CAMBRIDGE
UNIVERSITY PRESS & ASSESSMENT

Effectiveness and equity in education: Lessons from the past, challenges for the future

EDULOG May 2024

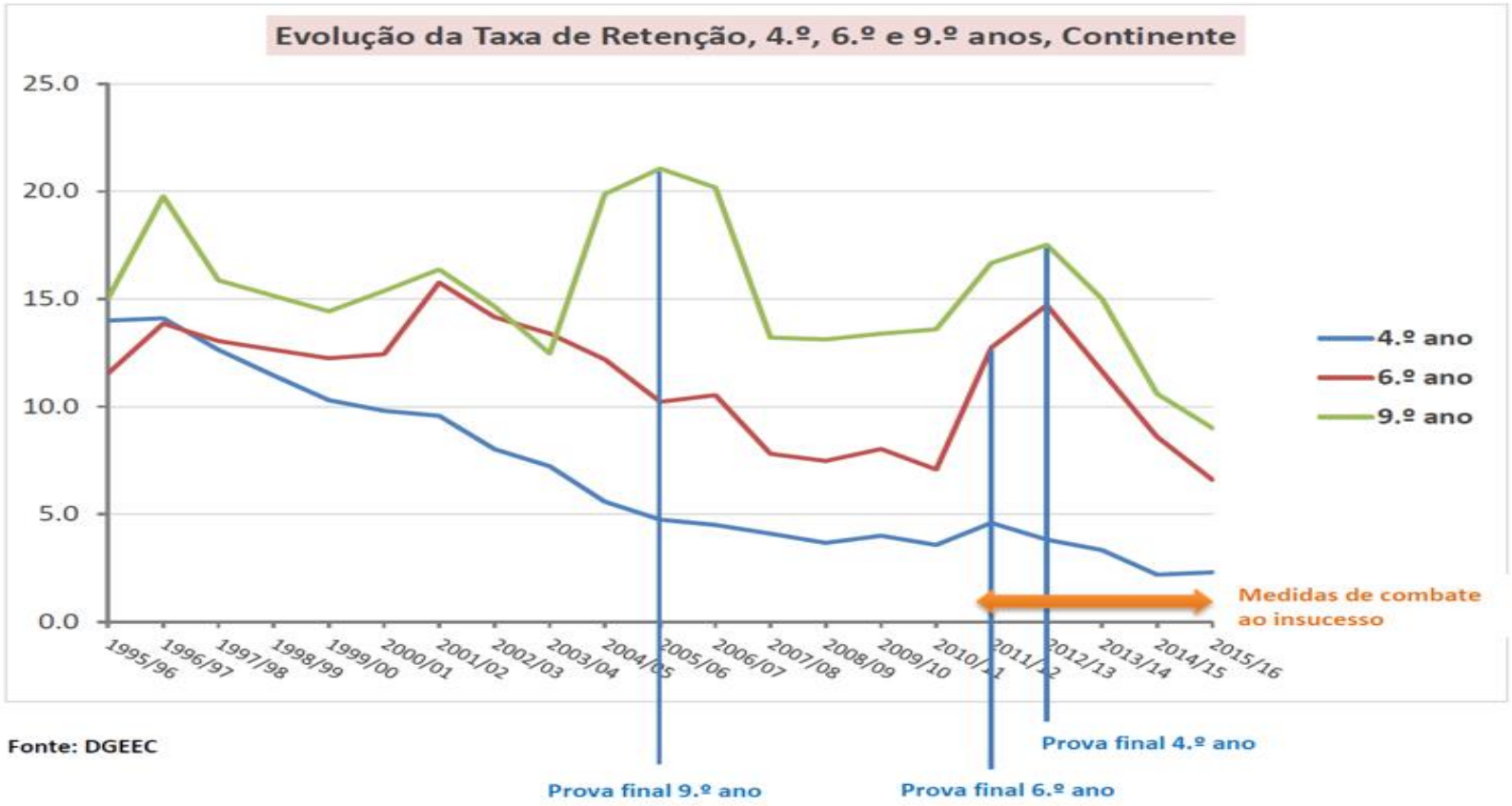
Tim Oates CBE
Group Director Research
Cambridge University Press & Assessment

	Maths score	Reading score	Science score	change maths	change reading	change science	restrictions days	periods
Japan	536	561	547	9	12	17	voluntary	na
Singapore	575	543	561	6	-7	10	158	4
United States	465	504	499	-13	-1	-3	0-453	1 (9 states)
England	496	492	503	-9	-12	-4	213	3
Estonia	510	511	526	-13	-12	-4	31	1
Finland	484	490	511	-23	-30	-11	20	1

(Source: OECD)

(Source: UNESCO)

Portugal 1995-2016



What should we be looking for?

