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Using data to adapt and improve teaching practice

National FutureSchools Expo
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Three overarching challenges

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1. Improve the teaching of the core academic subjects
2. Change elements of what we teach and how we teach it

Optimisation and innovation

3. Reduce the gaps between educational haves and have nots

Few clear solutions

NAPLAN improvement is slow

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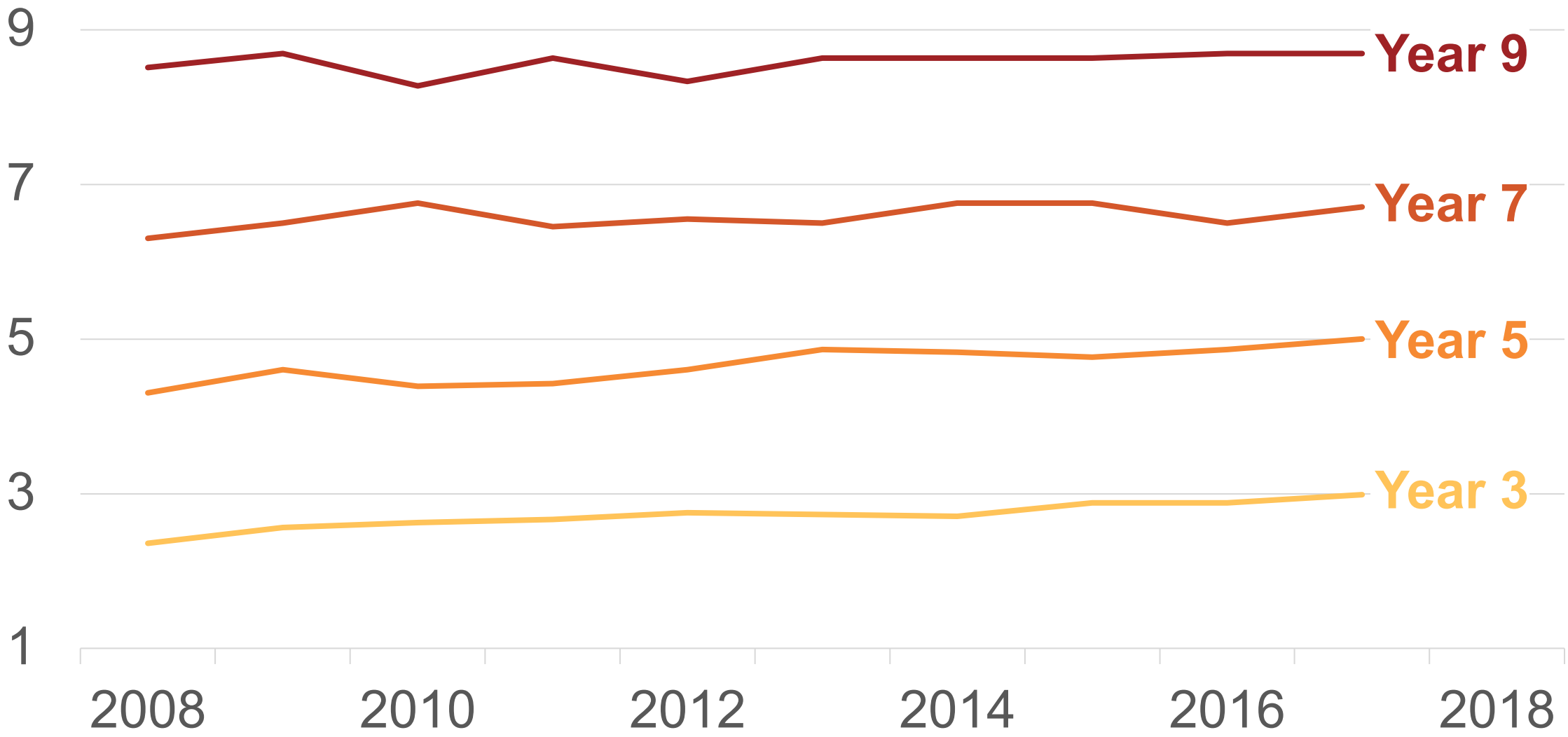
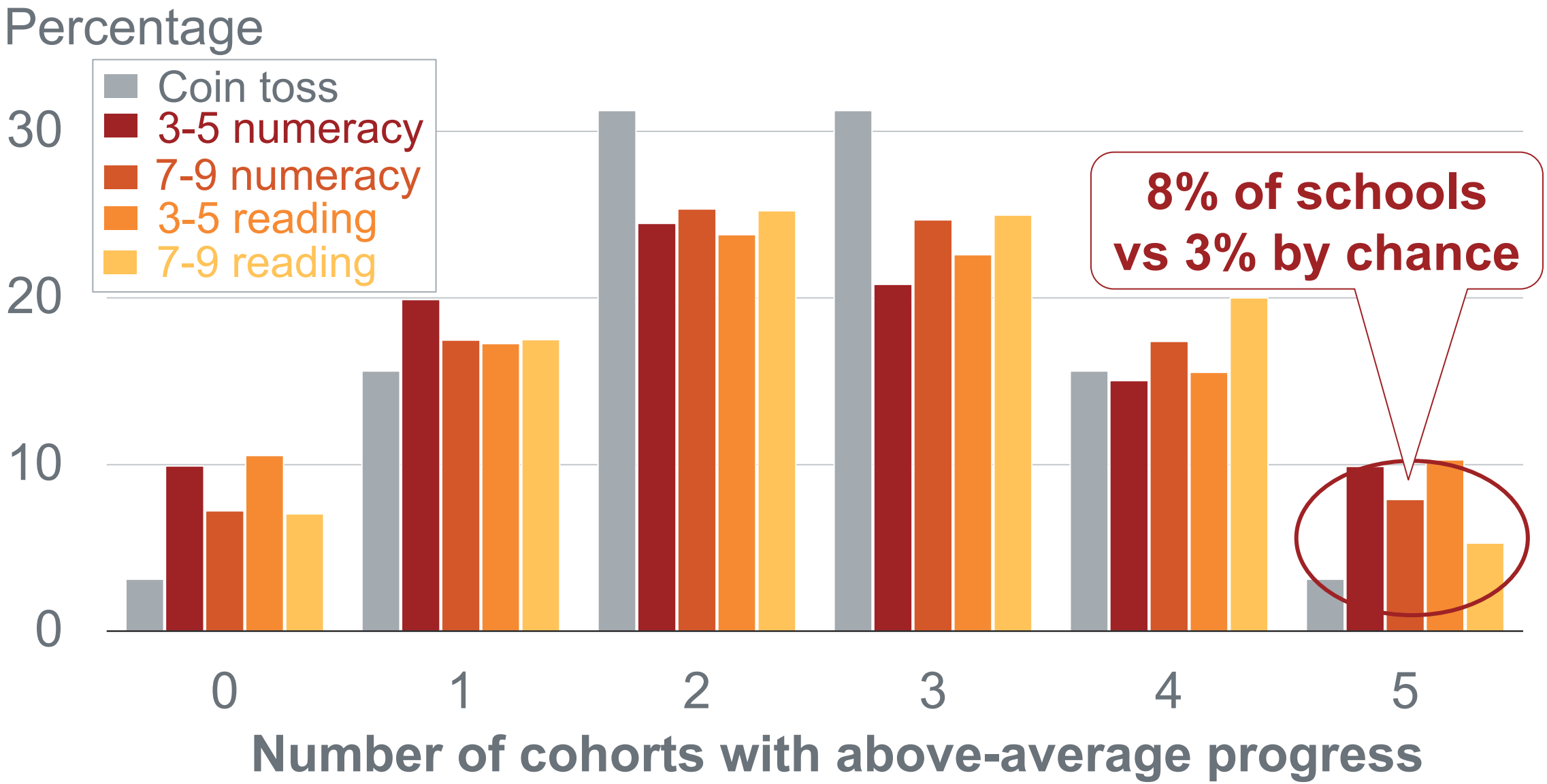
Equivalent year level (reading)



