

Putting learning at the center of everything we do.

Premier's Council on Skills
28 Oct 2021

Nic Spaul
Associate Professor of Economics
Stellenbosch University

Knowledge Capital and Economic Growth

Figure 1

Economic growth and years of schooling (1960-2000)

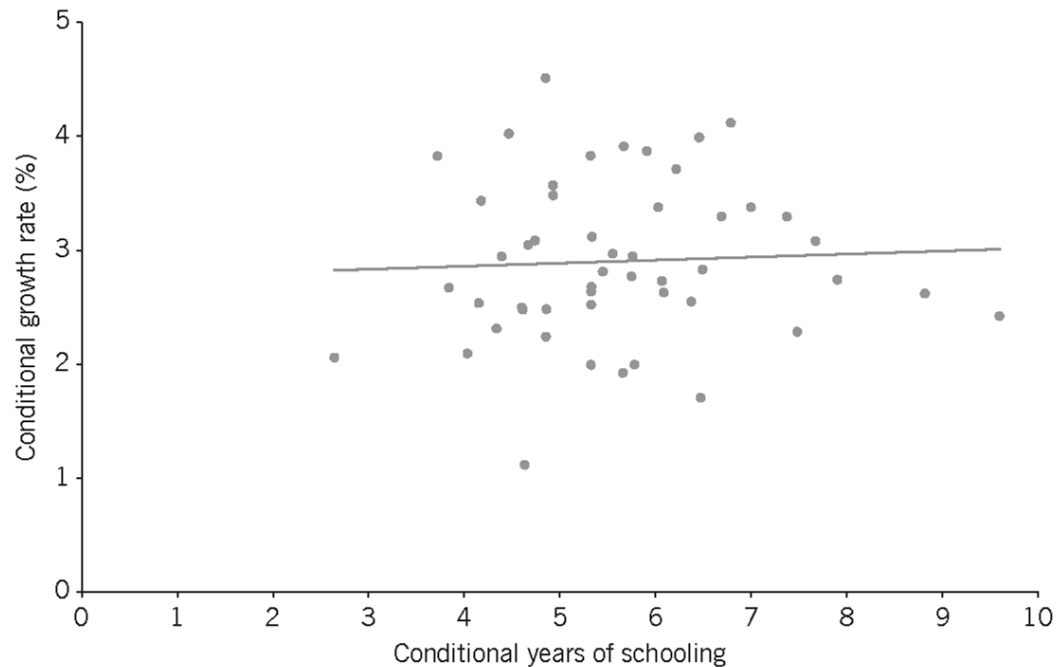
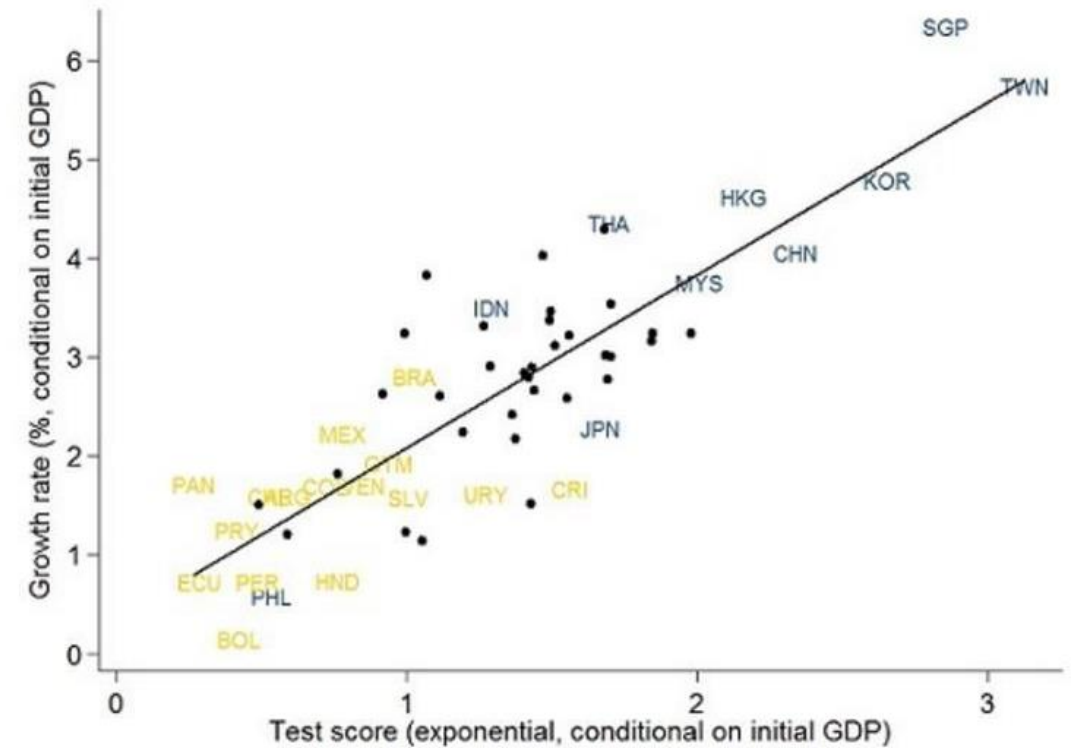


Figure 2

Economic growth and learning outcomes (1960-2000)



Note: Each dot represents a country. The underlying regression model of long-term growth in GDP per capita (1960–2000) includes GDP per capita in 1960 and knowledge capital.

Source: Hanushek, E. A., and L. Woessmann, *The Knowledge Capital of Nations: Education and the Economics of Growth*. Cambridge, MA: MIT Press, 2015 [1].

COVID-19: The economy in Q2: 2021 was the same size as what it was in Q4: 2017

The economy is 1,4% smaller than what it was before the pandemic. Real GDP (constant 2015 prices, seasonally adjusted)



Source: Gross domestic product (GDP), 2nd quarter 2021

**Anemic
economic growth
of ~1% p.a in SA.**

**29%
unemployment in
WC in Q2 2021**

Average learning outcomes vs GDP per capita, 1995 to 2015

The vertical axis shows average scores across standardized, psychometrically-robust international and regional student achievement tests. To maximize coverage by country, tests have been harmonized and pooled across subjects (math, reading, science) and levels (primary and secondary education). The horizontal axis shows GDP per capita after adjusting for price differences between countries and across time.

