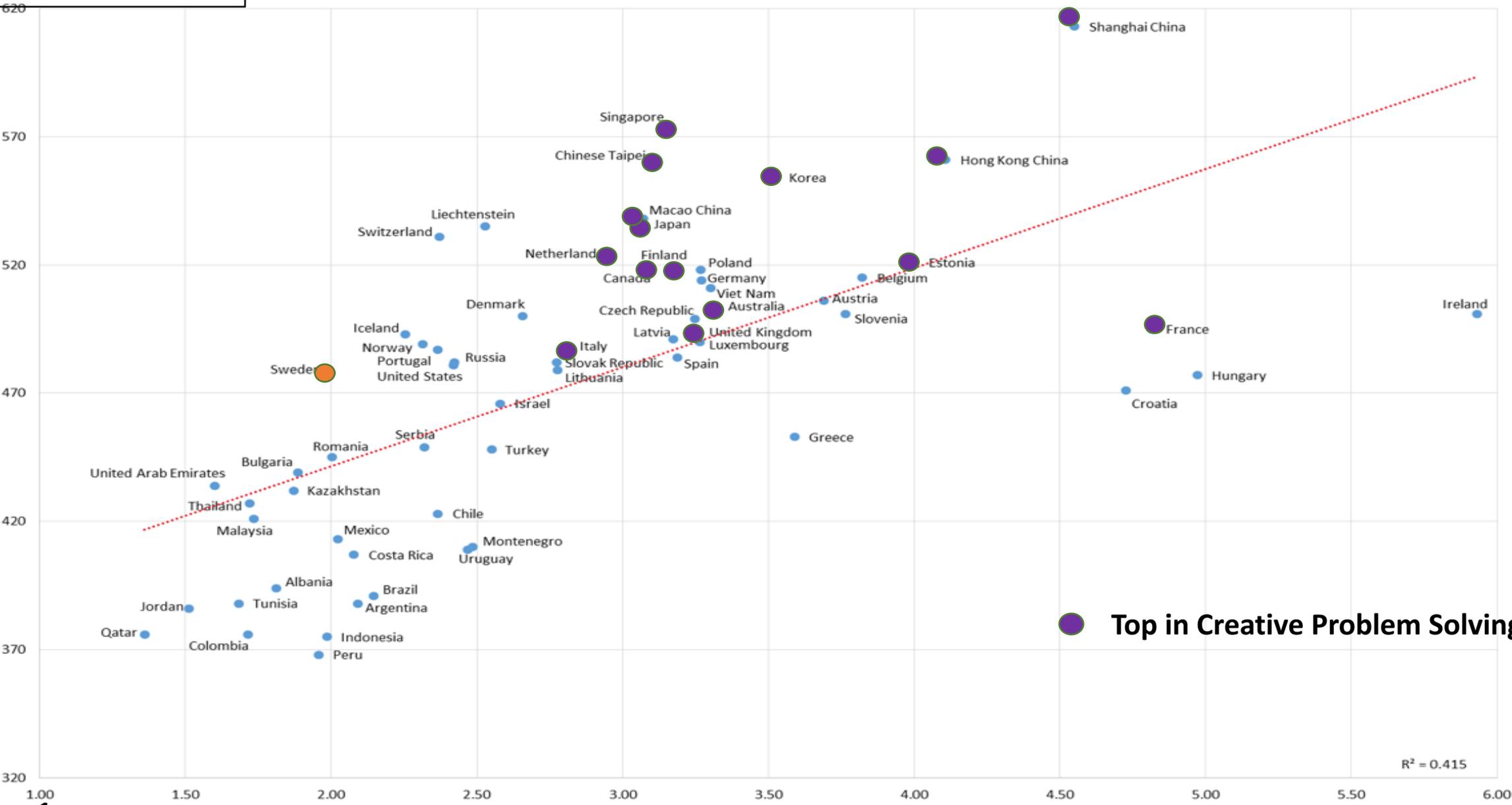
Relatively more student-oriented ←

→ Relatively more teacher-directed



Teacher-Directed and Student-Oriented Instruction

Mathematics score



Top in Creative Problem Solving

R² = 0.415

1

2

3

4

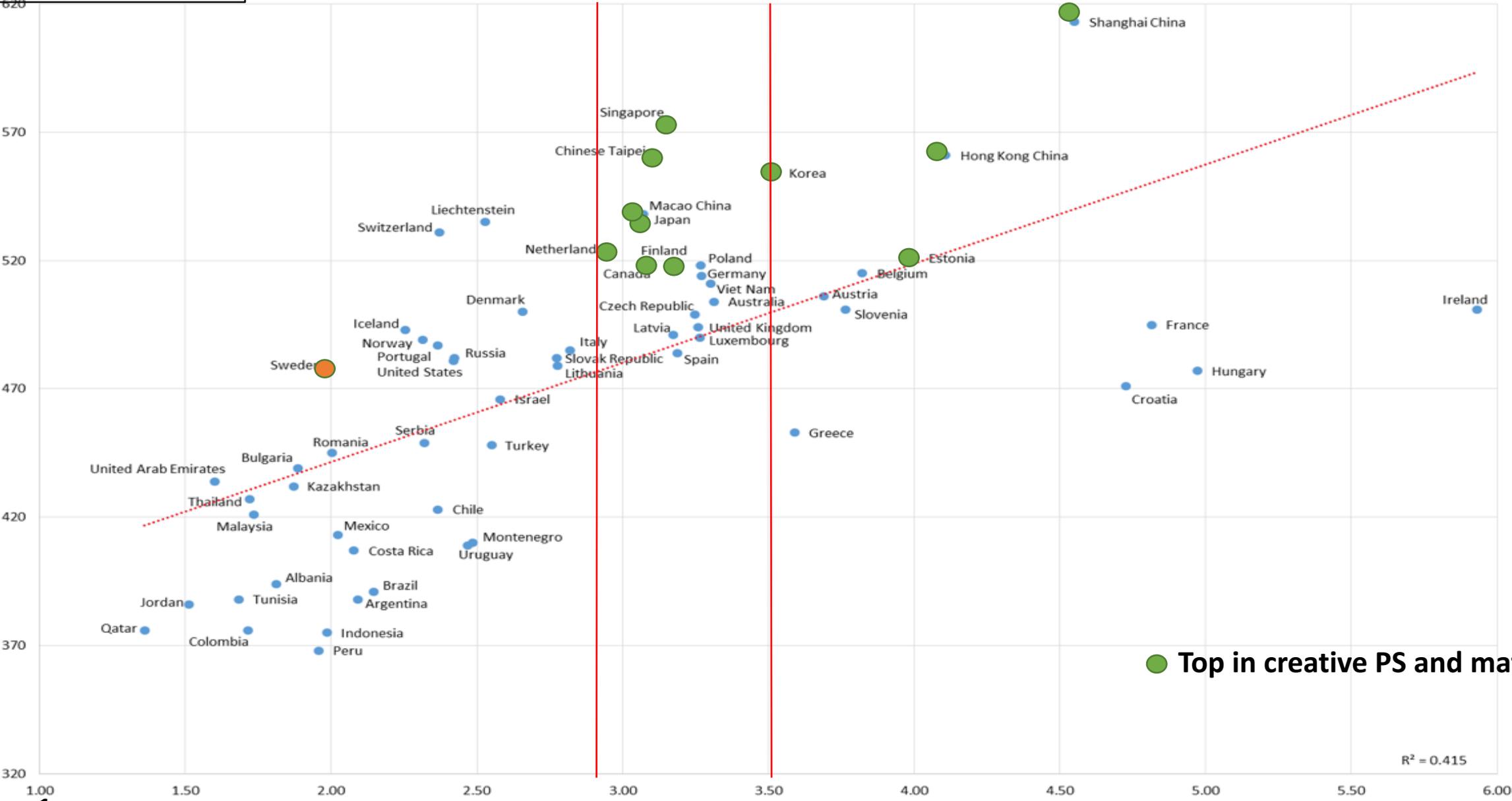
5

Relatively more student-oriented ←

→ Relatively more teacher-directed

Ratio : Students Strongly Agreeing or Agreeing with Statements on Teacher-Directed Instruction by Students Strongly Agreeing or Agreeing with Statements on Student-Oriented Instruction