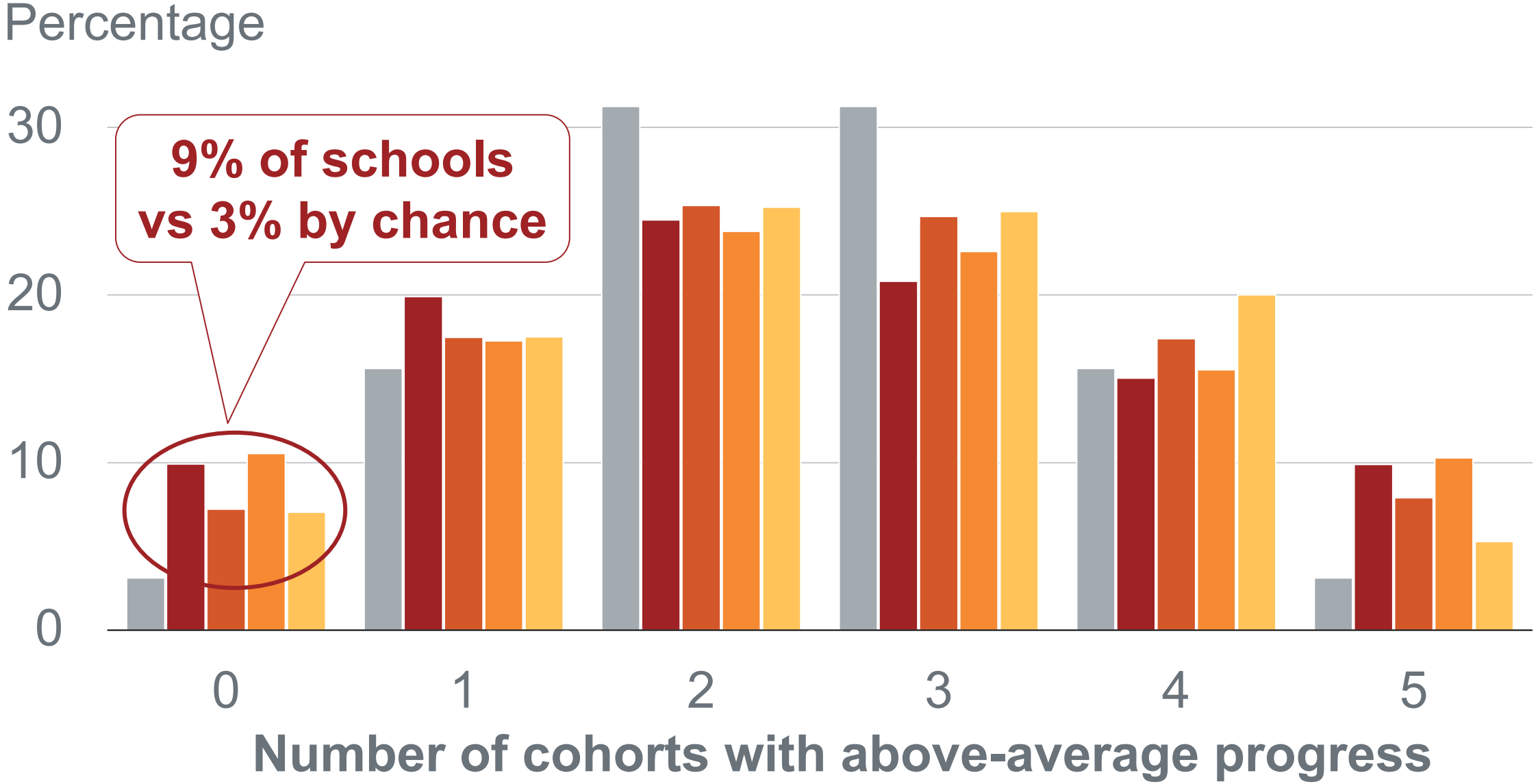
Source: ACARA, Grattan analysis

Some schools show us the way…



Source: ACARA, Grattan analysis

…others are struggling



Source: ACARA, Grattan analysis

Learning progress is the key

- Success in education comes from maximising progress
- By definition, stronger progress lifts achievement

But where does data fit?

or

The triumvirate of policy data

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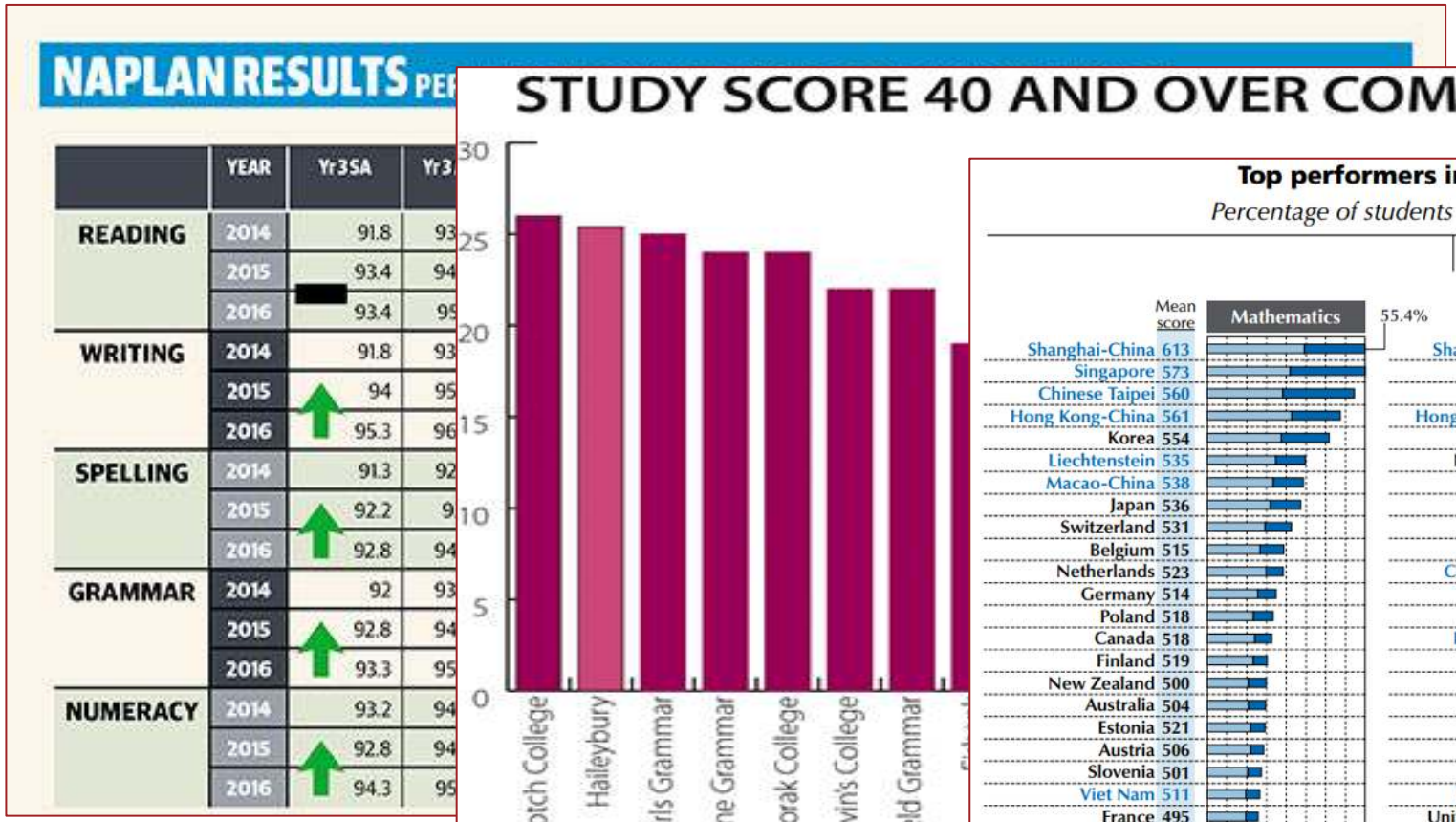