X: LINEAR

X: LOG



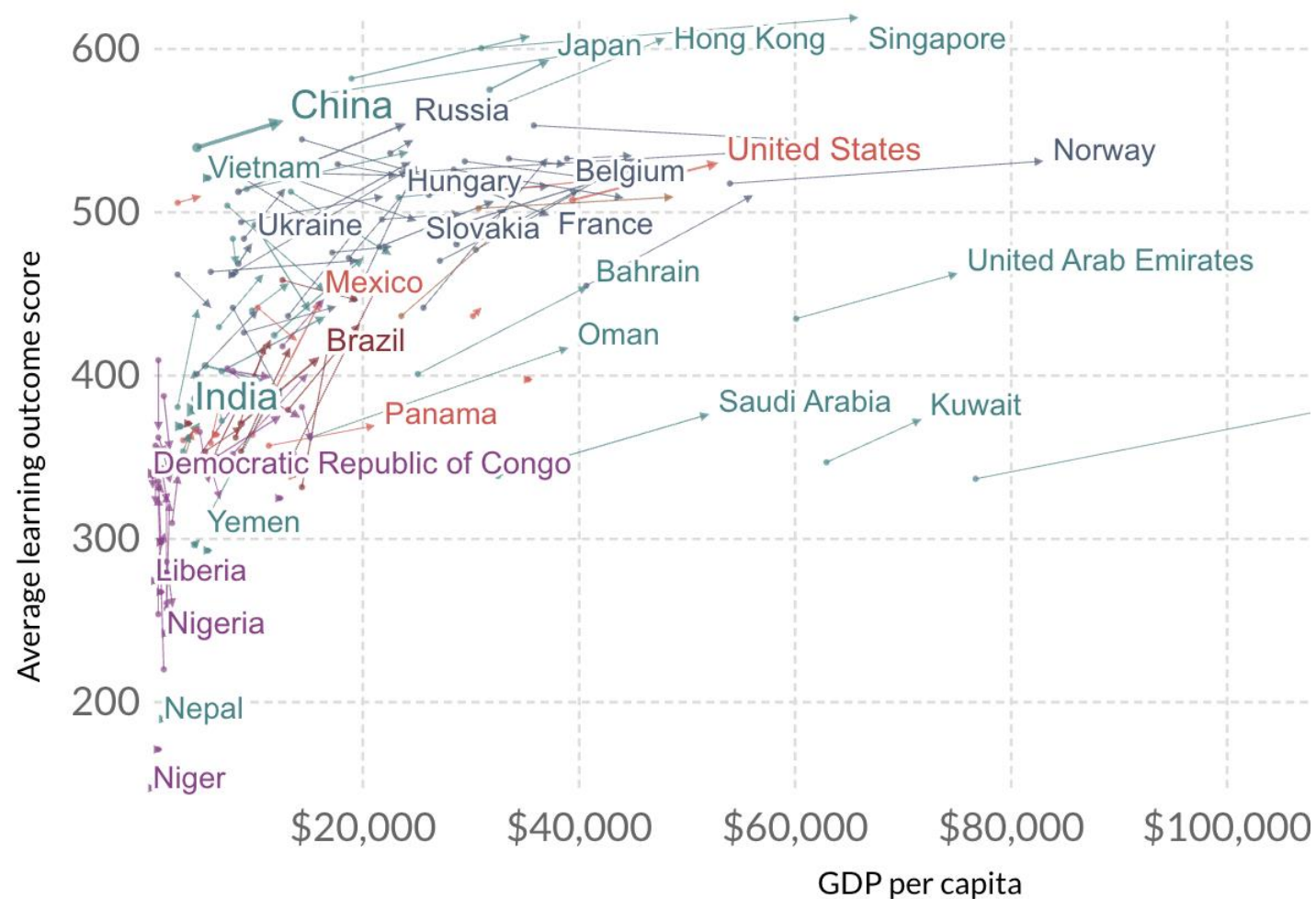
Select countries



Average annual change



Hide countries < 1 million people



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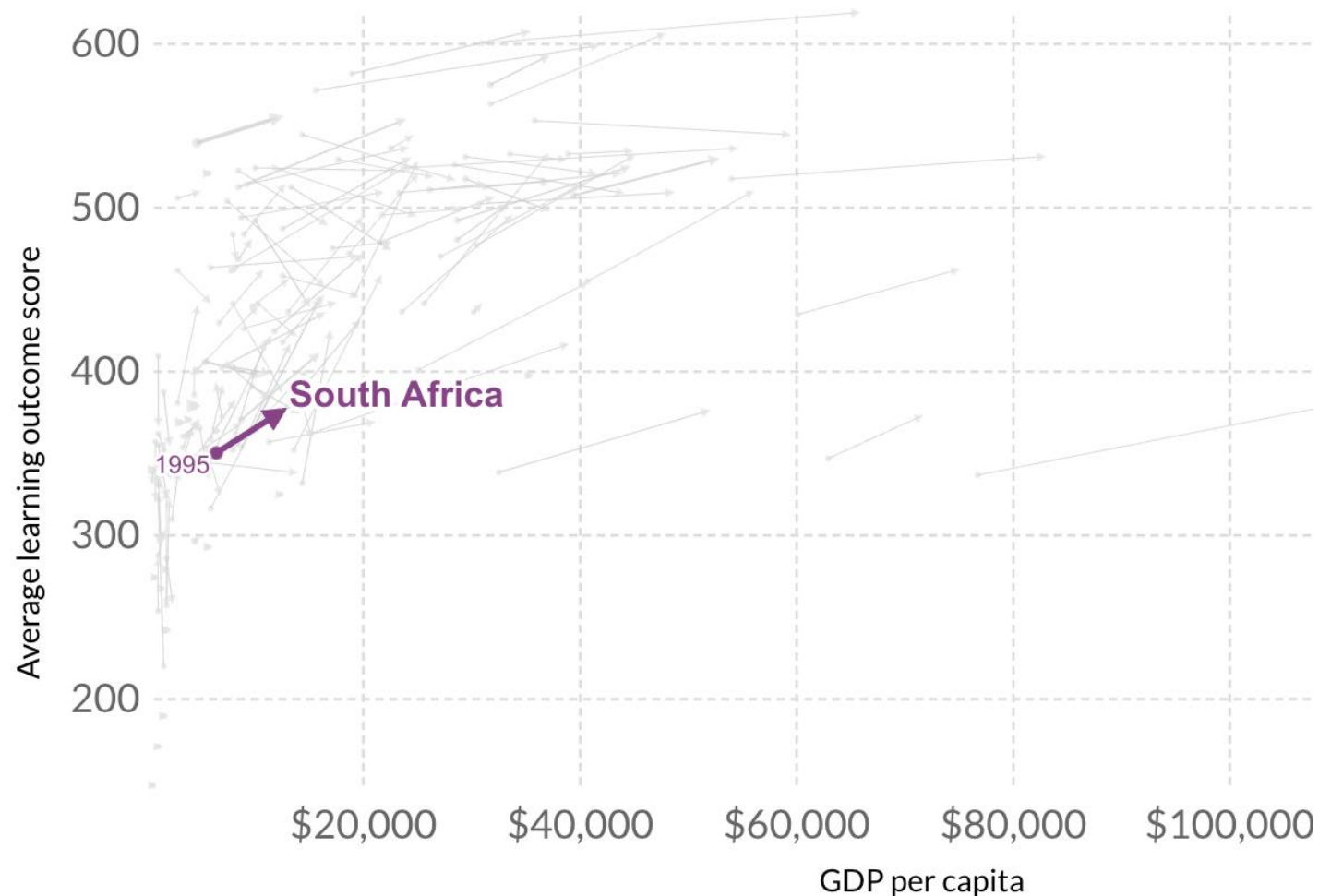


Select countries

☐ Zoom to selection

☐ Average annual change

☐ Hide countries < 1 million people



Average learning outcomes vs GDP per capita, 1994 to 2015

The vertical axis shows average scores across standardized, psychometrically-robust international and regional student achievement tests. To maximize coverage by country, tests have been harmonized and pooled across subjects (math, reading, science) and levels (primary and secondary education). The horizontal axis shows GDP per capita after adjusting for price differences between countries and across time.

