

The Secrets Behind the Success of the World's Education Superpowers



Lucy Crehan

International Education Consultant and Education Explorer

@lucy_crehan

lucycrehan.com

What is PISA?

- The Programme for International Student Assessment.
- Designed in the 1990s by the OECD to measure children's performance at the end of compulsory schooling.
- Tests the **application** of skills in reading, maths and science, in a sample of 15-year-olds, every three years.
- 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.?



Pedagogical stereotypes



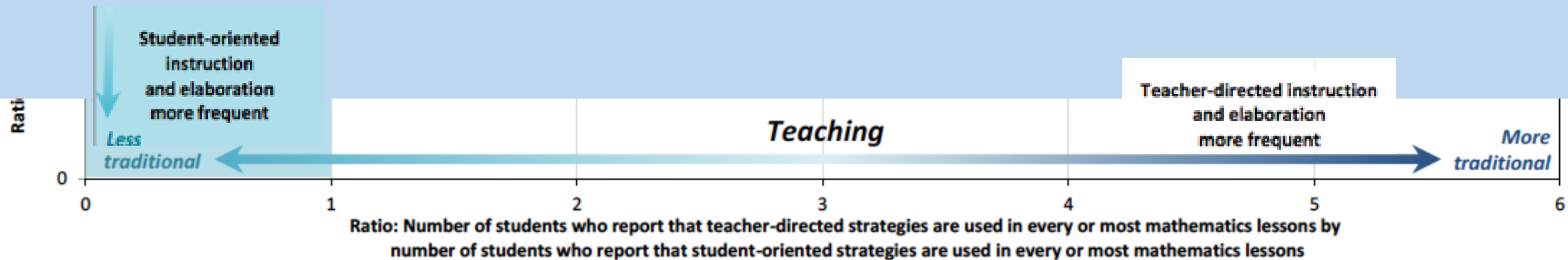
Index of **student-oriented** instruction

- 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.

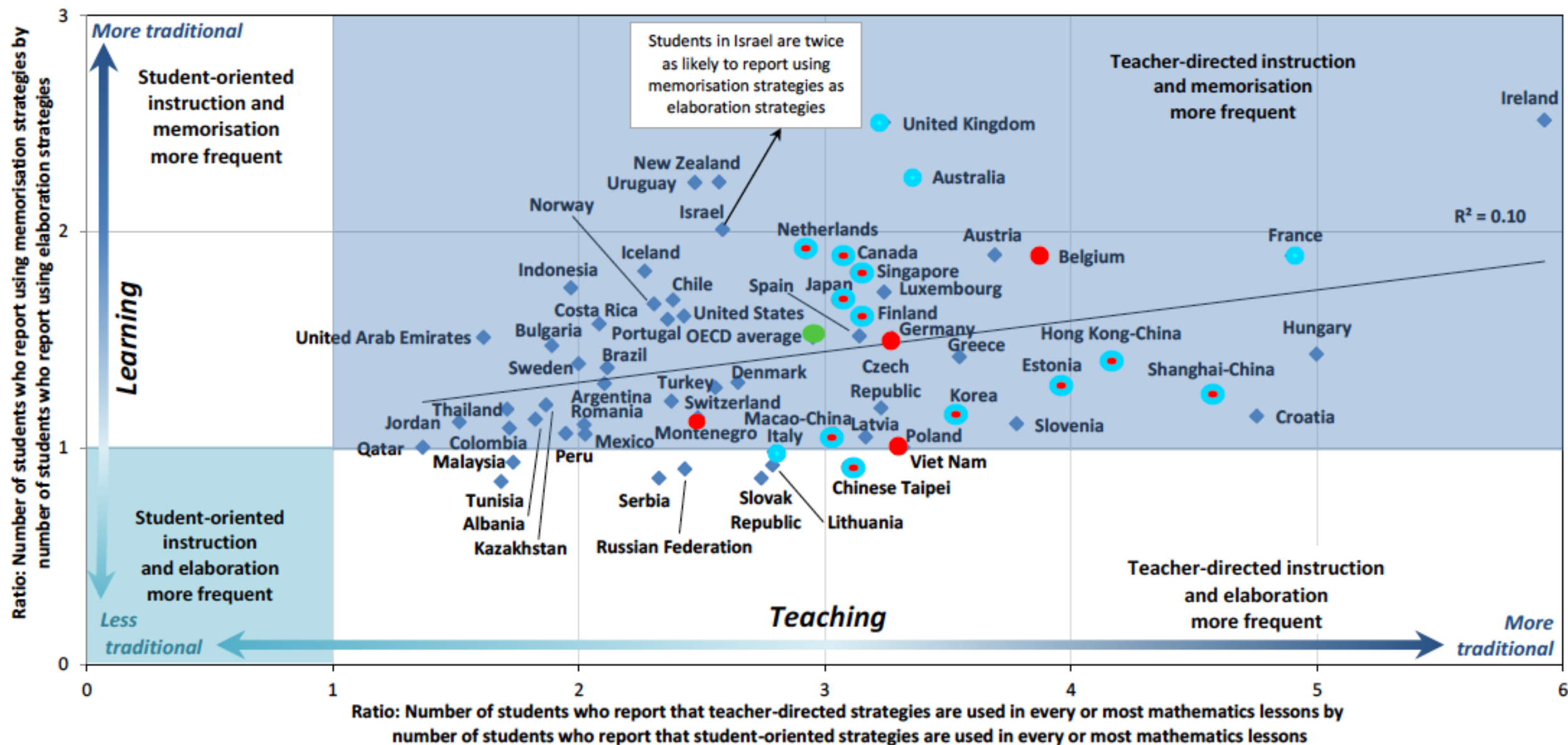
Index of **teacher-directed** instruction