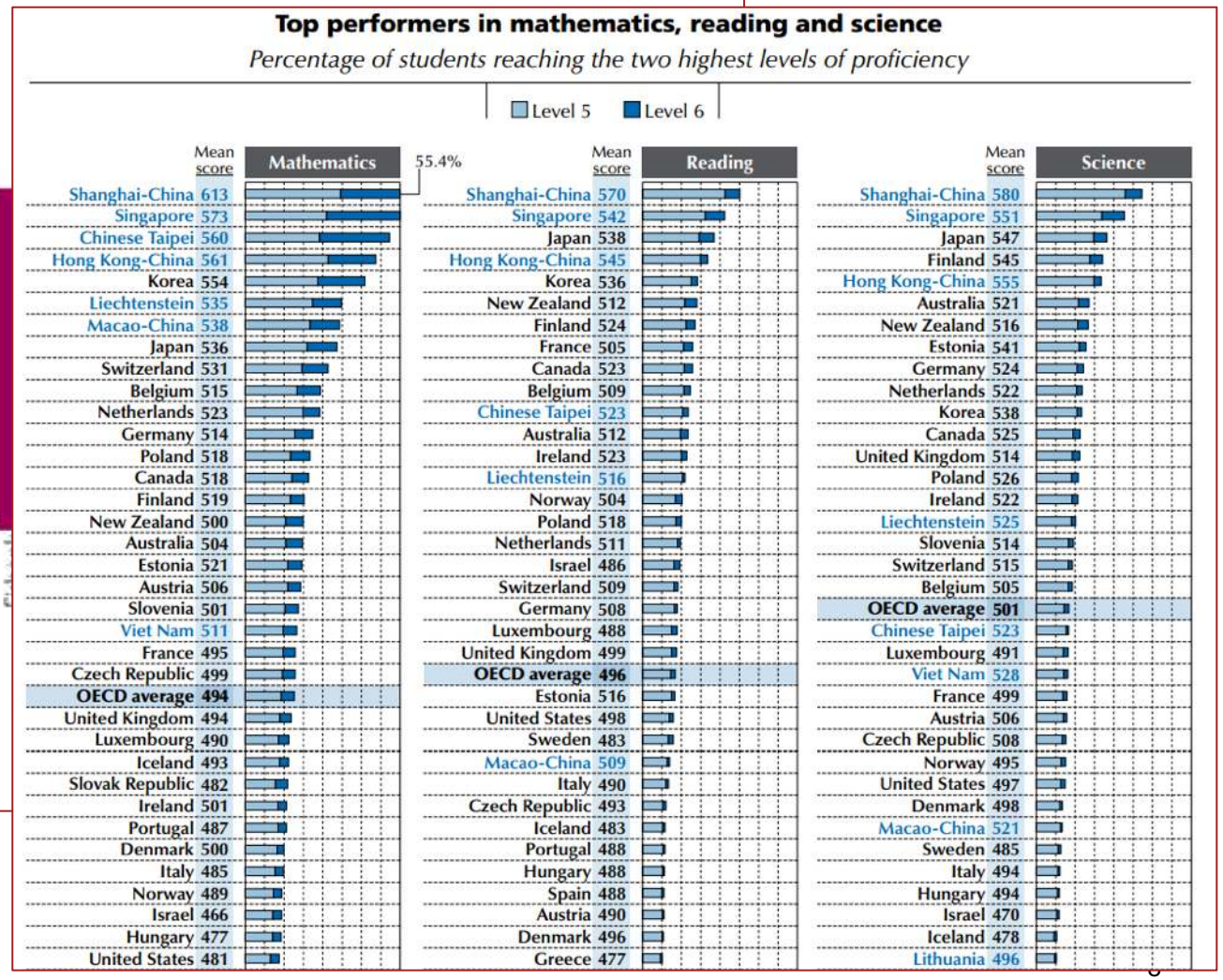
NAPLAN RESULTS

	YEAR	Yr3SA	Yr3
READING	2014	91.8	93
	2015	93.4	94
	2016	93.4	95
WRITING	2014	91.8	93
	2015	94	95
	2016	95.3	96
SPELLING	2014	91.3	92
	2015	92.2	9
	2016	92.8	94
GRAMMAR	2014	92	93
	2015	92.8	94
	2016	93.3	95
NUMERACY	2014	93.2	94
	2015	92.8	94
	2016	94.3	95

NAPLAN

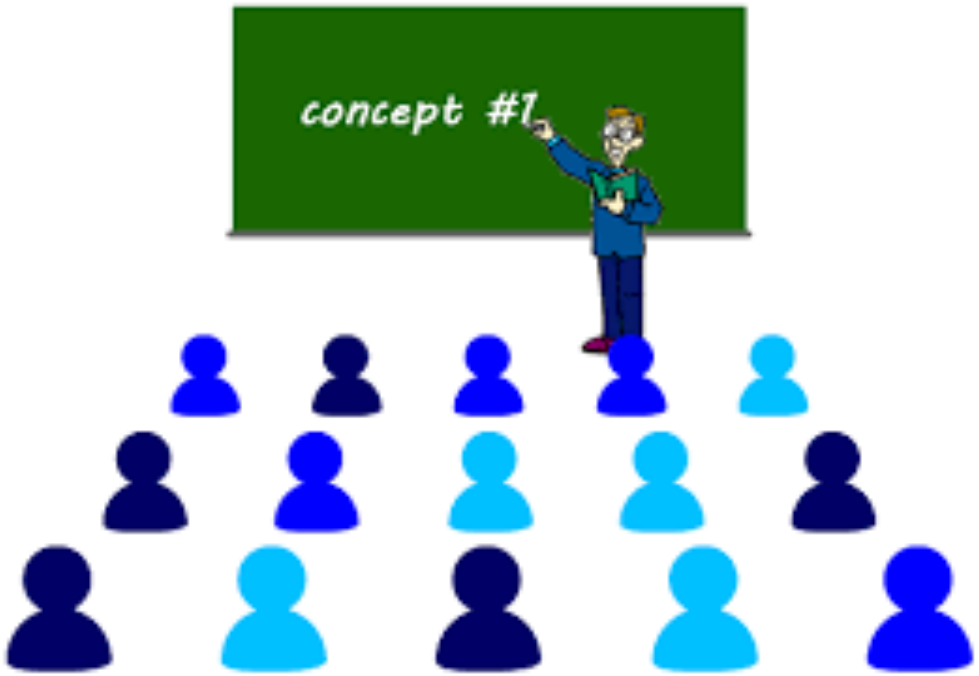
ATAR

PISA



Big data can inform teaching…

Teacher-directed methods OR Inquiry-based methods?