X: LINEAR

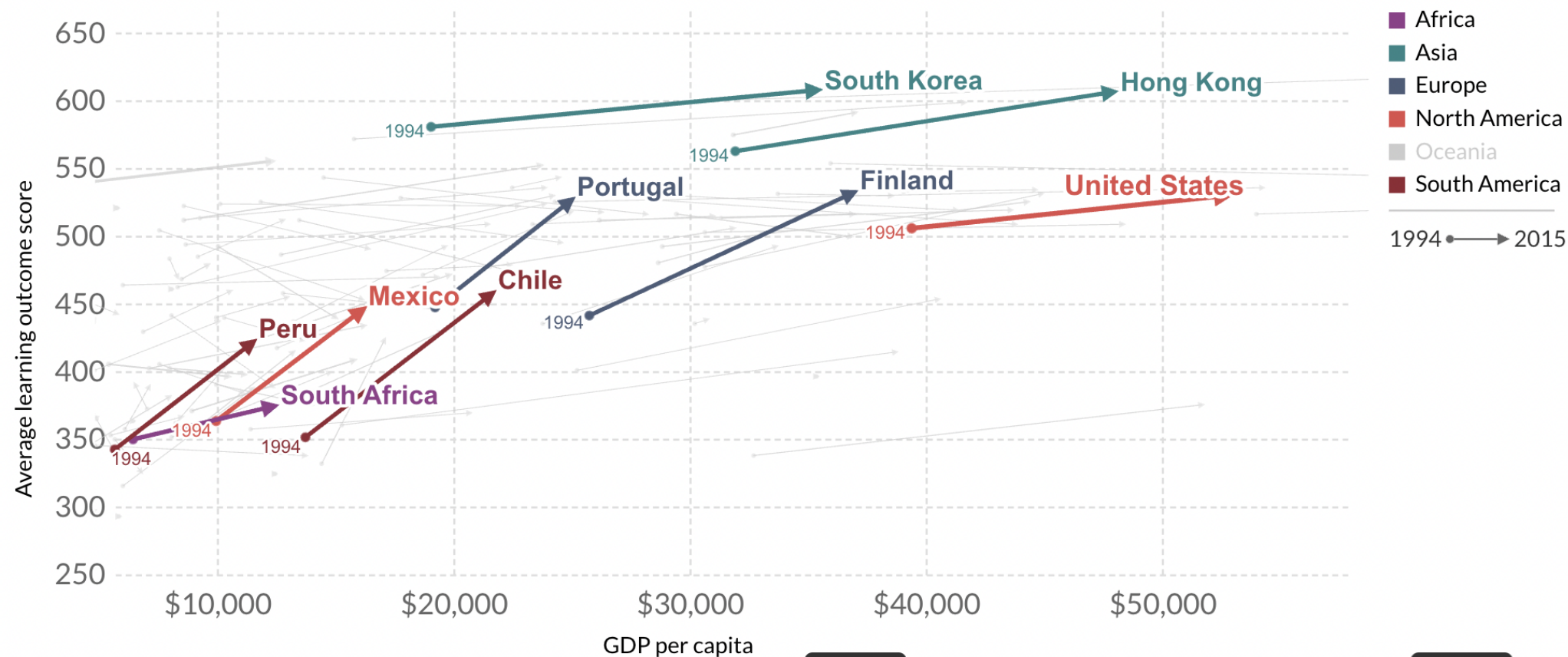
X: LOG

Select countries

Zoom to selection

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Hide countries < 1 million people



Source: Altinok, Angrist, and Patrinos (2018), Maddison Project Database 2020 (Maddison, 2020), and Zanden (2020))



1970

1994

2015

CC BY

2015



What can industry do?



LEARNING

TO REALIZE EDUCATION'S PROMISE



Successful job training programs are typically based on strong ties with employers, with curriculums taught by teachers who have both industry experience and up-to-date pedagogical expertise. These programs also tend to reinforce foundational skills, integrate classroom instruction with workplace learning, and offer certifications that can be further built on. These features keep career paths open for graduates. Though job training programs can yield positive outcomes, a key lesson is that trainees still need strong foundational skills—cognitive and socioemotional—before moving into specialized streams.

(WDR, 2018: p.159)

Features of successful job training programs

(WDR, 2018: p.154)

1. Establishing partnerships before training is designed

Sectoral training programs partner learners with employers early and sustain their commitment. "These programs set up partnerships between intermediary institutions – **usually network aggregators or nonprofits with industry-specific expertise** – and employers in an industry to anticipate job openings, design program content and maximize potential placement.



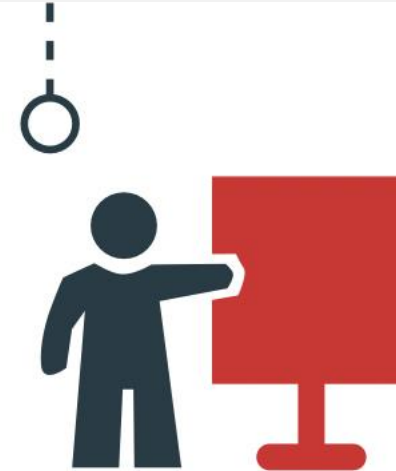
2. Combining classroom with workplace learning

Formal apprenticeships are a common way to combine classroom with workplace learning; such programs are often referred to as "**learning while earning**." Good programs offer structured training, a professional trainer and a written contract stipulating arrangements and assessments



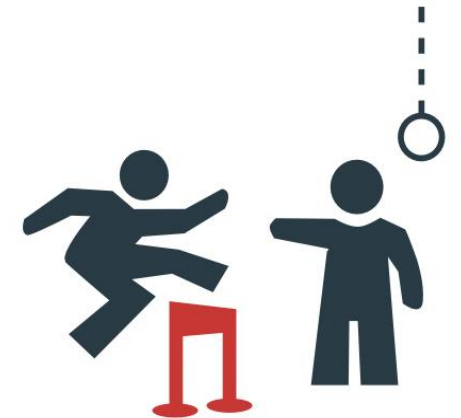
3. Identifying capable teachers

Successful approaches to training depend on **capable teachers with industry expertise** who can tailor training to meet job requirements. Students gaps in foundational skills and lack of motivation intensify the complexity of teachers' roles and responsibilities.



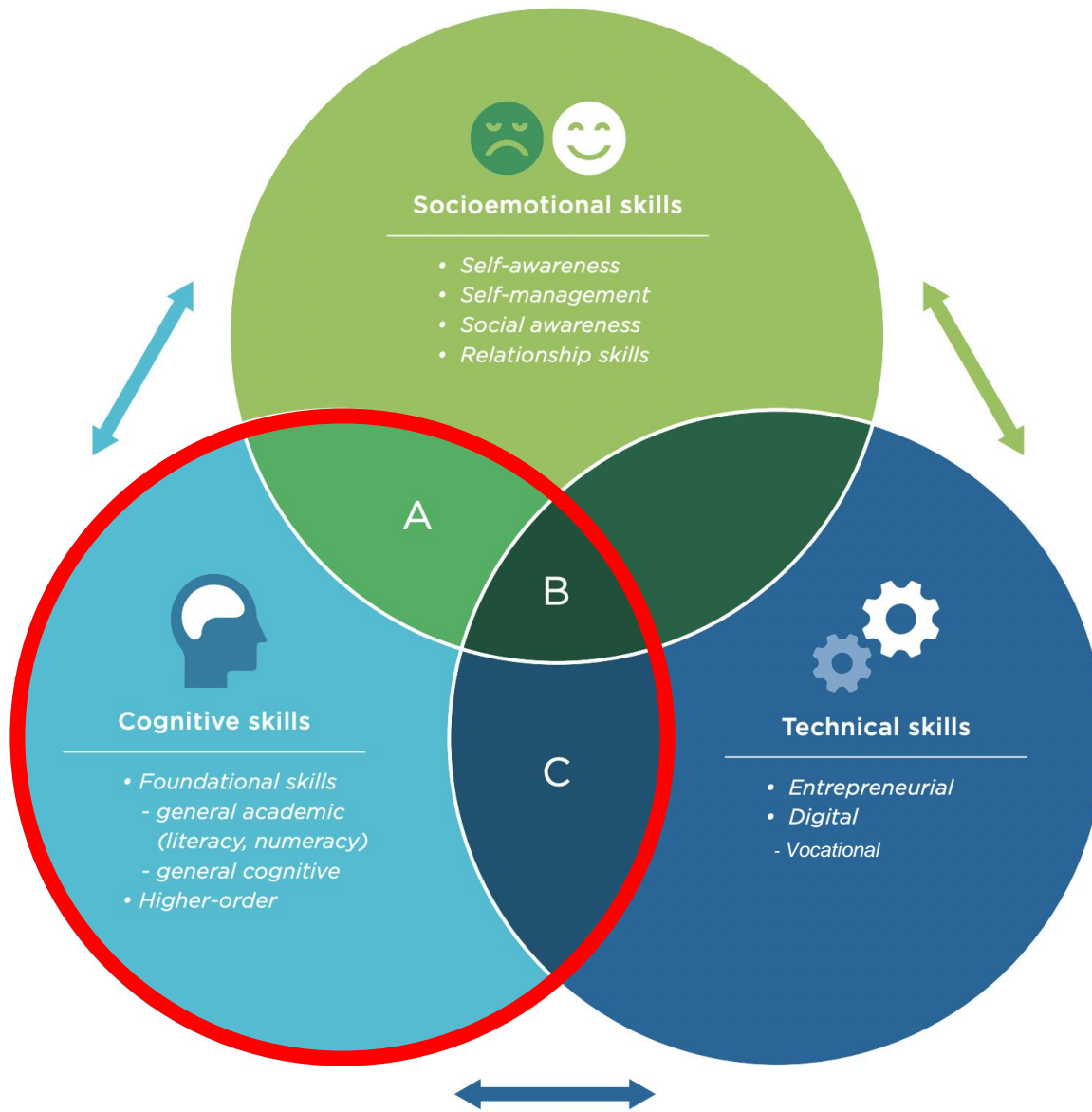
4. Creating certification frameworks that are relevant, modular & widely recognized

Industries need to be involved in creating and recognizing specific and **shared certification frameworks** that can be built on as students progress through their careers progress.





However, it's a mistake to think you can focus on technical skills in isolation...