Attainment
Equity
Sustained improvement linked to cause & action

Between-school and within-school variation
Equity across the pupil population

Understanding system performance

Curriculum coherence
Curriculum control

Schmidt & Prawat; Oates

Control factors

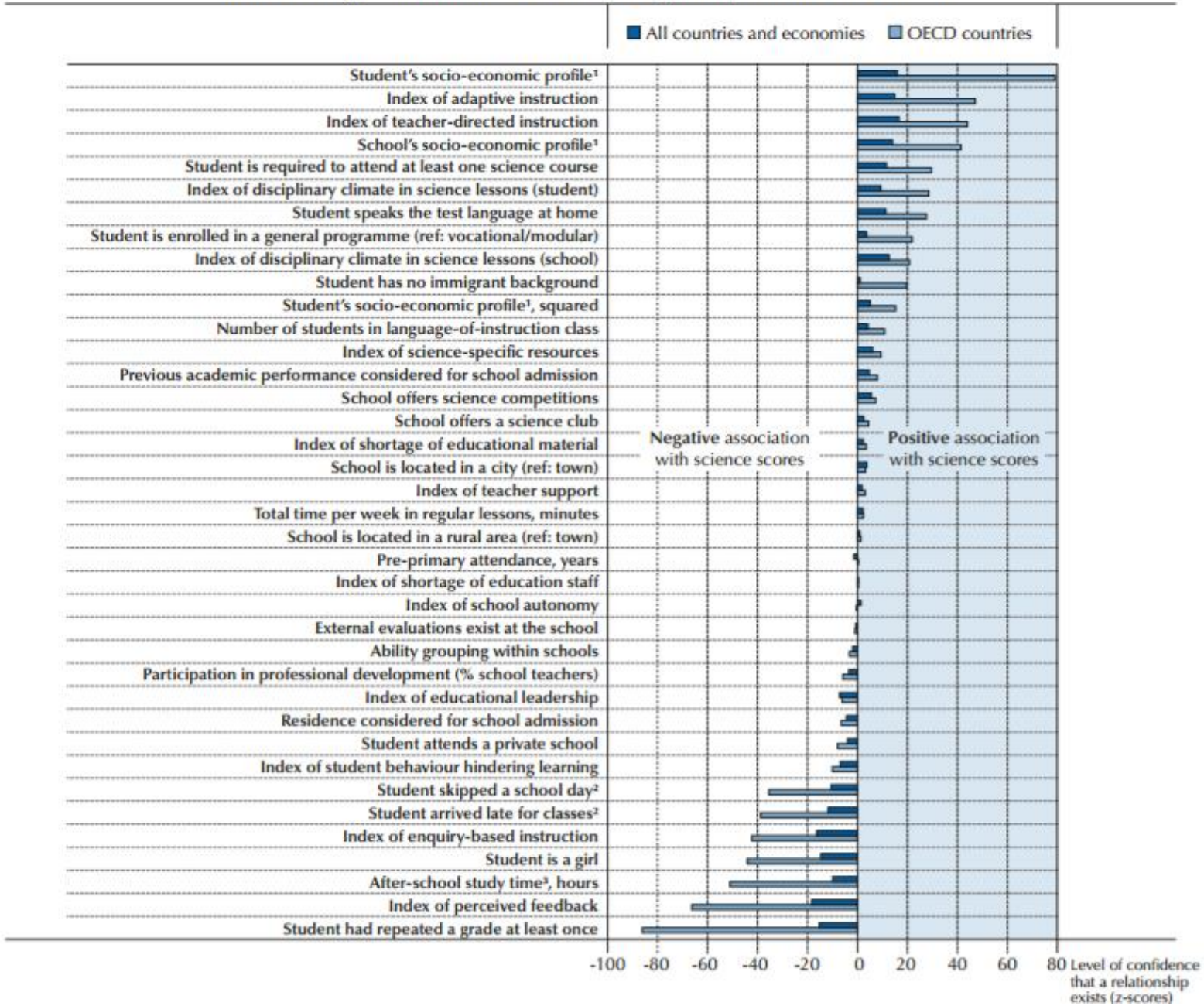
1. curriculum content
2. pedagogy
3. assessment and qualifications
4. institutional development
5. institutional forms and structures
6. governance
7. professional development
8. accountability
9. inspection
10. funding
11. national framework
12. selection and gatekeeping
13. information and guidance about routes and choices
14. allied social measures

