

Segregating students in NSW is exacerbating inequities and damaging achievement: We need to change the public discourse

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Introduction

When I arrived in NSW at the start of 2019 I was astonished by the depth of commitment to and acceptance of selective schooling and opportunity classes among academic colleagues across disciplines, teachers, and system personnel. I needed to look up the meaning of Opportunity Classes as it was not something I had heard of before in 40 years of working in education in Australia, but not in NSW. The name, opportunity class, is anachronistic, dating back to 1932. Education research has progressed enormously since then but without impact on the use of this term in NSW and the concept it embodies. When I questioned these things or wondered out loud that perhaps all students deserved opportunities I was met with horrified looks and exclamations such as, “Are you against aspiration?” Segregation as a way to meet the needs of higher ability/potential students appears to be engrained in the NSW education system and in the public imagination in NSW.

Experiences like this helped me to make sense of what I had observed before in interactions with mathematics teachers from across Australia in my role as President of the Australian Association of Mathematics Teachers and Mathematics, 2012–2014, and in facilitating consultations with teachers in preparation for the Australian Academy

of Science’s National Committee for the Mathematical Science’s Decadal Plan for the Mathematical Sciences (2016–2025). Mathematics teachers seem more convinced of the need to segregate students according to their prior attainment than are teachers of other subjects, and teachers generally in NSW are more convinced than teachers in other Australian jurisdictions of the need for such streaming.¹ Many NSW mathematics teachers thus appear to believe that streaming is not only necessary for their subject, but that it needs to happen earlier and more stringently than their colleagues in other jurisdictions would consider reasonable. This belief is not confined to teachers of mathematics.

We will not be able to reduce segregation in meaningful ways without educating parents and the general public, without changing the public discourse around segregating students based on prior attainment or a selection test. In this paper I set out the problem of declining mathematics performance of students in Australia and particularly in NSW and briefly argue that equity is crucial to addressing the problem. I then discuss the impacts of streaming on low attainers and on high attainers, before discussing some ways in which streaming interacts with between school segregation. I focus on mathematics because it is my

¹ Streaming is the within school practice of sorting students into classes based on their prior mathematics attainment.

primary area of expertise and because mathematics is frequently used as a proxy for general achievement (Beswick et al., 2019) and intelligence (Gutiérrez, 2017). In addition, mathematics achievement, more than achievement in any other school subject, is believed by teachers and students to be a consequence of innate ability (Jonsson et al., 2012). Such a belief makes logical grouping students according to ability and teaching to meet students' ability, rather than to enhance it.

Declining mathematics achievement of Australian students

The performance of Australian 15-year-olds in mathematical literacy² has been declining in the OECD's Program for International Student Assessment, PISA, since it was first measured in 2003. The decline has occurred across all school sectors.

In 2018 for the first time Australian students did not achieve above the OECD average for a regularly assessed domain. For the first time, the performance of Australian 15-year-olds in mathematical literacy was similar to, rather than above, the OECD average (Thomson et al., 2020). Australia performed the equivalent of more than 3½ years of schooling lower than the highest performing economy, (China, represented by four provinces: Beijing, Shanghai, Jiangsu and Zhejiang), and around 3 years lower than the highest performing country, Singapore (Thomson et al., 2020). In 2018, 54% of Australian students attained the National Proficient Standard, 22% were low perform-

ers and only 10% were high performers. In that year, a gender gap in favour of boys also re-emerged (Thomson et al., 2020).

Almost 30% of the variation in students' achievement in NSW is associated with between-school factors. This is higher than in other Australian jurisdictions, a difference that has been attributed to the relative prevalence of selective schools in NSW. Nevertheless, most variance in Australia's PISA results (~70%) is within-schools. That is, differences in achievement can mainly be attributed to differences located inside schools.

NAPLAN

Analysis by the Australian Curriculum, Assessment and Reporting Authority showed that for all NAPLAN domains (reading, writing, spelling, grammar and punctuation, and numeracy) in 2021 Year 3, 5, 7 and 9 students in NSW did as well as or better than their peers in other states and territories. There is a general pattern, however, of increasingly achieving similar rather than better results than other jurisdictions as students progress through school. By Year 9, for example, NSW students performed better in reading than the Northern Territory and similarly to all other jurisdictions. In numeracy NSW Year 9 students outperformed their peers in Queensland, Tasmania, and NT, and performed similarly to those in the ACT, Victoria, WA, and SA. This is in spite of the fact that NSW has arguably the most specified curriculum and syllabus documents, the most onerous processes for

² For PISA the OECD defines mathematical literacy is as follows: "Mathematical literacy is an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of the individual's life as a constructive, concerned and reflective citizen." (OECD, 2003). The PISA 2003 assessment framework: Mathematics, reading, science and problem-solving knowledge and skills. <https://www.oecd.org/education/school/programme-for-international-student-assessment-pisa/33707192.pdf>

obtaining approval to teach, and the most demanding accreditation standards for initial teacher education programs, and for teachers of all Australian states and territories. It also has the greatest commitment to student segregation based on “ability” both between and within schools, and between and within school sectors — all measures aimed at achieving educational excellence, but clearly not doing so at statewide level.