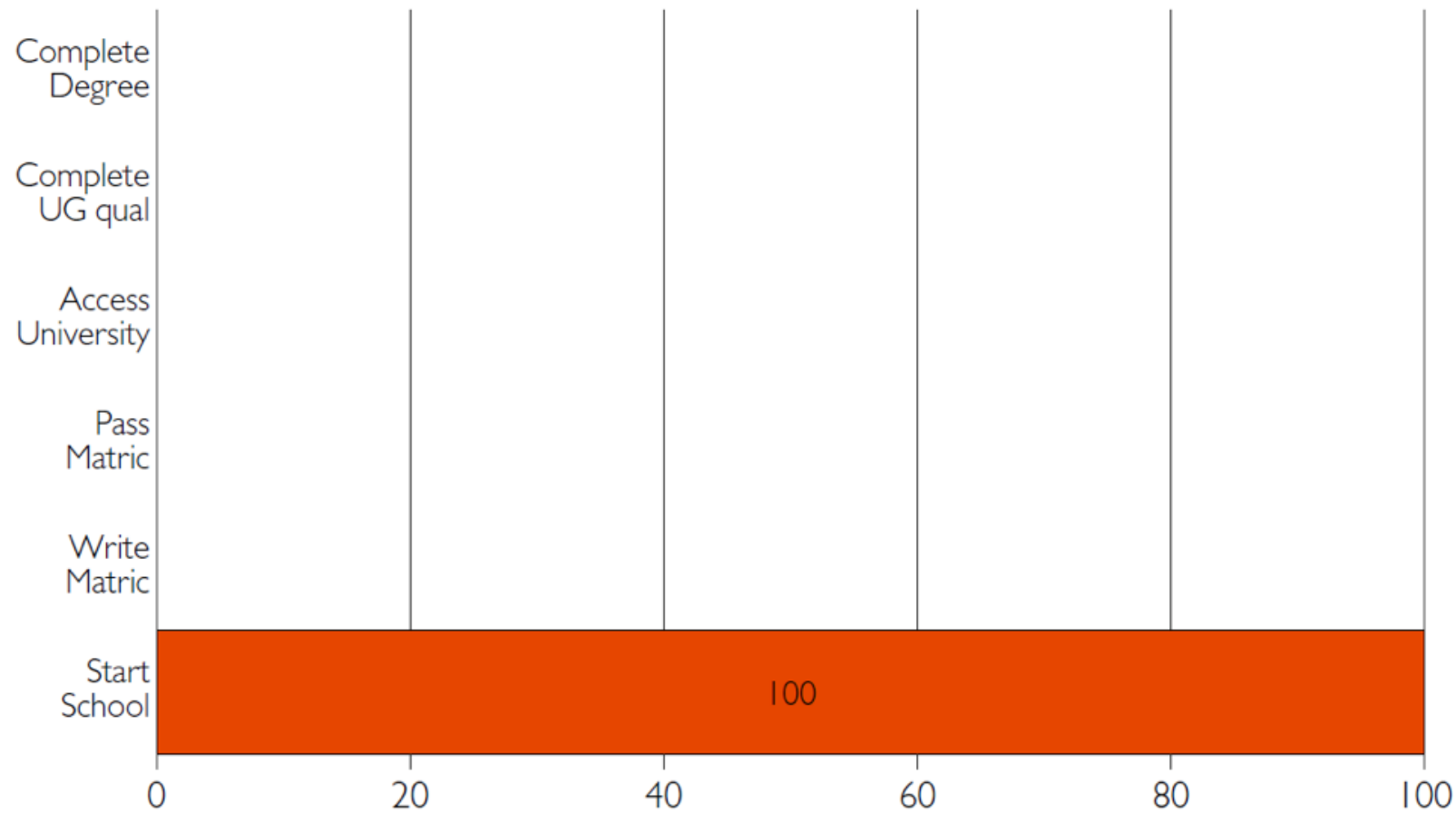


Cognitive, socioemotional & technical skills interact

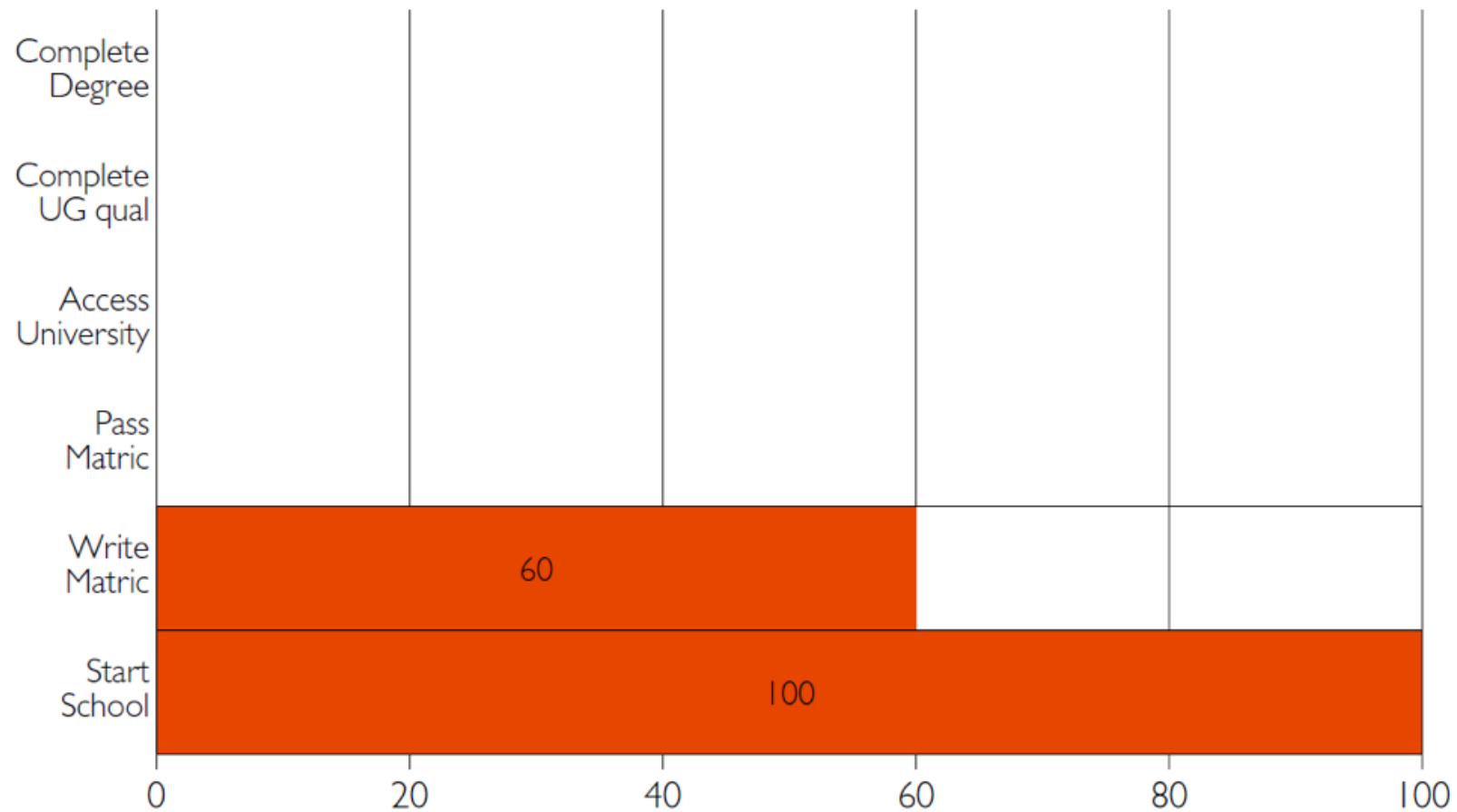


Setting the scene...