Big data can inform teaching…

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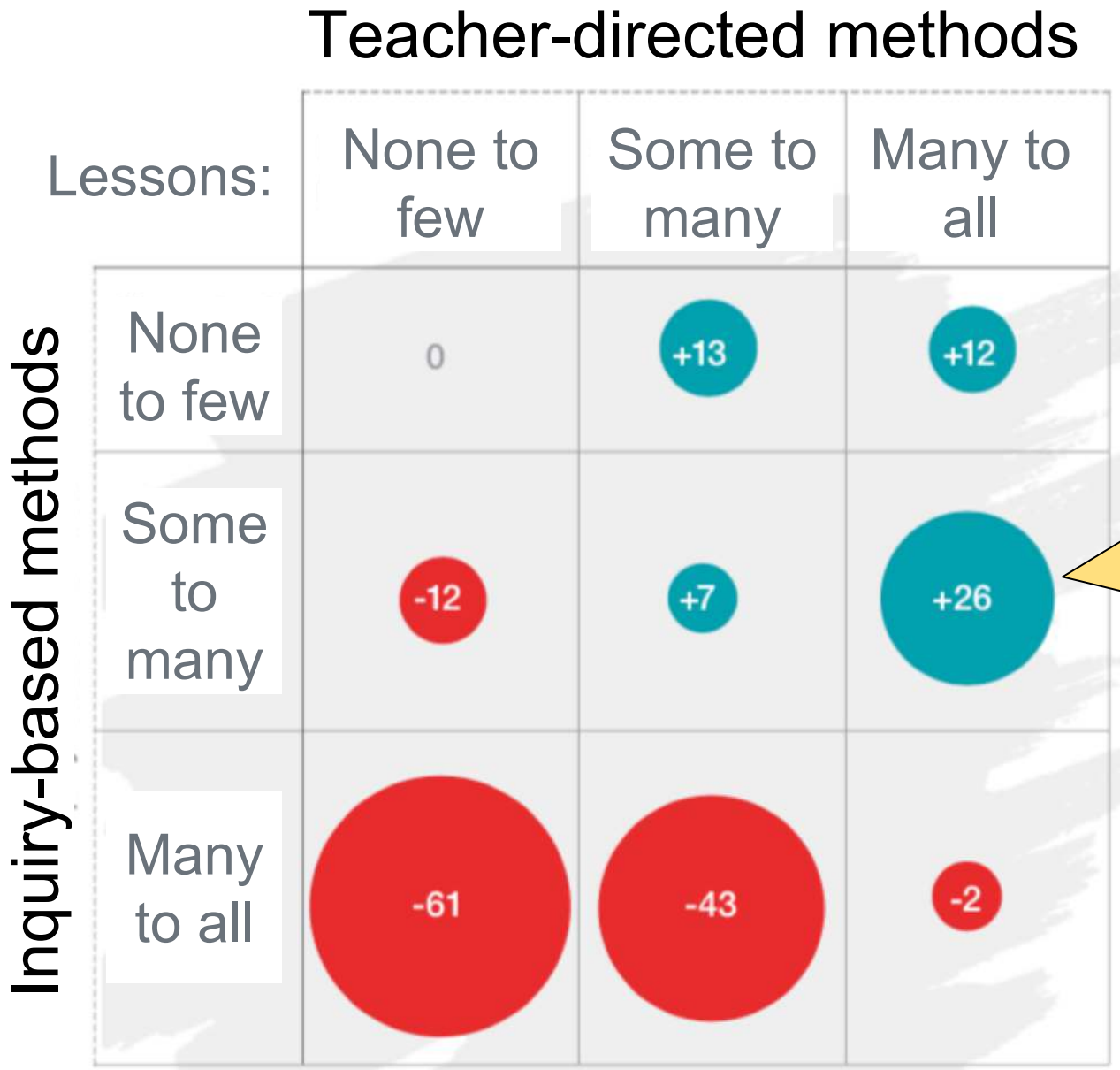


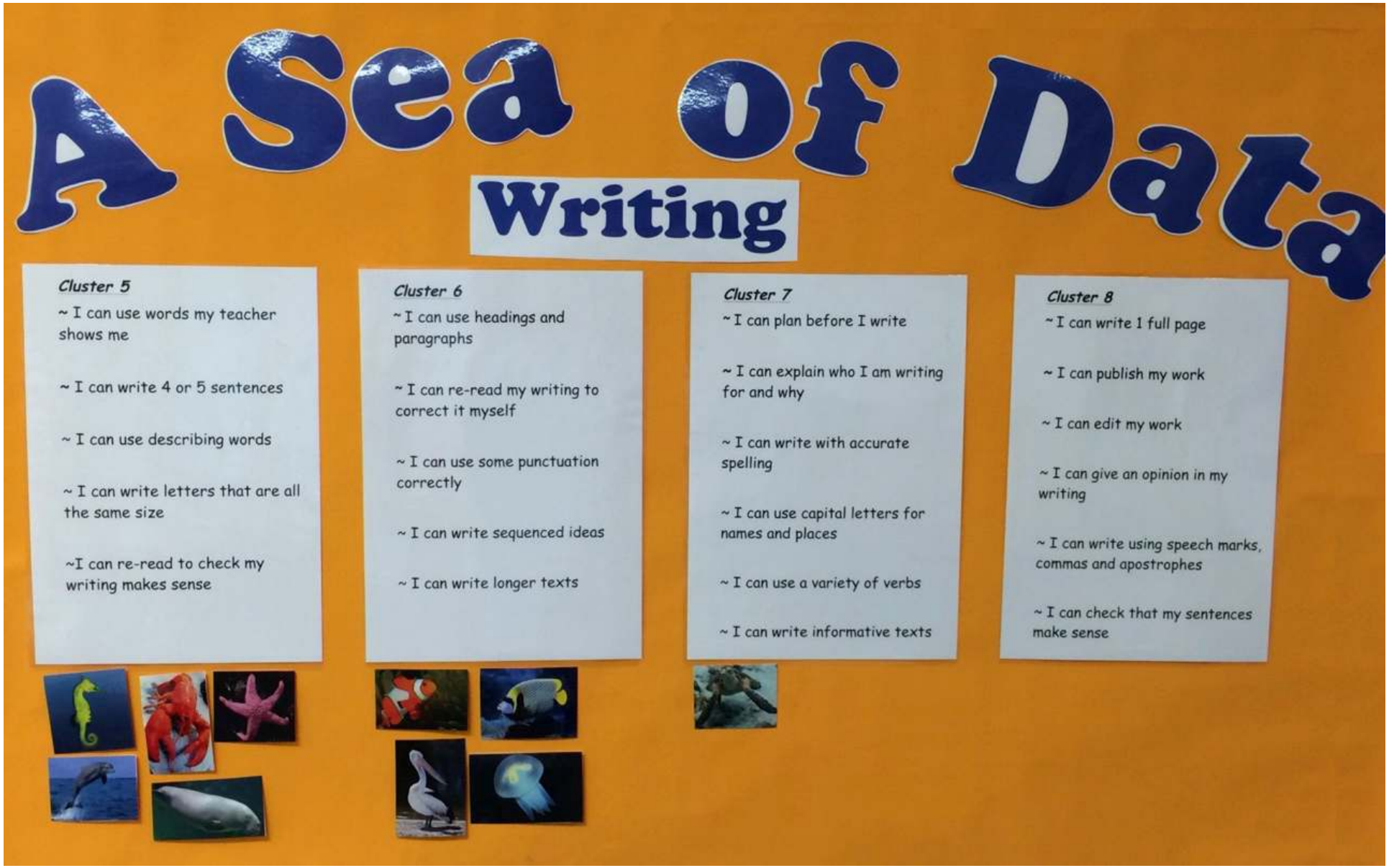
PISA 2015 Science:

- Average score increase
- Or decrease

"Sweet spot": teacher-directed learning in most to all classes, inquiry-based learning in some

How to improve student educational outcomes: insights from data analytics, McKinsey, 2018

But small data drives learning



OECD: Australia must shift focus

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The overall evaluation and assessment framework appears as highly sophisticated and well conceptualised, especially at its top level (**national and systemic levels**).

Translation: thumbs up on use of big data

However, there is a less clear articulation of ways for the national agenda to generate improvements in classroom practice through the assessment and evaluation procedures which are **closer to the place of learning**.

Translation: More effort needed with small data

OECD Review of Evaluation and Assessment in Education, Australia, 2011

The policy conundrum

If top-down approaches (with big data) don't work …

… and school autonomy (plus small data) isn't enough …

… how are we supposed to improve at scale?