Mathematics score



● Top in creative PS and maths

R² = 0.415

1

2

3

4

5

Relatively more student-oriented ←

→ Relatively more teacher-directed

Index of teacher-directed instruction

Factors associated with Science performance

Multilevel regression models of education systems, schools and students

- Index of teacher-directed instruction
- Student's socio-economic profile¹
- Index of adaptive instruction
- School's socio-economic profile
- Index of disciplinary climate in science lessons (school)
- Student is required to attend at least one science course
- Student speaks at home the test language
- Index of disciplinary climate in science lessons (student)
- Index of science-specific resources
- School offers science competitions
- Student's socio-economic profile, squared
- Previous academic performance considered for school admission
- Number of students in language-of-instruction class
- School is located in a city (ref: town)
- Student is enrolled in a general programme (ref: vocational/modular)
- School offers a science club
- Index of shortage of educational material
- Total time per week in regular lessons, minutes
- Index of teacher support
- Index of school autonomy
- Student has no immigrant background
- School is located in a rural area (ref: town)
- Index of shortage of education staff
- External evaluations exist at the school
- Pre-primary attendance, years
- Ability grouping within schools
- Participation in professional development (% school teachers)
- Student attends a private school
- Residence considered for school admission
- Index of student behaviour hindering learning
- Index of educational leadership
- After-school study time³, hours
- Student skipped a school day²
- Student arrived late for classes²
- Student is a girl
- Student had repeated a grade at least once
- Index of enquiry-based instruction
- Index of perceived feedback



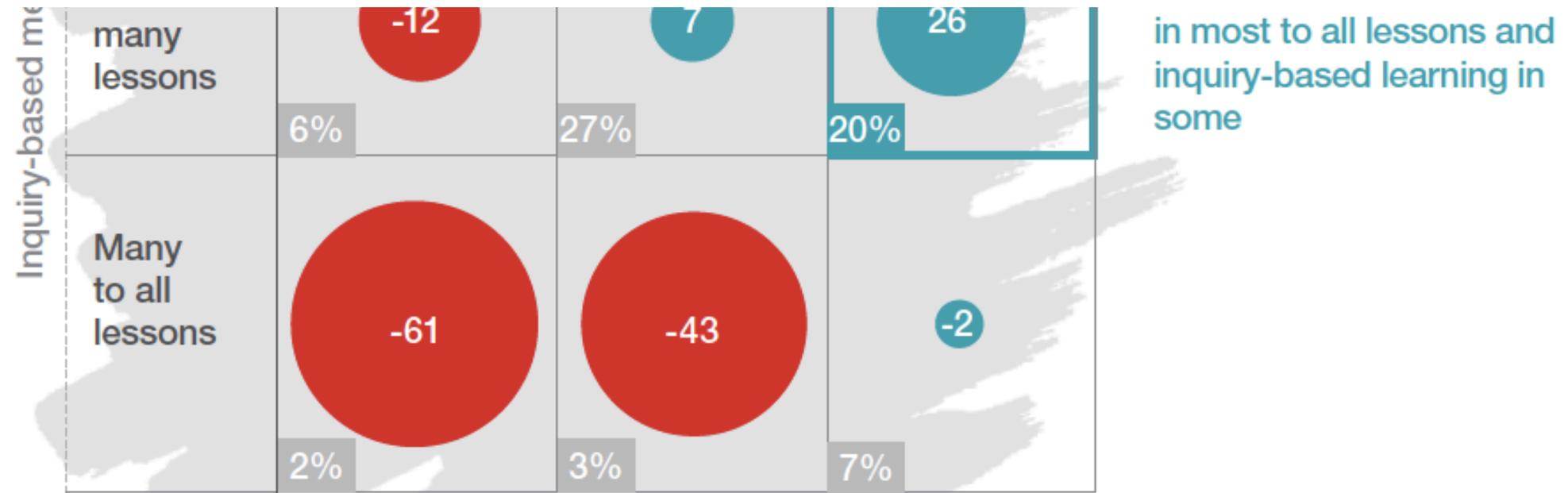
Index of enquiry-based instruction

PISA science (2015)



“Inquiry-based teaching can be effective—but only when strong teacher-directed instruction is in place. This suggests that for students to fully benefit from inquiry-based teaching, teachers must be able to clearly explain scientific concepts, and students need to have content mastery.”