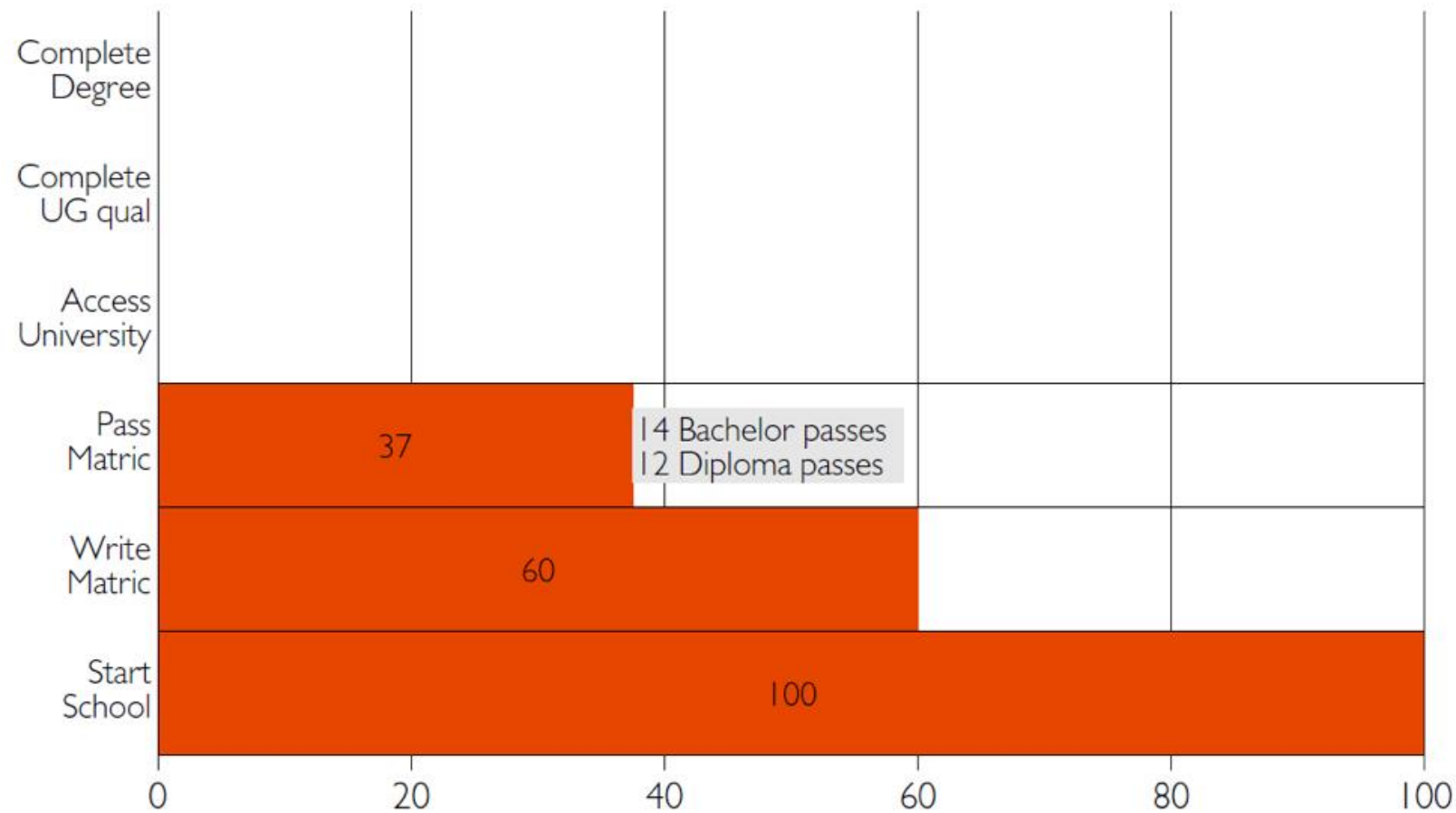
How many students actually make it to university?



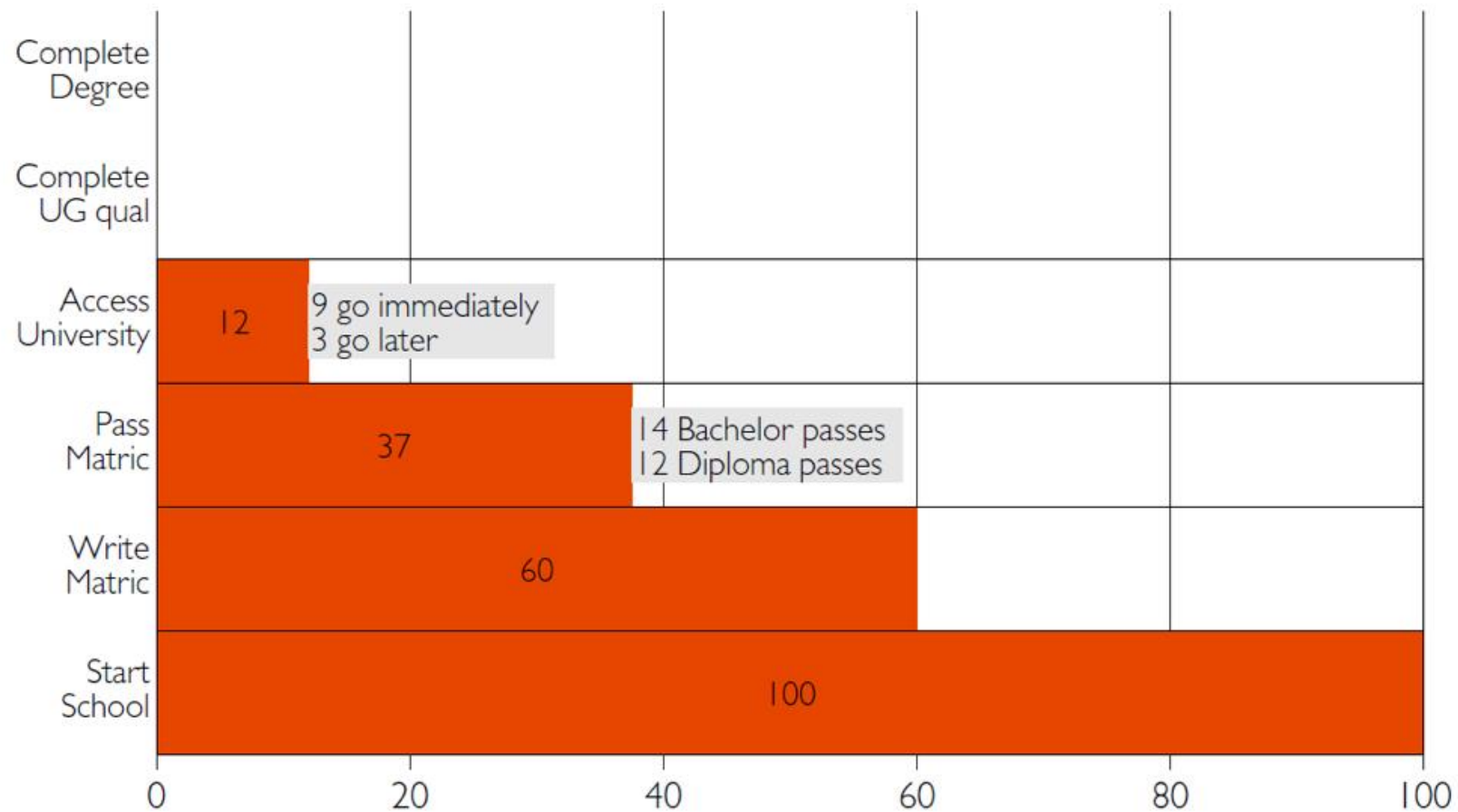
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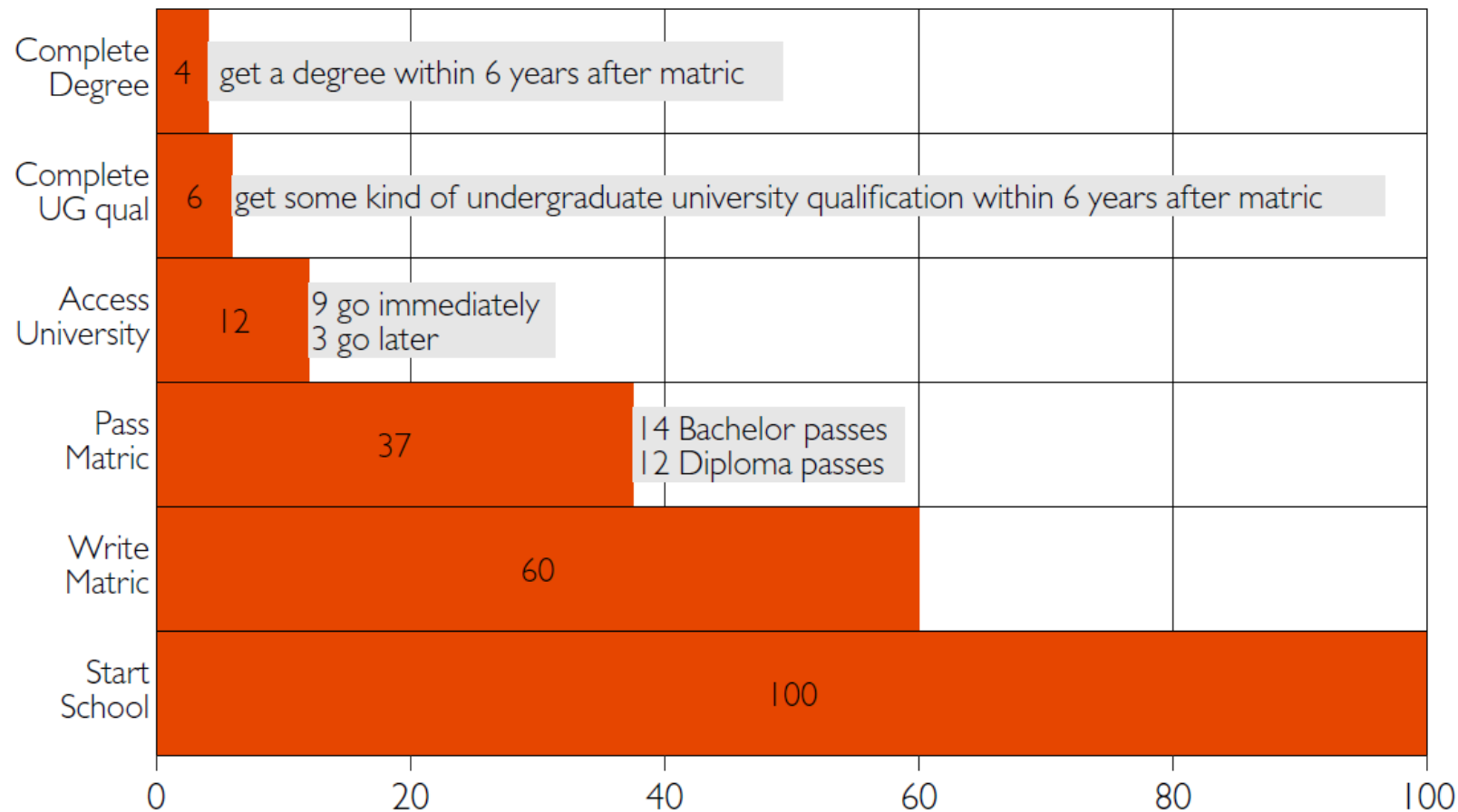
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How many students actually make it to university?