Three main schools of thought

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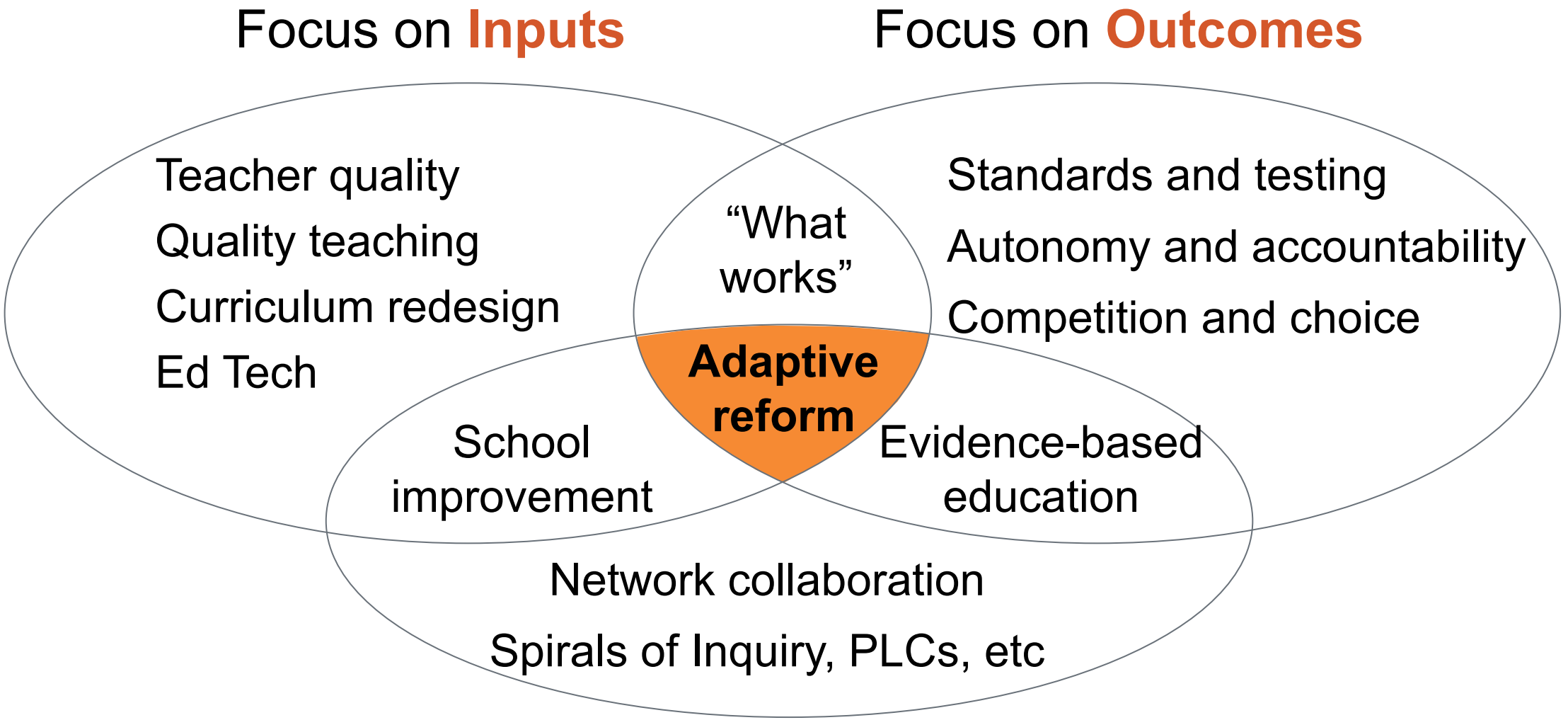

Adaptive reform blends all three

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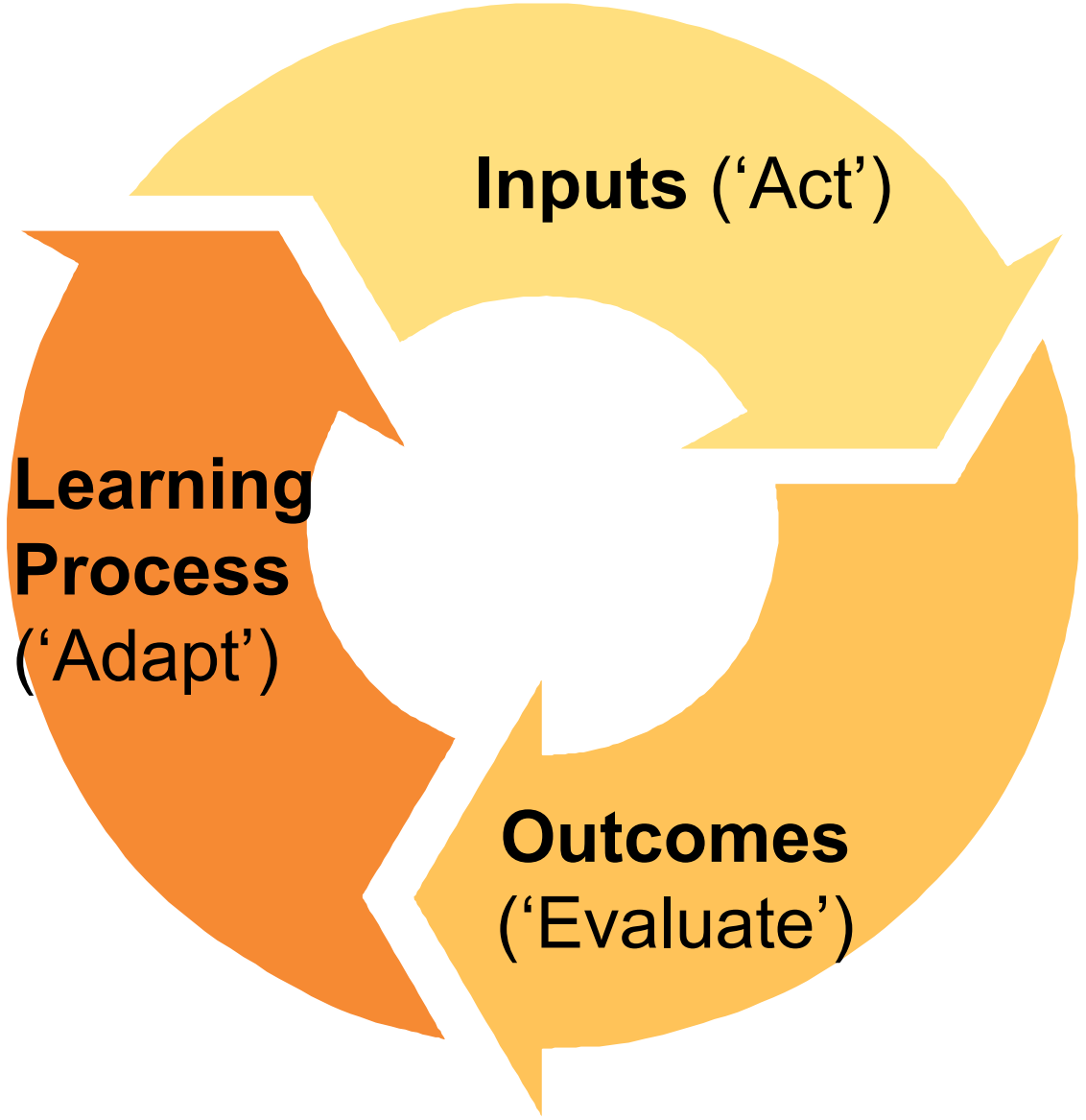
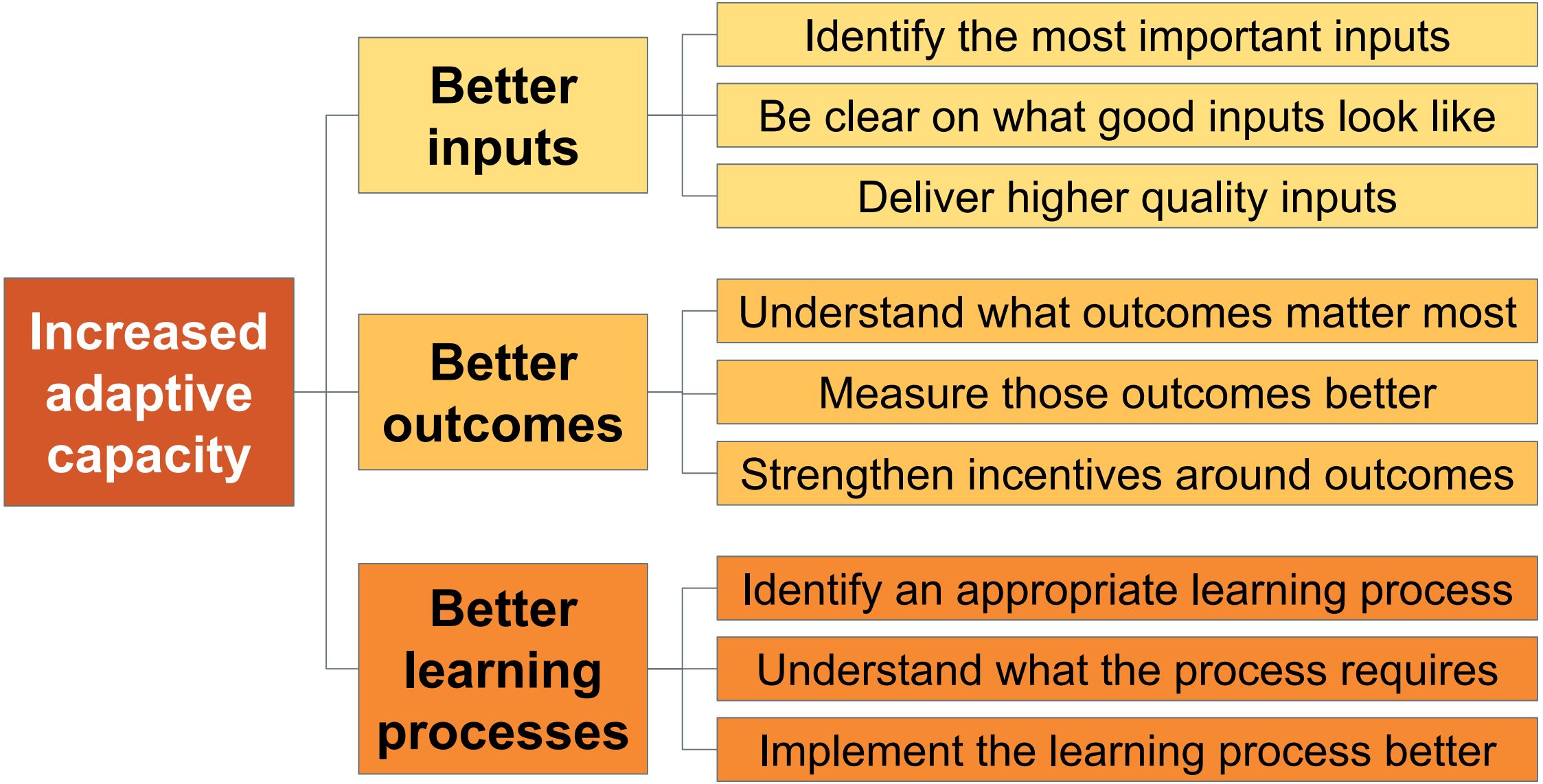