- 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.

Where would Finland and Singapore be?
OECD average



Top performers in mathematics (red) and creative problem solving (blue)

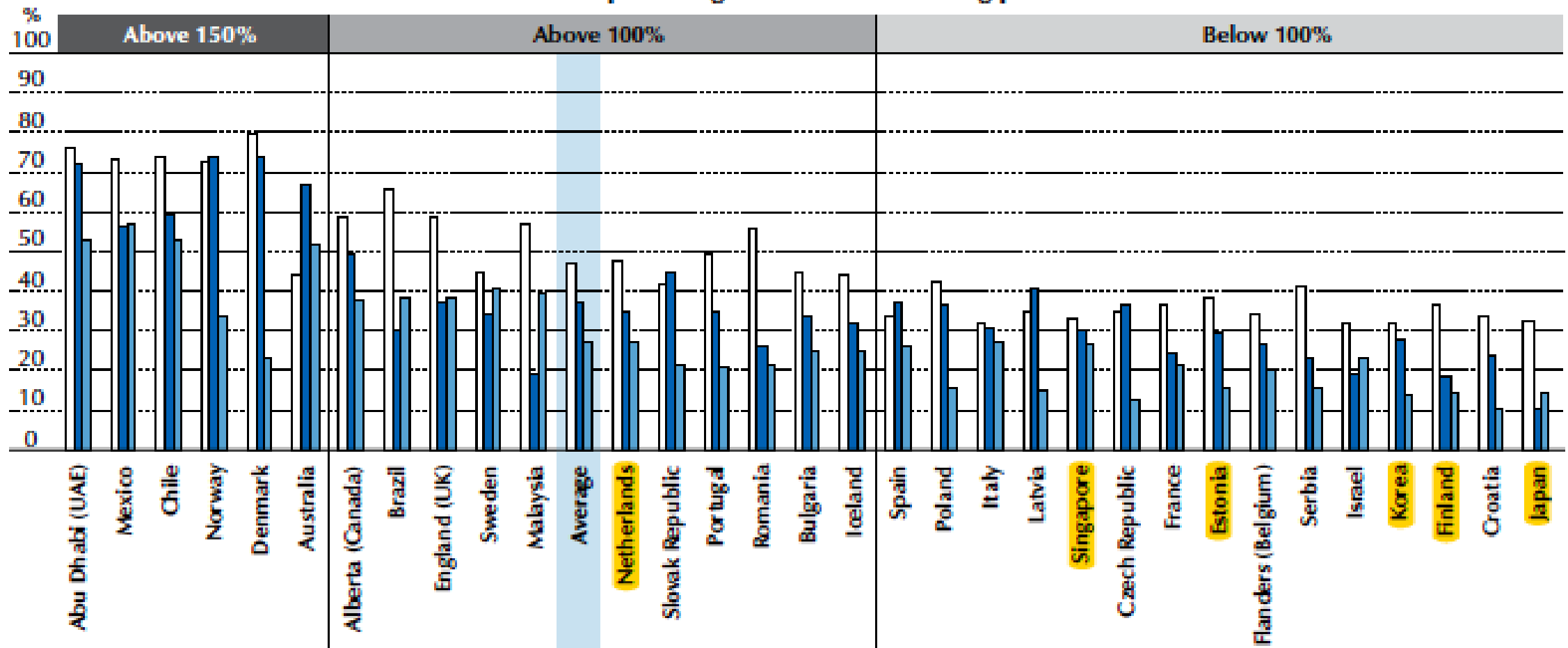


Teaching practices by country

Percentage of lower secondary education teachers who report using the following teaching practices "frequently" or "in all or nearly all lessons"¹

- Small groups
- ICT
- Projects longer than one week

Cumulative percentage of the three teaching practices



Index of **cognitive activation**

- The teacher asks questions that make us reflect on the problem.
- The teacher gives problems that require us to think for an extended time.
- The teacher asks us to explain how we have solved a problem.
- The teacher asks us to decide on our own procedures for solving complex problems.
- The teacher presents problems for which there is no immediately obvious method of solution.
- The teacher gives problems that can be solved in several different ways
- The teacher presents problems in different contexts so that students know whether they have understood the concepts.
- The teacher presents problems that require students to apply what they have learned to new contexts.
- The teacher helps us to learn from mistakes we have made.

Underlying philosophy? Genuinely high expectations



- In 5/6 systems I visited, and 10 out of the 12 top-performers in 2012, students aren't tracked into different schools until 15/16 (OECD average is 14).
- In these five systems, they weren't selected into different classes based on ability until 15/16, either.
- Even within lessons, there is less differentiation *by activity* than is often described as 'best practice': England (63%), average (44%), USA (37%), Finland (37%), Japan (22%), Korea (20%) (TALIS 2013)

Setting or streaming

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



But how on earth do they make it work?!



1. Teacher collaboration

a) Weekly timetabled planning of lessons together with others who teach same year/subject (In Finland and East Asia)

b) Lesson study in Japan, Singapore and Shanghai includes:

- Observations of lessons they've planned together, focusing on impact on children