McKinsey analysis 2017



From McKinsey (2017) 'Drivers of Student Performance: Europe Insights'

Pedagogical differences between 'top-performing' and 'lower-performing' systems

- Top-performing systems **do not** have more *student-led* or individualized pedagogy. They are mainly teacher-led.
- Their lessons **are** interactive – there is discussion between teacher-class and student-student.
- Their lessons **are** *student-centered* – planned and adapted with student abilities and needs in mind



E.g. from Japan: student-centered but not student-led



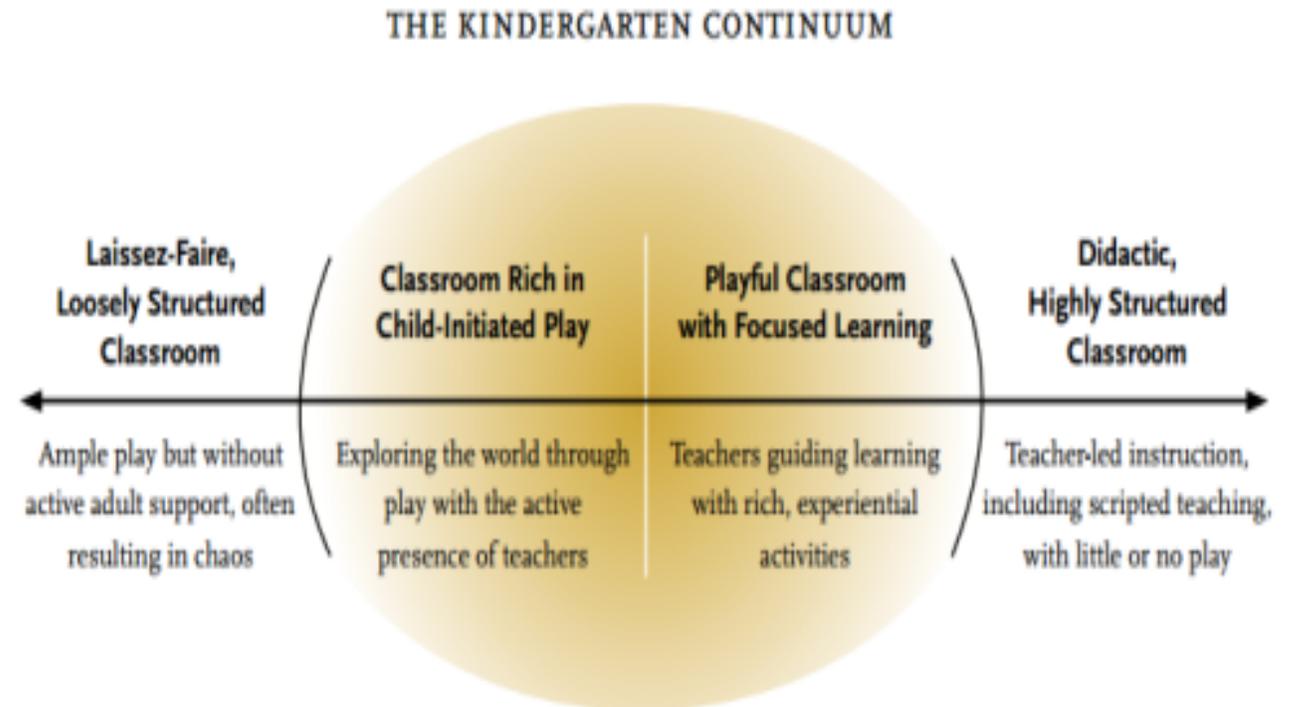
- Corey et al (2010) recorded planning conversations between Japanese teachers. They identified three principles of differentiation:
 - Consider two groups of students, those who understand and those who do not *rather than pre-empting groups*;
 - Focus on commonalities rather than differences, *e.g. through whole class feedback*;
 - Challenge all students, even those who appear to understand material. *i.e. Differentiation through extension and support, (not easier work)*.