Strengthening any step can help



Targeted teaching is adaptive

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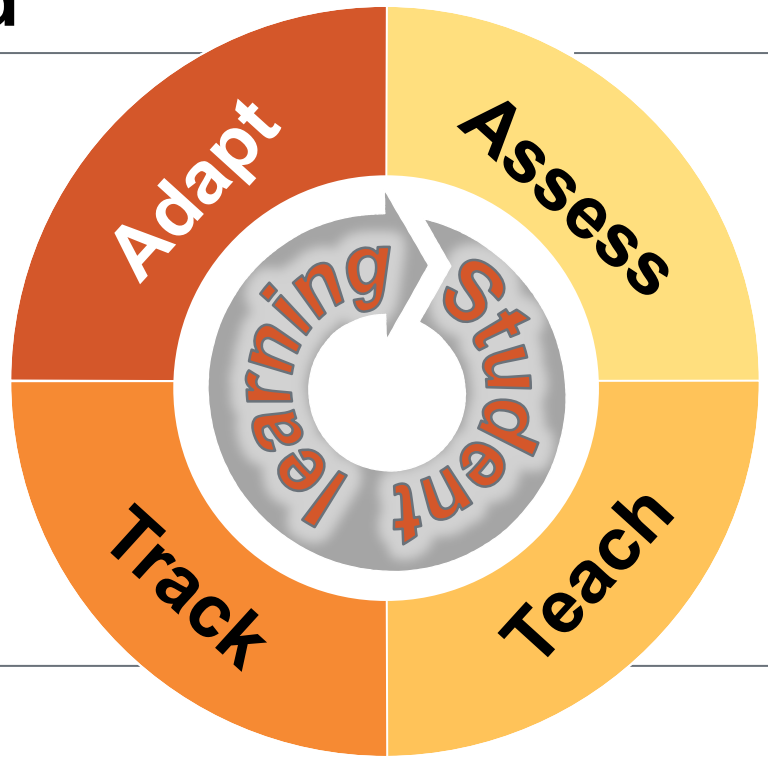
Adapt teaching practice to improve next time round

Assess what each student knows already



Rigorously track progress of each student

Target teaching to each student's learning needs

Why is it needed?

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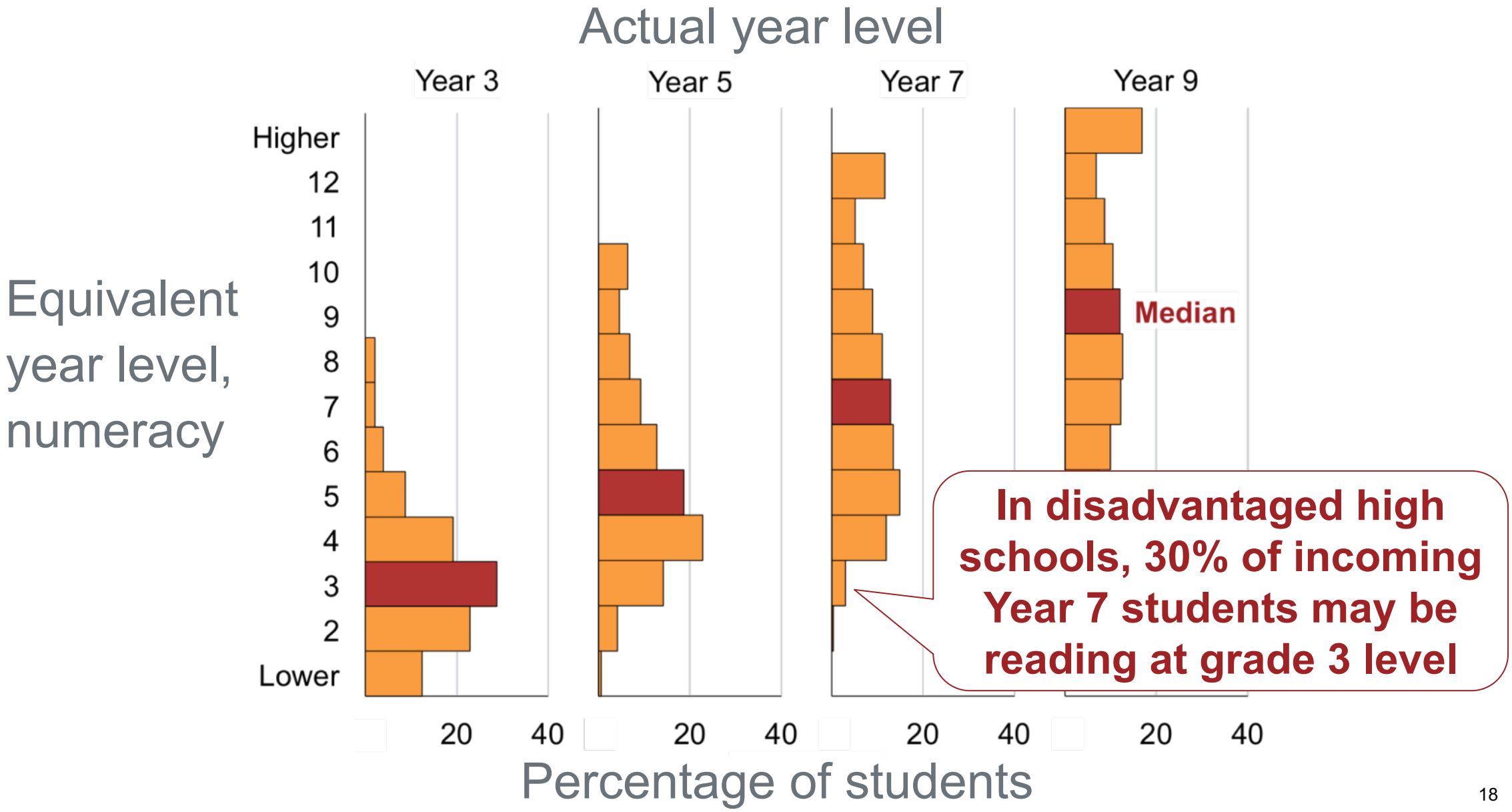