How many students actually make it to university?



Source: Van Broekhuizen & Van der Berg, 2016 (Higher Education Access and Outcomes for the 2008 National Matric Cohort)

Where does the problem begin?

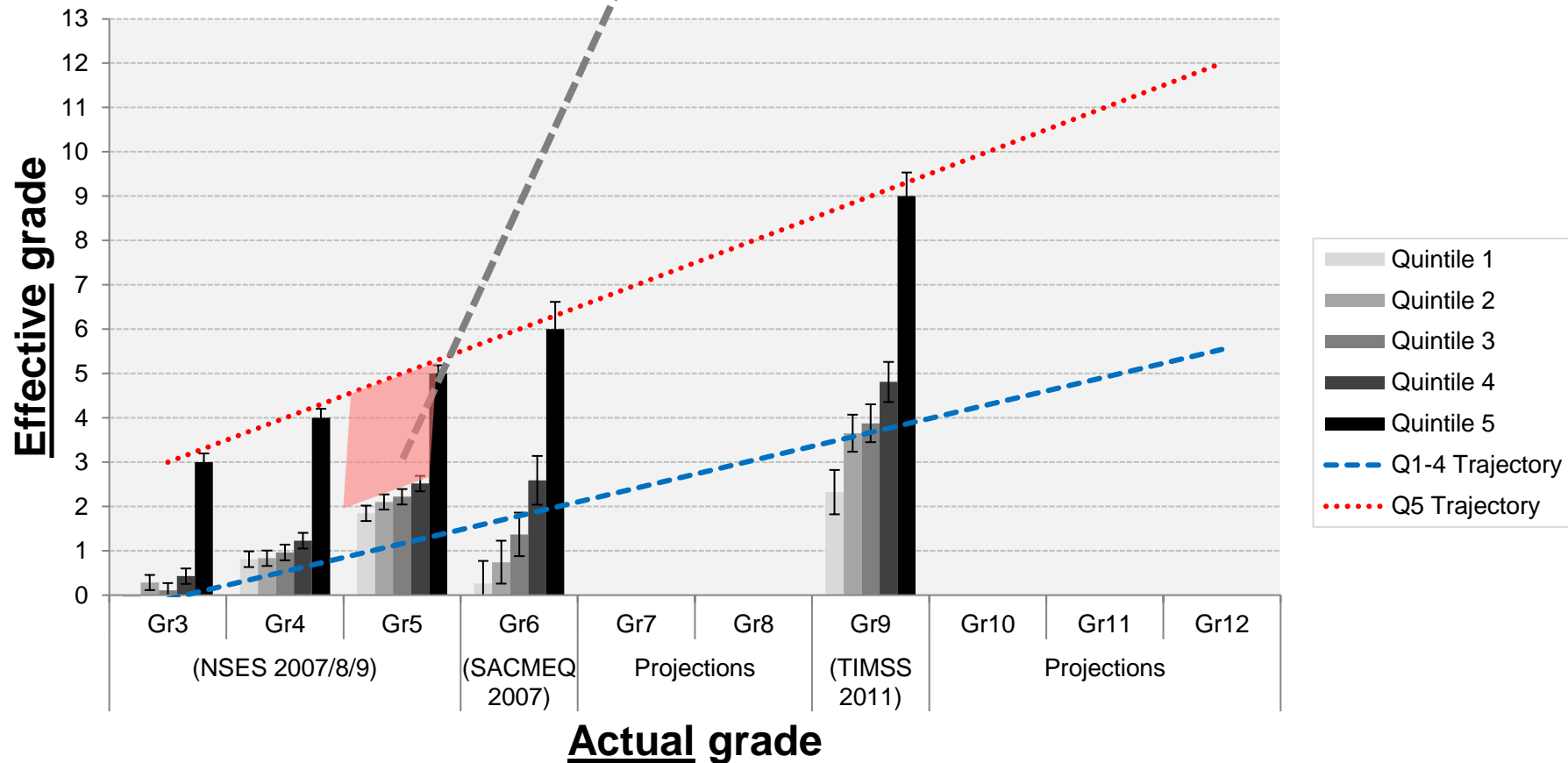


Where does the problem begin?

Only **25%** of Grade 5 learners in SA can answer:
700 – 28 = _____ (TIMSS-N 2019)

Insurmountable learning deficits

Figure 10b: South African mathematics learning trajectories by national socioeconomic quintiles using a variable standard deviation for a year of learning (0.28 in grade 3 to 0.2 in grade 9 with interpolated values for in-between grades (Based on NSES 2007/8/9 for grades 3/4/5, SACMEQ 2007 for grade 6 and TIMSS 2011 for grade 9, including 95% confidence interval