- Discussions of the strengths and weaknesses of these lessons, sometimes with input from an external 'expert teacher', and adaptation of ongoing plans.



c) Effective professional learning communities:

1. Are based on **student learning analysis**, with an inquiry cycle
2. Include a focus on **subject-specific expertise** (not just general skills)
3. Are **sustained over time**
4. Are **collaborative**
5. Happen approximately **every four weeks**, for at least 75 minutes, with 8 -12 participants

British Columbia Learning Communities	Shanghai Research and Lesson Groups	Singapore Professional Learning Teams
<ol style="list-style-type: none">1. Scanning (evidence of student learning)2. Focusing (prioritizing)3. Developing a hunch4. New professional learning5. Taking action6. Checking (assessing impact)	<ol style="list-style-type: none">1. Set research question based on student learning2. Review research evidence3. Prioritize teaching strategies4. Test strategies in class; observe and discuss each other's lessons5. Analyze evidence, identify improvements, and publish results	<ol style="list-style-type: none">1. Collect and analyze data2. Discuss focus for improvement cycle3. Propose new approaches4. Implement new approaches and measure impact5. Review, reflect and present on what worked

Source: Adapted from Jensen, Sonnemann, Roberts-Hull, Hunter (2016) "Beyond PD", and Wiliam (2012) "From teachers to schools: Scaling up professional development for formative assessment"

2. 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 – sometimes extra support from the class teacher during class. Most support between and after classes, from the class teacher. Then parental and tutor support where necessary.

3. Mastery approach

- In Shanghai, Singapore and Japan, fewer topics are covered initially, but in greater depth.
- The vast majority of pupils' progress through the curriculum at the same pace, with subject matter broken into units with clear goals.
- Academically weaker pupils are supported to reach at least a basic standard in each unit before the whole class moves on to the next topic together.
- In the meantime, more able pupils are encouraged to explore the content in depth.