However, system support is vital

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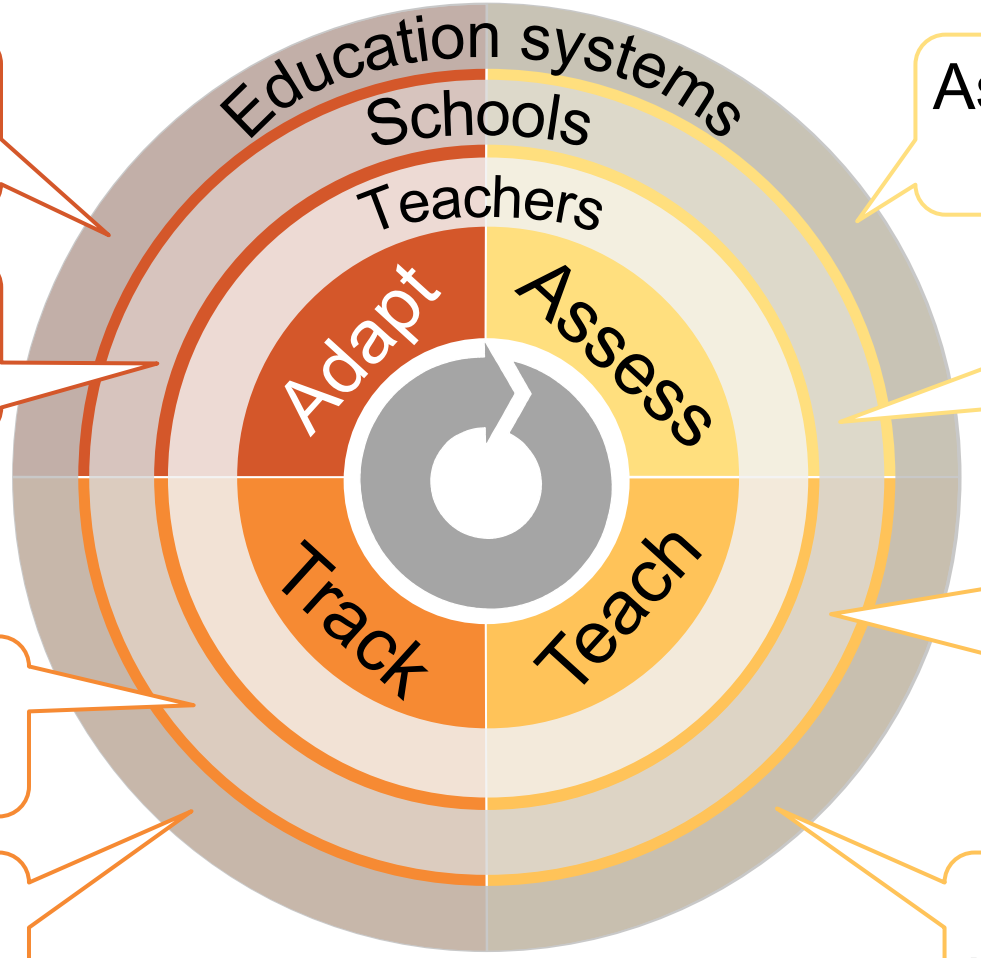
Systems to capture & spread best practice

Culture of continuous improvement

Ability to track student progress over time

Learning progressions linked to curriculum



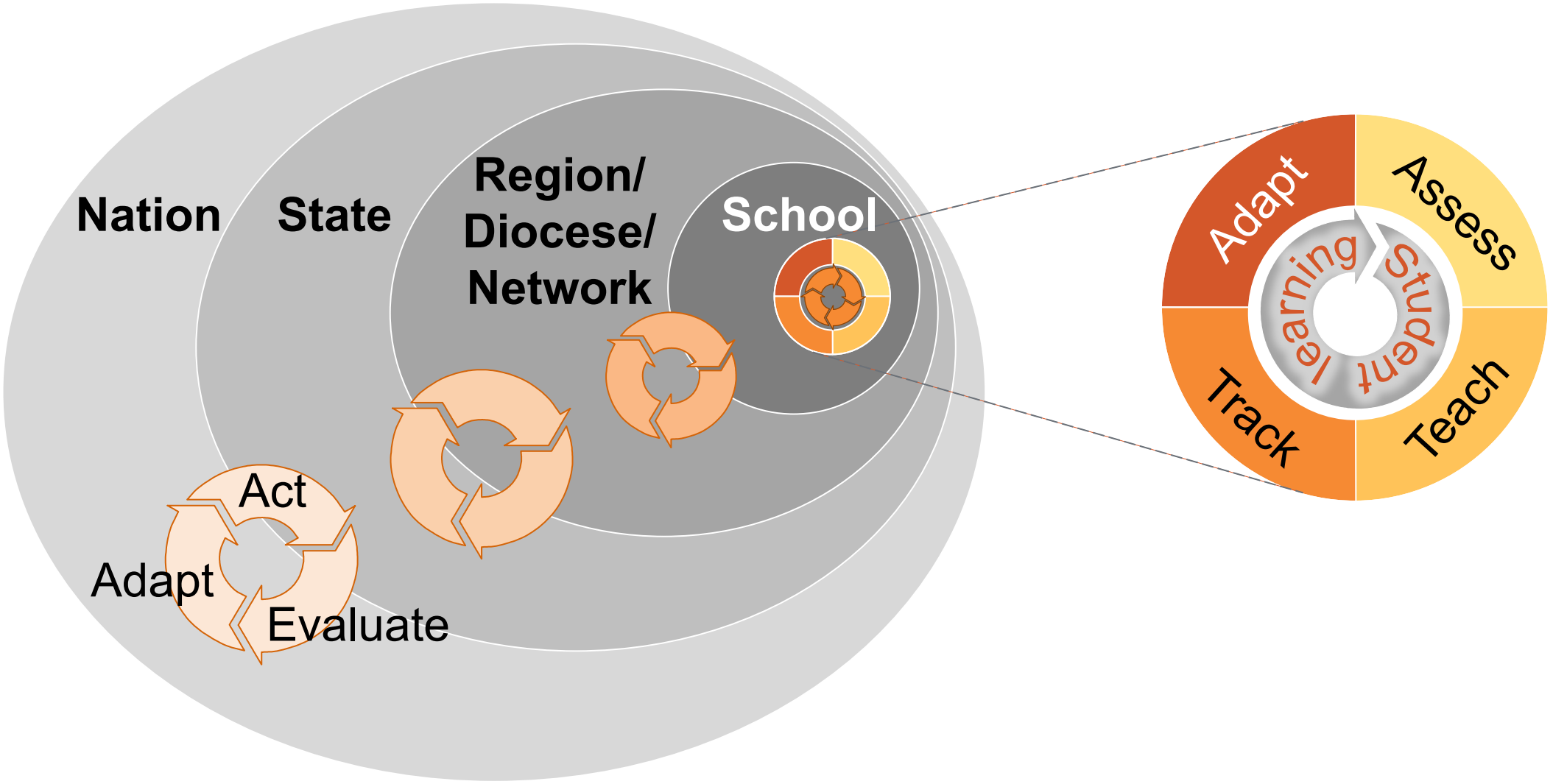
Assessments linked to teaching resources