Explanatory factors

1 global economy	trade patterns; upturn/downturn; labour movements; regulation; exchange rates
2 domestic economy	fiscal and monetary policy; upturn/downturn; industrial policy; inward investment; labour market policy; higher education research strategy; migration/immigration policy
3 culture	social structure; family culture; societal attitudes to education; gender identities and life expectations; signalling into schools from society and the economy
4 political structures and commitments	status of educational policy in domestic policy apparatus; nature of social consents
5 historical contingencies	natural resources; distribution of wealth and opportunity; regional political and territorial relations/conflict; domestic security and conflict; political developments impacting on education (eg post-conflict reconstruction; independence movements; demographic trends
6 natural environment	natural disasters and calamitous events (earthquake; fire; flood); climate change

Figure II.7.2 ▪ **Factors associated with science performance**

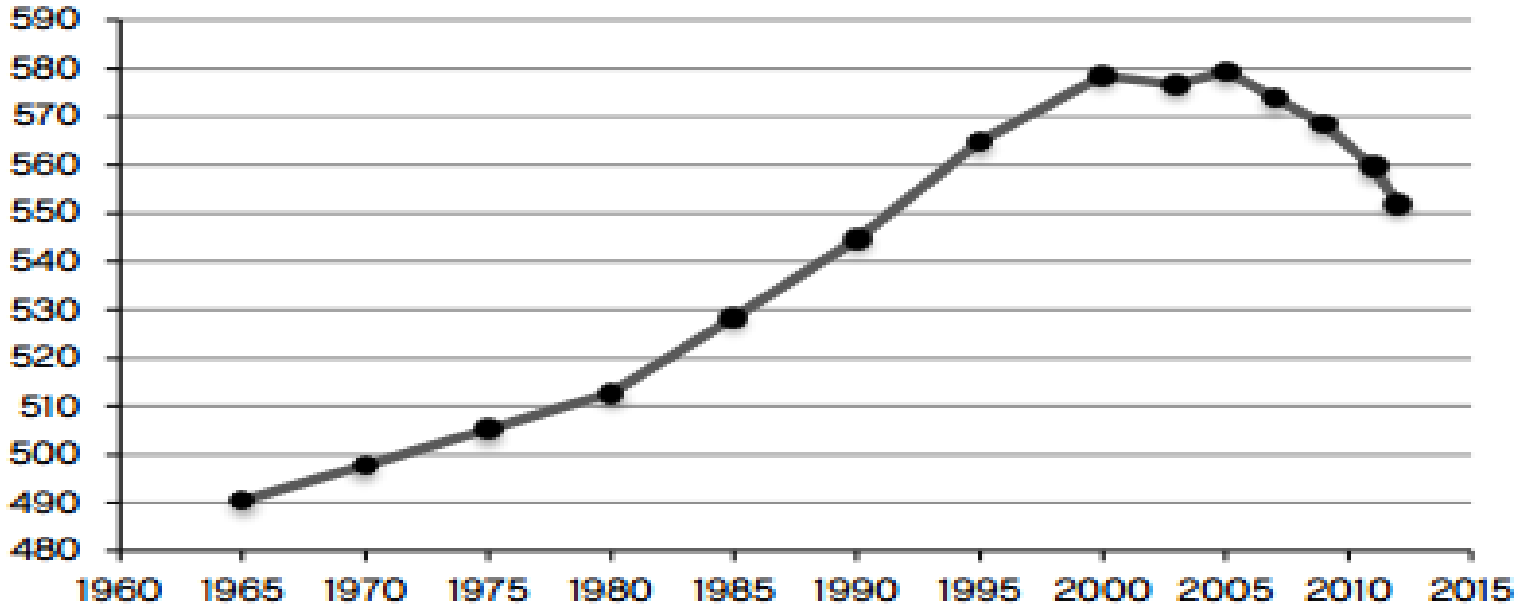
Multilevel regression models of education systems, schools and students



Finland in PISA

	Math	Science	Reading	
2000	536	538	546	
2003	544	548	543	
2006	548	563	547	plateau
2009	541	554	536	
2012	519	545	524	
2015	511	531	526	
2018	507	522	520	
2022	484	511	490	Continual decline – COVID period

Chart 1: Finnish lower-secondary pupil performance in international assessments over time



- From Real Finnish Lessons Heller Sahlgren 2015

Finland

5.541 million (2021)