Equity as the key to addressing the decline

Marks et al. (2006) showed that educational segregation, both between and within schools, mediates the relationship between SES and student achievement. It is only by lifting the long tail of attainment, without reducing attainment at the high end, that Australia will raise its overall achievement. That is, achieving educational equity is key to raising overall performance (Schleicher, 2019).

Equity in education means that personal or social circumstances such as gender, *socio-economic status*, *migrant background*, age, special needs, or place of residence, do not hinder the achievement of one’s educational potential (fairness) and that all individuals reach at least a minimum level of *skills* (inclusion). (OECD, 2023)

It should be noted that the OECD’s definition does not say that all students should achieve identically, nor that they should all be taught in the same way. It says nothing about the grouping of students according to the schools they attend or the class arrangements within schools. Rather, by whatever means, *every student* should be able to achieve their educational potential regardless of the circumstances of their birth, and that *all students* should reach at least a minimum

level. This means that students described as gifted or having high potential should be able to realise that potential, but not in ways that impede other students from achieving their potential.

In-school impacts on achievement

We often hear that the most important influence on students’ learning is the teacher which is a within-school variable (Ainley et al., 2022). This is true. Teachers really do matter. There are, however, structural issues within schools that impact equity. These include within-school segregation or streaming typically based on perceived or assumed ability inferred from prior attainment. These arrangements influence the assignment of teachers to classes and constrain what is taught and how teachers instruct particular classes.

Impacts of streaming on low attainers

In mathematics, students designated low attainers are usually grouped together and are typically offered an impoverished curriculum (Beswick, 2017) that is based more firmly on widely held beliefs about the nature of mathematics as hierarchical and fixed, than on an analysis of the conceptual difficulty of the ideas or the capabilities of the students (Hunter et al., 2020). The lowest-attaining students often struggle to recall basic facts and may never achieve automatic recall — things that arguably are not mathematics (Beswick, 2017). As useful as these skills are, insisting that students continue to work on very basic material typically covered in the first half of primary school achieves little other convincing them that (1) they are stupid, and (2) mathematics is pointless, and, too often, (3) that school is

not for them. It does nothing to help them either to learn maths or to want to engage with the subject.

Streaming students also impacts staffing choices. “Top” classes studying — or thought likely eventually to study — the most demanding senior secondary subjects must have teachers who know the mathematics thoroughly and have experience of teaching it successfully. This means that other (younger, and lower attaining) groups are typically taught by relatively inexperienced teachers, who are less mathematically qualified (Schleicher, 2019). These teachers are often out-of-field.³

Other research has shown that teachers interact differently with lower-attaining students, have lower expectations, are less happy with the work and behaviour of those students, and describe difficulties with teaching them (Archambault et al., 2012, cite several studies). Students receive these negative messages, further lowering their confidence that they can succeed, making them less likely to engage and expend effort and hence their teacher’s belief that they have low ability is reinforced. There is a double downward spiral involving teacher and students.

In summary, the students who have the greatest difficulty with mathematics and arguably have the greatest need for highly skilled teachers are the least likely to have such teachers (Hill & Dalton, 2013), and experience curricula and pedagogies focused on low-level skills rather than on the development of understanding (Beswick, 2017).

Impacts of streaming on high attainers

There are also downsides of streaming for high attainers. In any class someone is necessarily finding things harder than most others, so some very capable students in classes for high attainers can come to see themselves as not very good at maths. Students in relatively high-attaining classes are also less likely to be given problems involving applications of mathematics, or to in other ways have the uses of the mathematics they are learning pointed out. Rather, the focus tends to be on preparing for exams. Many very capable students end up disliking the subject and choosing not to pursue it at the more demanding levels in senior secondary grades (Hine, 2019) and hence beyond school.

Boaler and Staples (2008) and Boaler (2008) found in separate studies conducted in the USA and England that students in schools using mixed-ability groups for mathematics (i.e. not streaming) achieved higher overall results than students in schools using streaming. Follow-up studies found negative impacts on job prospects, including likelihood of being in a professional job, of having been taught in streamed context (Boaler, 2005; 2012).

Interactions between within-school segregation (streaming) and between-school segregation

Out-of-field teaching

Within-school segregation by perceived ability interacts with the between-school segregation that occurs largely along socio-economic lines. Teacher shortages that are

³ In Weldon (2016), “out-of-field teaching is defined as a secondary teacher teaching a subject for which they have not studied above first year at university, and for which they have not studied teaching methodology.”

being felt everywhere are more acute in disadvantaged schools and have been a problem in these contexts for many years. In 2016 approximately 26% of Year 7–10 class groups in remote locations were taught by an out-of-field teacher compared with 14% in metropolitan locations. In the same year, of class groups in schools in low-SES locations, 19% had an out-of-field teacher compared with 13% in schools in high-SES locations (Weldon, 2016). Further compounding the problem, out-of-field teaching was more commonly done by inexperienced teachers: 37% of Year 7–10 teachers with one to two years of experience teaching a subject out-of-field compared with 25% of teachers with more than 5 years of experience (Weldon, 2016).

