

Intelligence MEMOS



From: Anna Stokke
To: Canadian Ministers of Education
Date: August 20, 2024
Re: REVERSING THE DECLINE IN CANADIAN MATH SCORES

Math scores on international exams administered by the Organisation for Economic Cooperation and Development [declined](#) in all provinces between 2003 and 2022. In almost all provinces, the proportion of students performing at the lowest levels has increased since 2003 and has more than doubled in some.

Equally concerning, the percentage of students performing at the highest levels has decreased and, in some provinces, has more than halved. More students are struggling with math and fewer students are excelling. While the pandemic likely affected the most recent scores, the downward trend started well before that, so other issues must be contributing to the long-term decline.

Mathematics is more important for our economy than ever, and this decline should be a matter of public concern and requires action from provincial governments. A baseline level of mathematics competency is necessary to participate meaningfully in society. A high level of mathematics proficiency is required for careers that underpin our economy, including those in technology, artificial intelligence, and data science, to name a few.

I outline four recommendations for reversing the trend:

1. Provincial governments should ensure that math teaching practices are aligned with the science of learning.
2. Improvements should be made to math curricula.
3. Transparency and accountability in reporting student achievement should be a priority.
4. And, arguably most important, provinces should insist on smartphone bans in schools.

Recently, [media attention](#) focused on how misguided pedagogical ideas about reading took over North American schools despite conflicting research evidence in cognitive science. A corrective shift is now happening in reading, with educators and policy makers now recognizing the importance of phonics and other principles from the science of learning.

Misguided ideas for teaching math have also gained in popularity in recent years. Despite math being extremely important, and [parallels between reading and math](#), it has not received the same level of attention as reading.

Math is cumulative and requires much practice to solidify new concepts. Students who do not receive effective instruction or get sufficient practice can easily fall behind and it can be difficult to get caught up.

Ministries of education must ensure that advice given to teachers about teaching math and instructional resources is aligned with the science of learning. This includes [explicitly teaching](#) students, incorporating ample [practice](#), and using other [evidence-informed techniques](#). Professional development providers who play down the need for explicit instruction, devalue student practice, or fail to provide solid evidence for the effectiveness of their programs should be avoided. Public funds should not be spent on such programs.

Accountability to parents and the public are key aspects of successful education systems. Parents are important stakeholders in Canadian education and should be regularly provided with clear and accurate reports on how their children are performing so that they can assist and advocate for their children. Provincial assessments at several grade levels provide important data to help identify flaws in the system and hold decision-makers accountable. Moves to remove [provincial assessments](#) and [reduce transparency](#) in communicating students' performance to parents are misguided and should be reversed.

Students need a strong base of foundational skills to succeed with more complex problem-solving. Student fluency with math concepts, such as basic facts and fraction arithmetic, in early and middle years places them on the trajectory to algebra, which is the foundation for the higher-level mathematics required for quantitative careers. In my 2015 C.D. Howe Institute [report](#), I recommended that provincial math curricula be rewritten to remove ineffective pedagogical directives and to stress important topics at appropriate grade levels known to lead to later success in math. Some positive curriculum revisions have since been adopted in Manitoba, Alberta, and Ontario, but they need to go further, and other provinces should follow suit.

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Recent [studies](#) have found that smartphone use hurts learning and academic performance. Initial [findings](#) from PISA 2022 mirror these results. Among Canadian students who participated, more than 80 percent reported being distracted by digital devices in some math lessons (compared to an OECD average of 65 percent), and more than 40 percent reported being distracted in all or most of their math lessons (compared with the slightly more than 30 percent OECD average). Students who reported digital device distractions from their classmates, on average, scored 15 points lower in math than students who did not report such distractions. This is not insignificant – 15 points represents around three-quarters of a year’s worth of education, according to the OECD. School phone bans have been recommended or implemented in the [United Kingdom](#), France, Italy and Portugal, as well as every Canadian province.

Mathematics must be prioritized in Canadian schools. Canadian children deserve it, and the future of our economy depends on it.

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