Declining in PISA since 2006
Dependence on legacy cultural commitment to reading and learning
Moved from selective to fully comprehensive system in 1950s onwards
Low between school variation relatively high within school variation
Gender gap in reading is one of the highest in PISA
Socio-economic gap widening although consistent with average across OCED countries
8.5% foreigners residing in Finland
8% of immigrant students scored in top quartile – across OECD 17%
Stresses in urban school system
Closed 2000+ schools in the late 90s
High commitment to '21st Century skills' and allied curriculum theory
Transformed teacher training in the 1980s and 1990s
High compliance system

See
https://www.oecd.org/pisa/publications/PISA2018_CN_FIN.pdf

Sweden in PISA

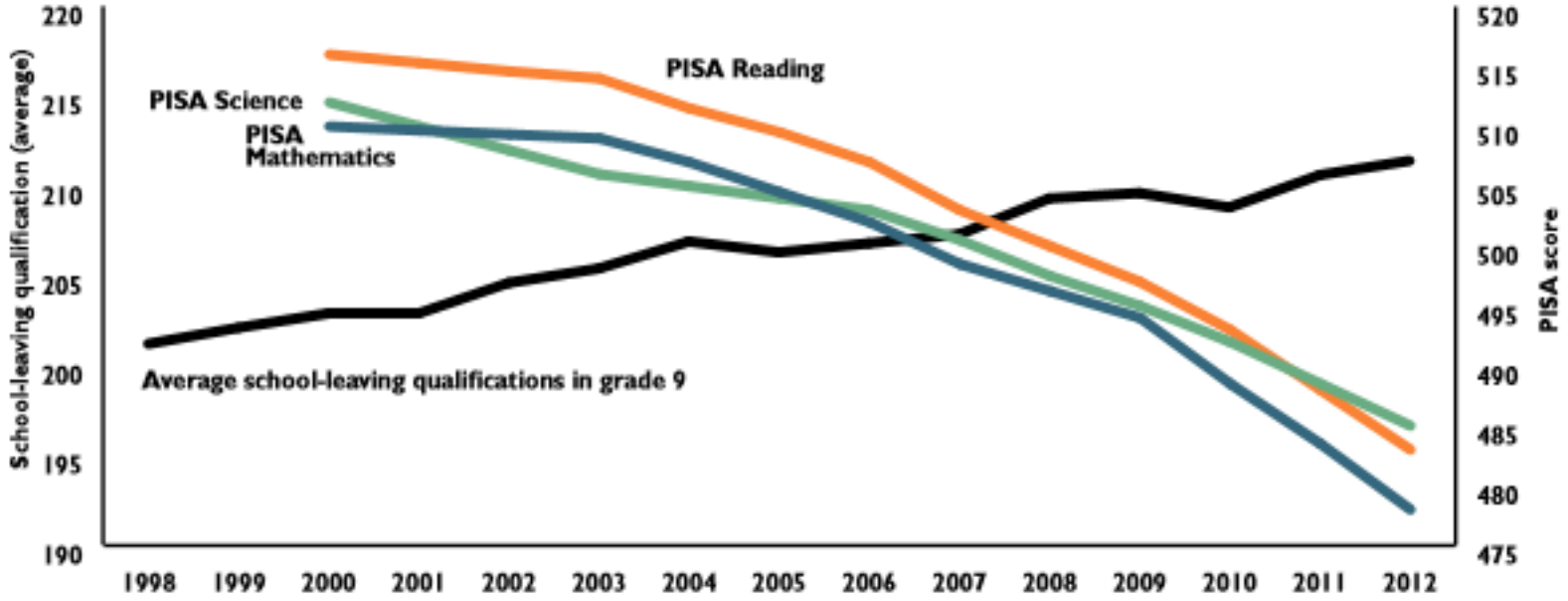
	Math	Science	Reading	
2000	510	521	516	
2003	509	506	509	Decline
2006	502	503	507	
2009	494	495	497	
2012	478	485	483	
2015	493	500	493	Improvement/Recovery
2018	506	502	499	
2022	482	494	487	significant decline – COVID period

Sweden

10.42 million (2021)

Previously high performing nation – since 1990s fallen from 7th to 23rd place
High societal commitment to education
Radical structural reform with emphasis on decentralisation (1980s) and marketisation (1990s)
Protracted and serious decline in underlying educational standards
Gradual increase in restriction and control
Increased signalling of quality of educational provision through inspection and data on educational results/outcomes
Re-introduction of national testing and increase in inspection
Increased fine tuning of municipal and state elements of ‘curriculum control’
Kr685m (60m Euro) investment in school textbooks 2023
Lack of curriculum control a key factor
Curriculum principles implicated in decline

Figure 9: Sweden's average PISA scores (2000–2012) and the average school-leaving qualifications in grade 9 (1998–2012).