Common formative assessment tasks

Timetable enables regular discussions between teachers

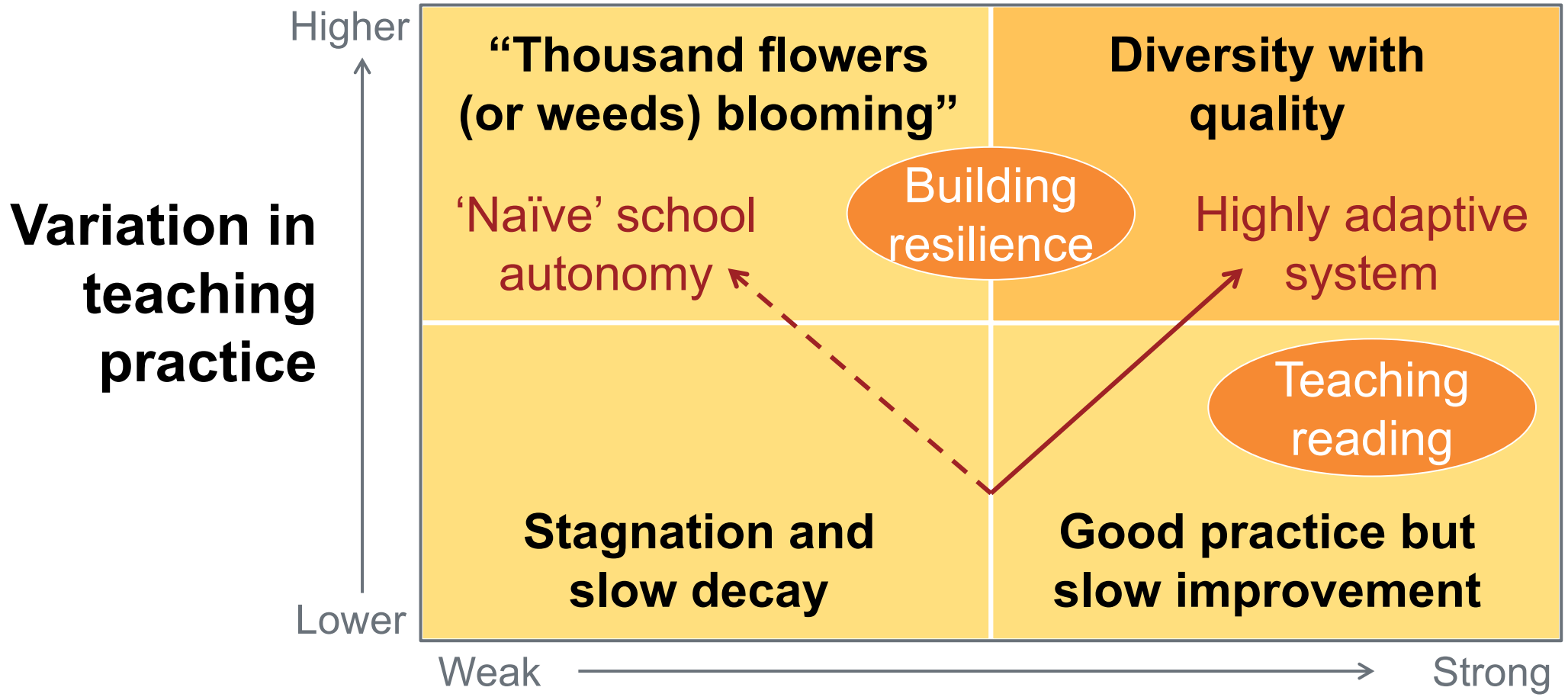
Expert support and instructional coaches

Systems need nested loops



Towards an Adaptive Education System, Goss (2017), inspired by The biology of corporate survival (BCG, 2016)

Selection is the critical step



What helps good local decisions?

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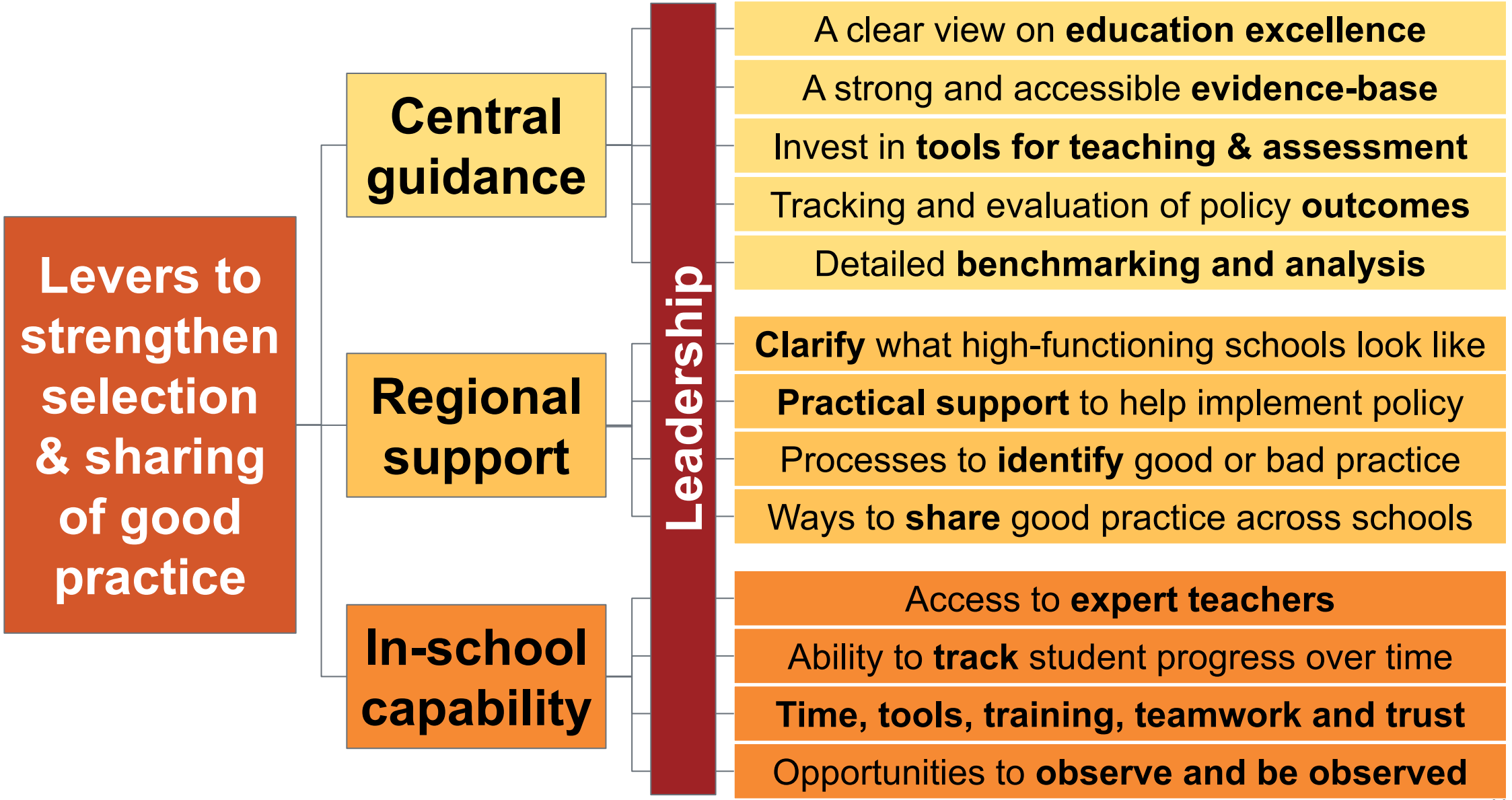

Five ‘guide-posts’ for the future

Better data in hands of teachers: trusted; timely; practical

Invest in our most expert teachers

Optimise practice in core academic areas…

… and innovate more systematically for a changing world

Focus more on system design