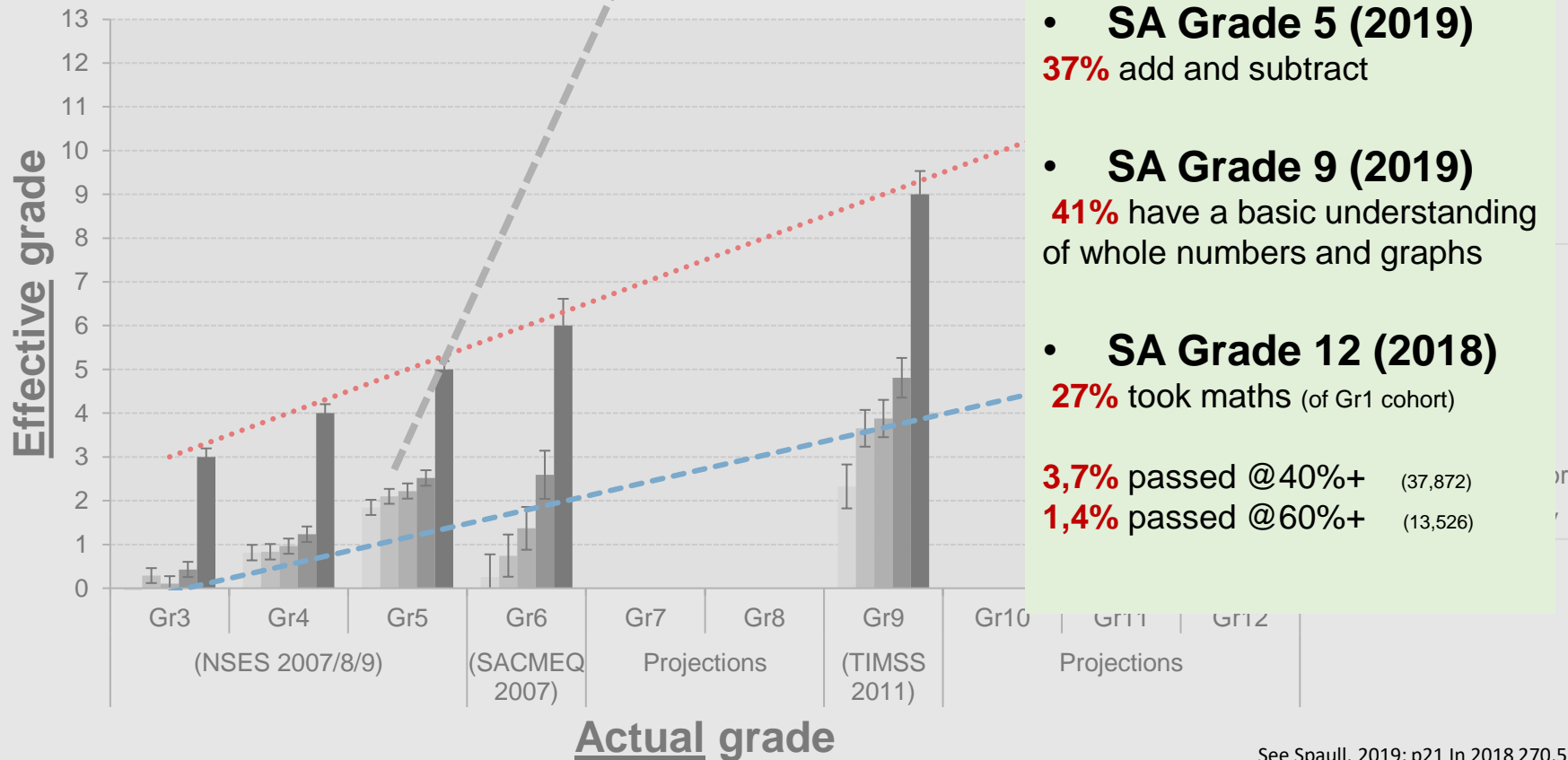


The problem starts early (Gr 1-3) and is never overcome

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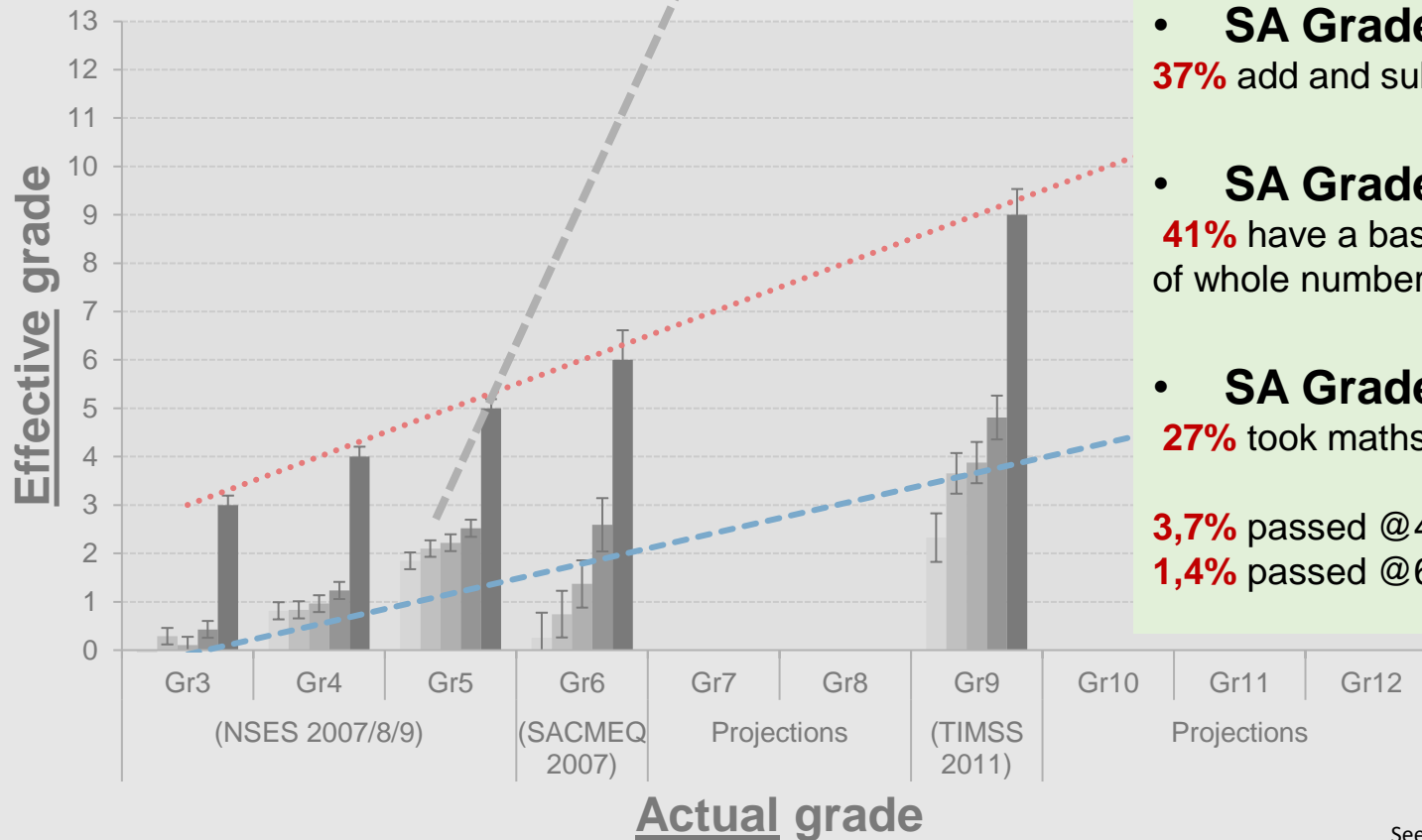


The problem starts early (Gr 1-3) and is never overcome

Only **25%** of Grade 5 learners in SA can answer:
 $700 - 28 = \underline{\hspace{2cm}}$ (TIMSS-N 2019)

Insurmountable learning deficits

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SA Grade 5 (2019)

37% add and subtract reliably

SA Grade 9 (2019)

41% have a basic understanding of whole numbers and graphs

SA Grade 12 (2018)

27% took maths (of Gr1 cohort)

3,7% passed @40%+

1,4% passed @60%+

WC Grade 5 (2019)

65% add and subtract reliably

WC Grade 9 (2019)