We know the situation has deteriorated since then. In 2018, just two years later, the Australian Mathematical Science Institute estimated that “there is a 76% chance of at least one out-of-field mathematics teacher, 35% for at least two and 8% for at least three years of out-of-field teaching. Fewer than one in four Year 7 to 10 students have an in-field maths teacher every year” (Prince & O’Conner, 2018). These figures are averaged across all schools and hence are much worse in remote, rural, and regional schools, and schools serving low SES communities. The misfortune of being born in the “wrong” postcode or to parents with limited resources is compounded by in-school practices that further segregate those designated low-attaining from peers deemed relatively more capable, likely to be more motivated and to be taught by teachers with higher academic expectations.

Out-of-field teaching has been identified as a major threat to educational equity (Darling-Hammond, 2000). It negatively

impacts student achievement and motivation (Shah et al., 2020). Out-of-field teachers are less able than well qualified teachers to demonstrate the relevance of content, convey enthusiasm for the subject (Porsch & Wilden, 2022), and are less able to analyse students’ thinking and respond appropriately (Watson et al., 2006).

Between-school segregation

Segregation both within and between schools can strengthen the association between SES and student achievement primarily because of the differing curriculum offered to students perceived as more and less capable (Marks et al., 2006). Perry and McConney (2010) cited evidence of the concentration of rigorous academic curricula in independent schools and schools serving higher SES communities and found that school SES is associated with student achievement regardless of the individual SES background of the student. Individual student achievement is also affected by the peer group with which they learn. That is, a student learning in a classroom with high-attaining peers is likely to have higher achievement than if that student was in class with lower-attaining peers. Bäckström (2021) found that these peer effects appear to operate primarily through the impacts of class composition on teaching.

There is no evidence that teachers in schools serving lower SES communities are less knowledgeable or capable than those in schools serving more advantaged school communities (Gore et al., 2022). There is evidence, however, that teachers in lower SES schools perceive the educational aspirations of students and parents to be lower than do their colleagues in higher SES schools (Beswick et al., 2019). This may be

a consequence of the greater prevalence among students from low SES backgrounds of behaviours considered problematic (McGrath & Elgar, 2015), combined with the tendency of teachers to conflate behaviours such as disorganisation and unwillingness to work with lower ability (Beswick, 2017). In addition, teachers who have taught only in disadvantaged contexts have no reference point for what is possible in terms of student achievement.

Shifting the public discourse

As is the case with all aspects of educational segregation, reducing or eliminating streaming will only be achieved if the public are brought along with or drive the change. There is a conundrum, however, faced by parents committed to educational equity when deciding on a school, especially a secondary school, for their child: Should they enrol their child in the nearest government school or consider alternatives? Rather than relying on evidence of school effectiveness, there is evidence that parents with the capacity to choose their child's school do so largely based on the SES and demographic characteristics of schools, including the presence of other parents perceived to be of high status (Rowe & Lubienski, 2016). Instinctively, it seems, parents recognise the power of peer effects. It is unreasonable to expect parents to make choices that they believe are not in the best interests of their children even if those choices add to educational inequity.

For this reason we need a major shift in the public discourse. We need to look beyond NSW for alternative ways to achieve the objectives that between- and within-school segregation are currently purported to address, trialling and scaling

these models. We need to change beliefs about the relative effectiveness of schools by making findings — such as that of Larsen et al. (2023) — that once SES is controlled for there are no differences between school sectors in any NAPLAN domain at any year level. We need to change teachers' and parents' beliefs about the need to segregate students by assumed ability, and to support schools and teachers to ensure that all students regardless of the classroom in which they learn are offered an academically challenging and rigorous curriculum.

To date, many of the efforts to “fix” teachers and schools have made things worse and have almost certainly exacerbated teacher shortages by making teaching a less attractive career, and feeding the public discourse that drives inequity. Education in NSW is of a scale that can be nationally influential. We can lead a national conversation and change. What needs to happen? I suggest the following:

- De-politicisation of education so that every negative report about schooling and every prospective election is not met with calls for improved teacher quality or better teacher education
- Ensuring all schools have their full Schooling Resource Standard
- A major shift in the social discourse, led by politicians, to focus the community's attention on the importance of educational equity — it matters for individual prospects, social cohesion, and overall education attainment, and hence prosperity for everyone. Education is a social good
- Looking beyond NSW for alternative ways to achieve the objectives that between- and within-school segregation is currently purported to address, trialling and scaling

these models and making sure that parents know selective schools are not the only or best option for their child — this will feed into the public discourse around education

- Recognise in concrete and resourcing terms the different, more complex and greater demands of leading or teaching in disadvantaged schools
- Support schools to build strong academic cultures in addition to catering for the pastoral needs of their students
- Pushing back against stereotypes about the capacities and aspirations of rural and low-SES students and ensuring that policies do not, even inadvertently, feed into and reinforce them
- Progressing the phase out of fee-charging if schools accept government funds, perhaps starting with primary schools, because between school segregation is less at this level.

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