Source: Swedish National Agency for Education (2001, 2004a, 2007, 2010, 2013), SIRIS (Swedish National Agency for Education) and OECD (2015).

file:///C:/Users/batemp/Downloads/2017%20Henrekson-JÃ¤vervall%20IVA%20report%20in%20English%20Jan%202017.pdf

Singapore in PISA

	Math	Science	Reading	
2000	na	na	na	
2003	na	na	na	
2006	na	na	na	
2009	562	542	526	
2012	573	551	542	
2015	564	556	535	
2018	569	551	549	
2022	575	561	543	sustained performance/improvement – COVID period

Singapore

5.454 million (2021)

High performer and sustained improver in PISA
Deliberate high proximity between schools and policy making process
Strong sense of national identity and high value of human capital
Relatively high between school variation and within school variation
Segregated routes – selective system
Very high stakes assessment system – but high investment in all routes
Multi-ethnic, multi-cultural, multi-racial system – social policy on integration
Well developed vocational route and highly successful polytechnic system
Highly structured model linked educational system to economy
High commitment to '21st Century skills' but actually a very balanced model
High level of research and innovation in all aspects of education

See
https://www.oecd.org/pisa/publications/PISA2018_CN_SGP.pdf

England in PISA

	Math	Science	Reading	
2000	531	535	526	
2003	507	516	507	
2006	495	516	496	
2009	493	495	515	
2012	495	516	500	
2015	493	512	500	stagnation
2018	504	507	505	recovery
2023	492	503	496	decline – COVID period

England

59.642 million (2021)

Incredibly diverse system
Highly localised education markets in urban areas
Massive investment in education in late 90s and early 2000s
Massification of Higher Education
Substantial shifts in patterns of governance of schools 1990s-current
Strong influence of assessment and target-based accountability arrangements
Very high quality data from annual census submissions and assessment data (UPN and NPD)
Strong influence of school inspection processes
Revised National Curriculum in 2014 - knowledge-based model
From 2010 key initiatives in reading and mathematics
High control interventions are linked to higher performance in reading and mathematics
High impact of teacher shortages
Issues of poor transition between primary and secondary education phases
Previously underdeveloped vocational arrangements but commitment to apprenticeship model

Scotland in PISA

	Math	Science	Reading	
2000	na	na	526	
2003	524	na	516	
2006	506	515	499	
2009	499	415	500	
2012	498	513	506	
2015	491	497	493	
2018	489	490	504	protracted decline – uptick in reading
2022	471	483	493	decline – COVID period – more rapid drop than OECD av

Scotland

5.48 million (2021)

Previously high performing with the four nations of the UK
Challenging distribution of schools similar to Nordic Countries
Impressive equity in Higher Education
In urban areas, high working class commitment to education
Considerable pressure for education to support improved health outcomes and tackle social issues
Increased school autonomy alongside focus on reducing class size
A focus on reducing post-16 Not in Education, Employment or Training
Following domestic review and review by OECD, adopted a new competence-based curriculum in 2010
Dismantled domestic survey of educational standards and withdrew from PIRLS and TIMSS
Constantly declining performance in PISA post-2010 except with small improvement in reading in 2018
Consistently and widely reported implementation problems with 2010 Curriculum for Excellence
Underlying process of concentration of power at the centre

Estonia in PISA

	Math	Science	Reading	
2000	na	na	na	
2003	na	na	na	
2006	515	531	501	
2009	512	528	501	
2012	521	541	516	
2015	520	534	519	
2018	523	530	523	significant improvement but science in decline
2022	510	526	511	decline – COVID period

Estonia

1.331 million (2021)

Now a top performing European nation
Strong sense of national identity and high value of human capital
Close proximity between schools and policy making process
Stressed primary school arrangements linked to strong learning culture
High compliance system
Strong steering elements and curriculum control through textbooks and national curriculum
High levels of detailed regulation of teacher duties via ‘teacher standards’
High use of EdTech in learning and school management
Regular checking of progress – every three years – through wide-ranging assessments using set criteria
Feedback for into model of personalised learning
Open access data on school performance – transparency for all attainment data
Now moving to low-prescription National Curriculum from legacy high demand curriculum

Understanding system performance

Lessons from the past, challenges for the future

Curriculum coherence
Curriculum control

Curriculum models – evidence-based content and pedagogy/didactics
Proximal relations – governance
Data and valid interpretation – on schools, on every child
Continuity – combined with appropriate evaluation and fine-tuning

Valid forms of personalised learning
Attention to both specific and general goods of education
School location in community

Population changes, economic shifts, climate change
COVID impact
Misconceptions about high performing systems – myths and legends
Teacher supply