The exception: pedagogy in pre-school

- In the countries I visited, children start school at aged six (Canada, Japan) or seven (Shanghai, Singapore, Finland), but most attend pre-school.
- Preschool attendance in high-quality settings has positive outcomes on intellectual and social overall development, especially for disadvantaged children.



- Unlike compulsory school, lessons in pre-school in these countries were often student-led.
- The environments were designed to encourage learning, and there was plenty of opportunity for student choice.



Miller and Almon (2009)

What do you think?

What is the balance of teacher-led and student-led learning in your school, and do you think you've got the balance right?

What can you do about it?

What questions do you have?

Underlying philosophy: Genuinely high expectations



- In these countries, the aim is to get *all* students to meet the goals of the lesson, rather than lowering the goals for some students.
- But how on earth do they make it work?! They do these four things...

1. They ensure children have the pre-skills they need before they start school.

- The pre-school curricula ensure children have the language, skills and and numerical understanding required to access the grade 1 curriculum.

“the basis for emerging literacy is that children have heard and listened, they have been heard, they have spoken and been spoken to, people have discussed things with them, and that they have asked questions and received answers.”

Finnish literacy early years curriculum

Learning Goals

At the end of K2, children should be able to...

- Recognise and use simple relationships and patterns
- Use numbers in daily experiences
- Recognise and use basic shapes and simple spatial concepts in daily experiences

Singaporean numeracy early years curriculum

- Children do not start school until they have reached the age and stage of development where they are ready for formal learning (typically age 6 or 7).

2. They follow a curriculum that allows students to progress together

- Just a few topics are specified to be covered initially, so they can be studied in depth.
- The vast majority of pupils' progress through the curriculum at the same pace.
- Academically weaker pupils are supported to reach at least a basic standard, while more able pupils are encouraged to explore the content in depth.



Mastery learning

Moderate impact for very low cost, based on moderate evidence.



3. Teachers regularly plan together and learn from each other

a) Weekly timetabled planning of lessons together with others who teach same year/subject.

b) Lesson study (approx monthly) in which teachers plan one lesson in detail, observe someone teaching it and debrief on the lesson.



3. Teachers regularly plan together and learn from each other

c) Collaboration to plan *schemes of work*

where teachers within or across schools in one area meet together to plan and trial coherent schemes of work, based on the national curriculum.

d) Collaboration to plan *teacher guides* which capture teacher knowledge, and include

- student misconceptions,
- ideas for analogies,
- questions to get students thinking, etc.



