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What do international tests of achievement tell us?

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The Finnish PISA Phenomenon?

- My research involves trying to understand how curriculum and culture intersect in the construction of mathematical learning.
- PISA provides some fascinating opportunities for analysis. Finland is one such example.

	2000	2003	2006	2009
Literacy	1	1	2	3
Mathematical literacy	4	2	2	6
Scientific literacy	3	1	1	2
Participating systems	32	41	57	65

- Such has been the interest in this small country's success that envoys from all around the world have visited Finland to uncover the story behind the success, including 15,000 from German-speaking countries alone (Laukkanen, 2008).

How do the Finns explain their success?

- A comprehensive school system based on equity for all, irrespective of gender, social status or ethnicity, and a compulsory nine year basic curriculum[1], [2]. The right to choose their children's school has had little influence on parents' decision making [3].
- Students, who are neither tracked [4], [5] nor streamed [6] are taught in schools typically construed as learning and caring communities [7], [8]. Finland achieved the lowest PISA-related between school variation [6], [5], [9].
- Integrated SEN begins when difficulties arise. Typically focused on mother tongue and basic mathematical skills [10], [11], it has both reduced the stigma of special needs and promoted inclusion [6], [12].
- Teaching is a popular, but competitive, career choice [1], [13]. Finnish teachers enjoy high public esteem [8], [2], [14], [15]. A master's degree, requiring 4 to 5 years to complete, is an essential prerequisite [6], [1], [16], [13].

Finnish PISA success: at what cost?

- TIMSS 1999 (520) was a function of low algebra (498) and geometry (494) and higher number (531), measure (521) and data handling (525)
- TIMSS 2011 (514) was a function of low algebra (492) and geometry (502) and higher number (527) and data handling (542)
- The mathematical knowledge necessary for higher education is in decline [17], [18]. For example, only 35% of 2400 engineering undergraduates could subtract one fraction from another and divide the answer by an integer [18].
- Swedish-speaking Finns are an economically elite group [19], [20]. But…

	PISA 2009 Mathematics	
Finnish-speaking Finns	Swedish-speaking Finns	Swedish-speaking Swedes
541	527	494

Alternative explanations

- A strong Finnish identity grew from successive periods of Swedish and Russian colonialism lasting from the mid-thirteenth century until independence in 1917 [21], creating a mind-set closer to those of Japan and Korea than other European states [14].
- For more than four hundred years, reading competence was a prerequisite for receiving Lutheran sacraments. Failure in the public examination, or *kinkerit,* meant a denial of permission to marry with the consequence that Finns have, for centuries, been raised in a culture of high expectations not only with respect to learning but also personal responsibility [22].
- This created a community with a "strong appreciation for education" [6]. Reading is valued so highly that the Finnish library network is among the densest in the world, with Finns borrowing more books than anyone else [8].
- Such traditions explain why there is no illiterate underclass in Finnish society.
- Summarising all the above, what does PISA tell us that is useful?

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