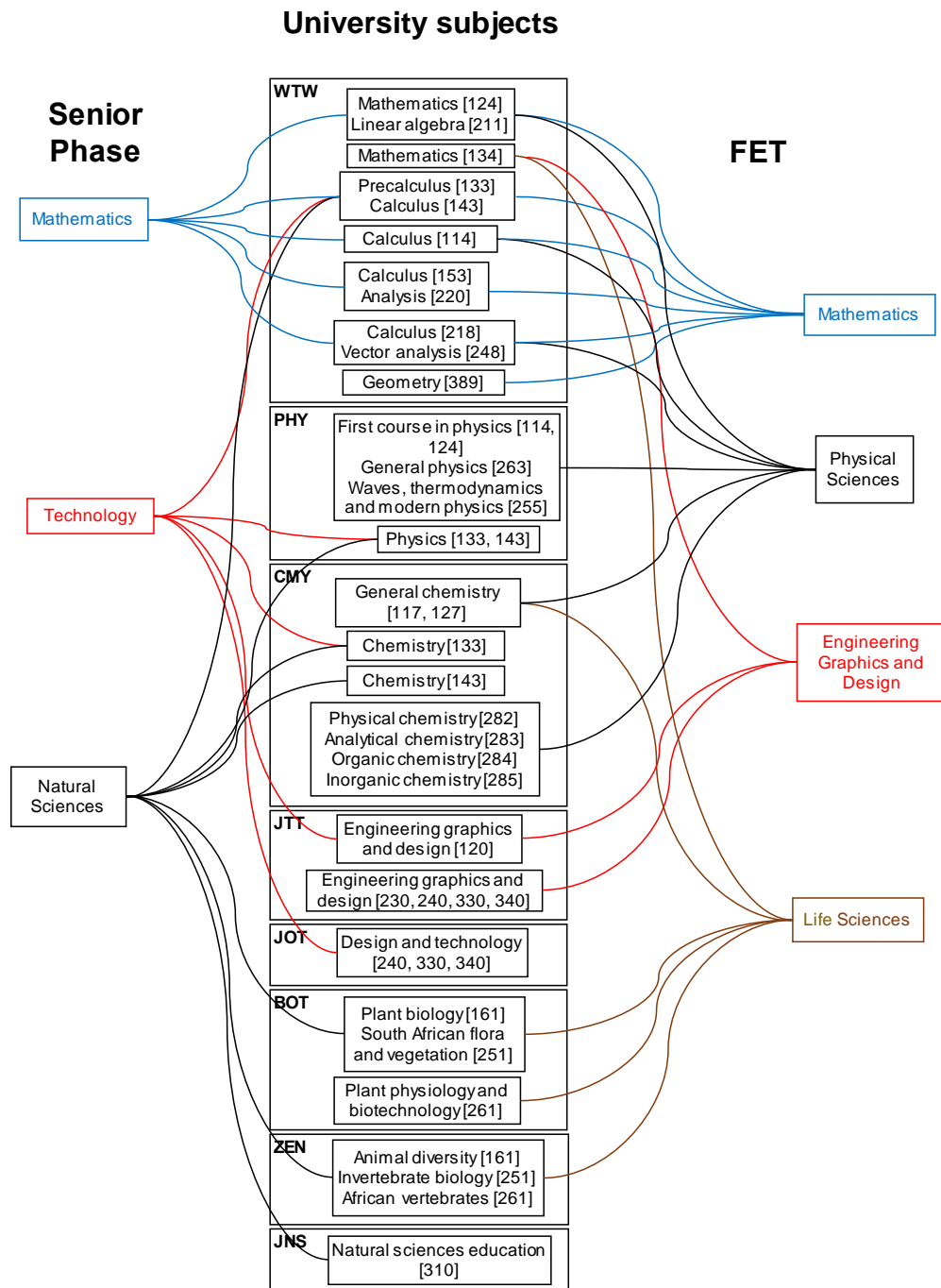
64% have a basic understanding of whole numbers and graphs

WC Grade 12 (2018)

18% took maths (of Gr1 WC cohort)

10% passed @40%+ (of Gr1)

4,3% passed @60%+ (of Gr1)



The Importance of

Maths, Science & Reading

especially in primary school

Source: Gustafsson & Van der Berg, 2021 Teacher Demand and Supply Report. Science-related subjects at University of Pretoria. Requirements for teacher training. Note: Curved lines indicate what modules may be taken for qualification to teach specific school subjects. What the diagram does not reflect is that some modules are optional.

Rotational timetables

are the single biggest threat to LT-skills-production in SA

In October 2021

86%

of **WC** primary schools
have been approved to
continue with rotational
timetables (WCED). A
generational catastrophe.

Government Gazette 44633

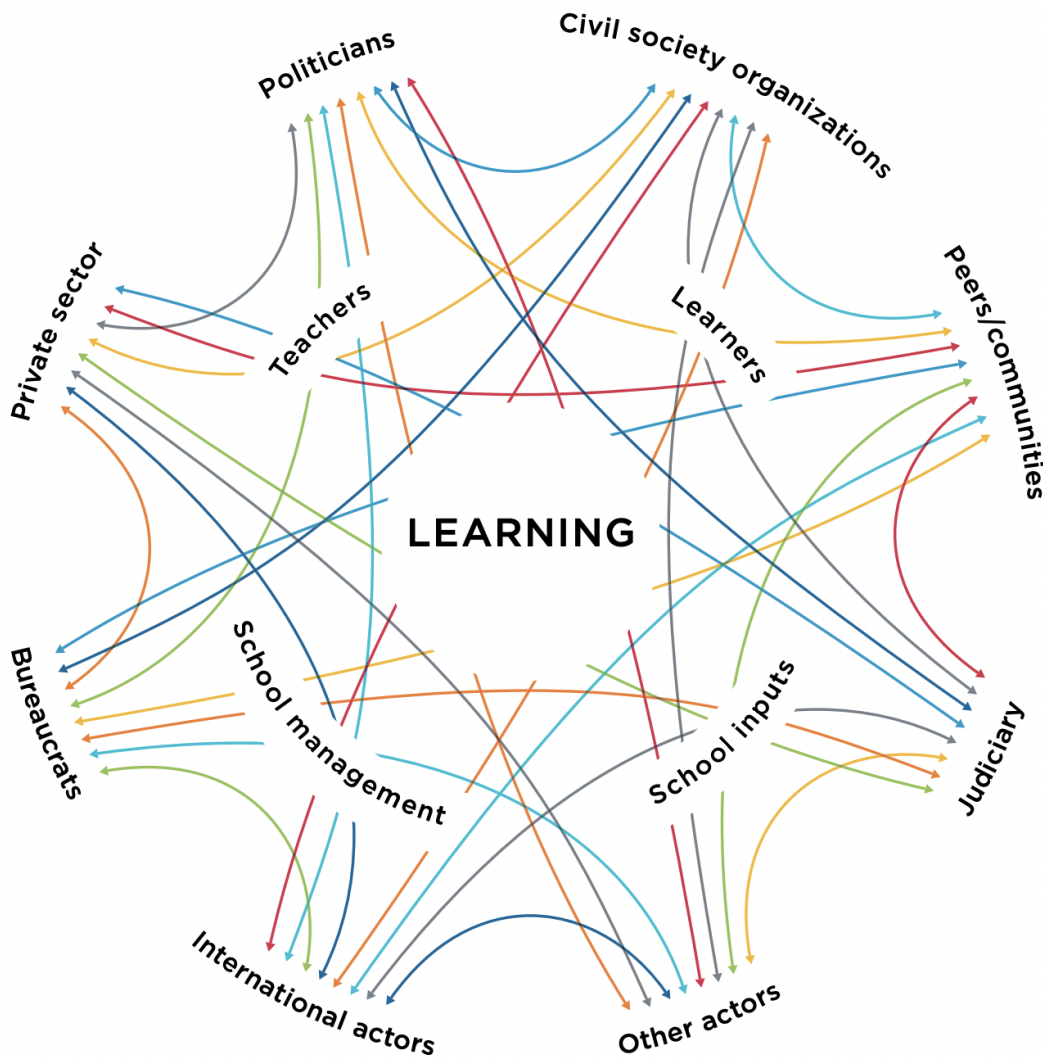
(May 2021)

*"Primary school learners (Grades R to 7) **must return to the daily attendance** and traditional timetabling model from 26 July 2021."* (5A.2)

DoH MAC Advisory

(July 2021)

"All primary schools should open at full capacity. It is the opinion of the school working group that the harms of learners attending school on a rotational basis - specifically the severe cognitive, nutritional, and psychosocial costs - exceed the benefits of reduced COVID-19 infections from smaller class sizes.



Source: WDR 2018 team.

It's more complicated than it looks

Take homes

(1) Coalitions: Industry needs to act with one voice in a consortium/coalition and not act individually.

(2) In it for the Long Term: Industry needs to be actively involved in the training and certification of youths.

(3) WCED to Ruthlessly Prioritize Foundational Skills by ensuring that all children acquire basic literacy, numeracy and science skills, especially in primary school where the trajectory is set.

(4) End Rotational Timetables for 2022: Of face the consequence of radical learning losses that will take decades to make up.

Thank you.



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1918-2018