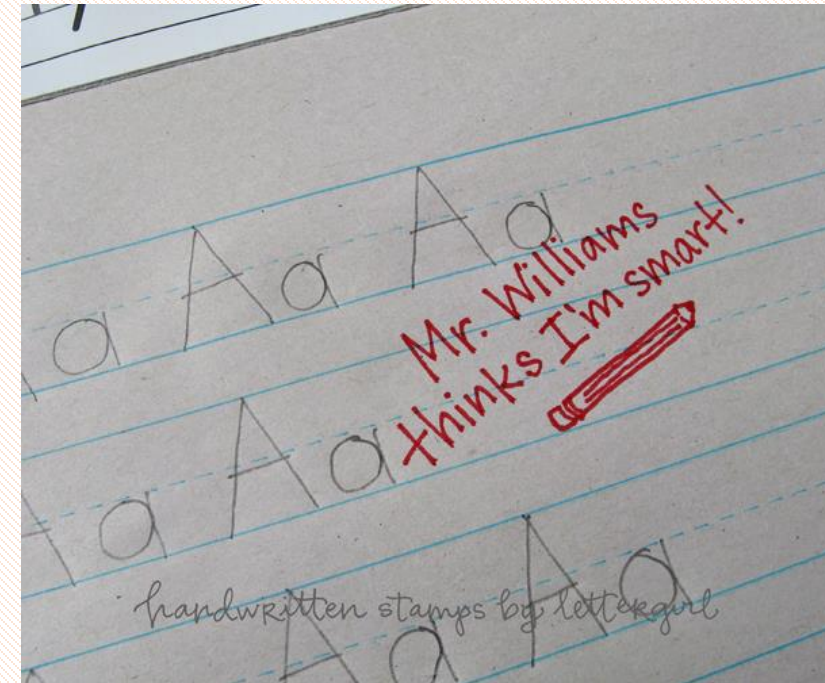
Mastery learning

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



4. A belief that all children are capable of success AND that learning is valuable.

“A clumsy bird that flies first gets to the forest earlier” – Chinese idiom



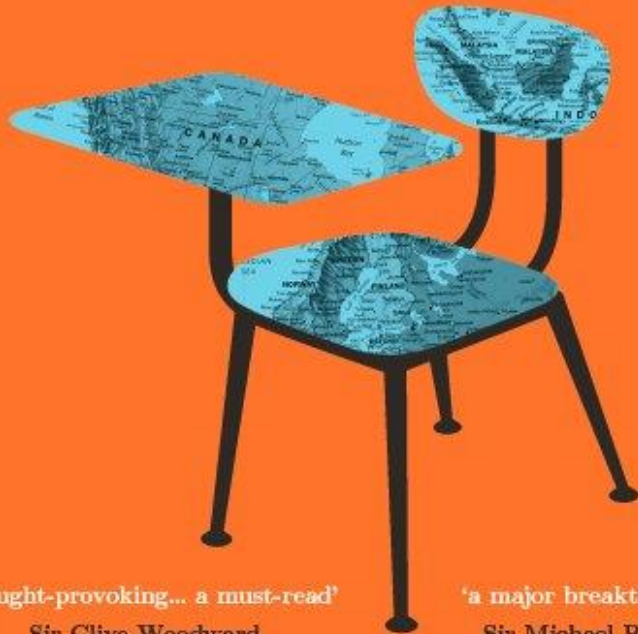
High-performing, equitable education systems set ambitious goals for all children. How do they make this work?

- Well-trained teachers plan together to ensure that each concept is taught clearly the first time, and then explained in different ways until all students understand.
- They employ or make time for additional teacher support for those who still don't understand or are falling behind.
- They design curricula concepts for mastery, and ensure all understand before moving on, so the gap doesn't grow.
- They believe that all children can achieve..



Clever Lands

The secrets behind the success of the world's
education superpowers



'thought-provoking... a must-read'

Sir Clive Woodward

'a major breakthrough'

Sir Michael Barber

LUCY CREHAN

With a foreword by Tim Oates, CBE

Any questions?

- Ask me now.
- Read the book – available on Amazon.
- Tweet me at @lucy_crehan
- Email me at lucy.crehan@gmail.com

Timetable and school organisation hacks

- Specialized teachers
- Bigger classes
- Same teacher for several years/teaching that subject
- Study lessons with 1:1 support or peer tutoring
- Time to plan together
- Mixed ability classes