4. Additional support from teachers for those who need it...



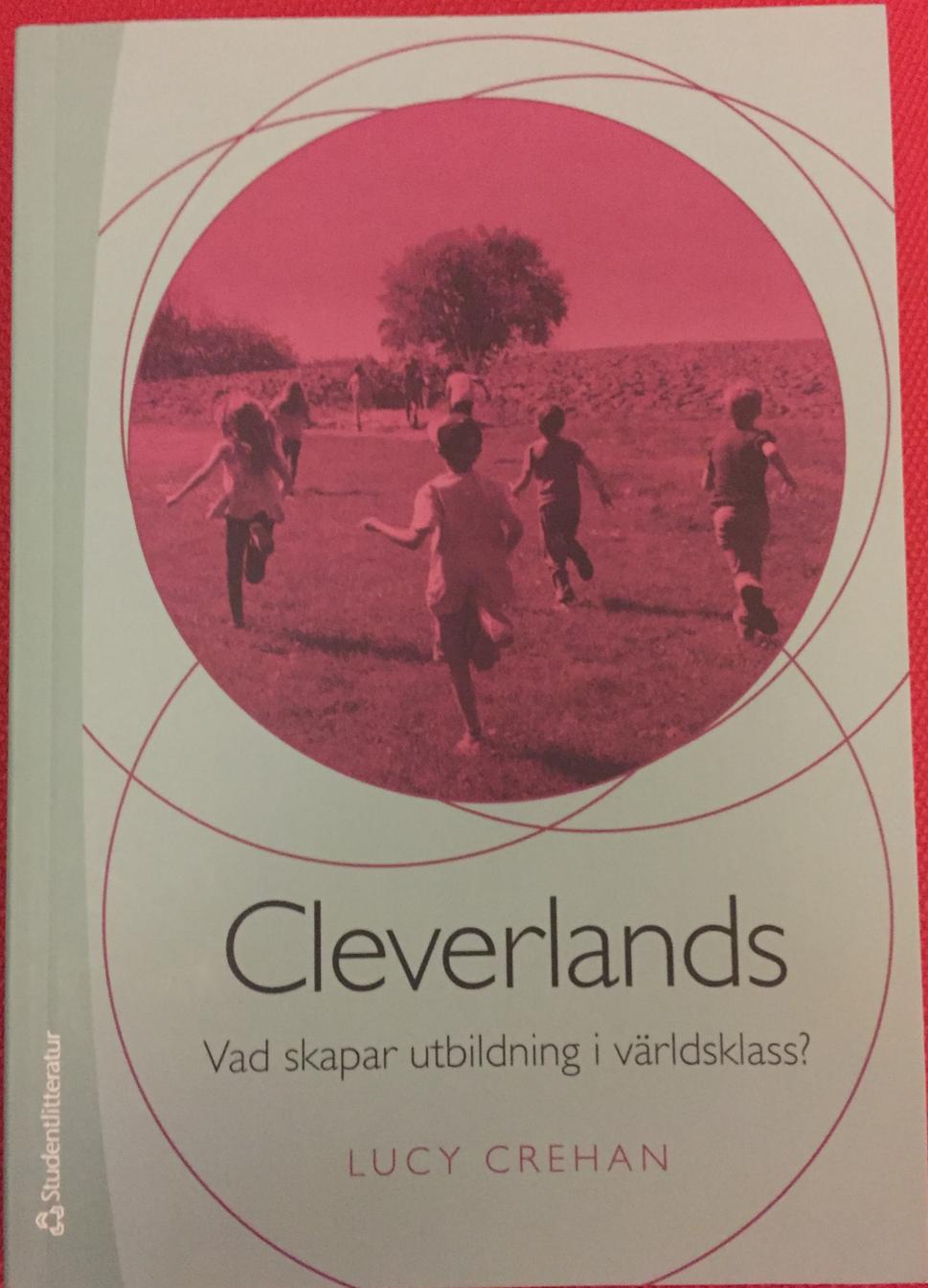
- Finland and Canada – additional qualified teachers are employed to support students in small (flexible) pull-out groups during and after class.
- Japan, Shanghai, Singapore – extra support from the class teacher during, between and after classes. Then parental and tutor support where necessary.
- It is *the most qualified people* who are tasked with solving the greatest educational challenges.

These systems build high expectations into their work and (in many cases) meet them by..

- **Getting children ready** for formal education and developing pre-skills through exposing children to educational environments and playful teacher-led learning.
- Having a focused, coherent curriculum, with **fewer topics covered in greater depth**, to allow the majority of students to progress together.
- Building **high expectations into their lesson planning**, considering how they can support those who don't understand, rather than pre-assigning easier work.
- Enabling **regular planning with colleagues**, including opportunities for lesson study and jointly designing resources.
- Employing or making available **qualified teachers to support students** who are at risk of falling behind.

What do you think?

- Do you think a mastery approach (key concepts in more depth, with students progressing together) would work in Sweden?
- Is there the appetite in Nacka for teachers to plan together and share resources?



Questions or comments?

- I'd love to learn from you.
- Please get in touch
- My book is out in Swedish!

Contact details:

- Tweet me at [@lucy_crehan](https://twitter.com/lucy_crehan)