Challenging 'ability grouping' in secondary mathematics classrooms

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Grouping practices in Aotearoa New Zealand secondary schools

- Practices vary (setting by subject, cross-subject streaming)
- Present in most schools
- Transparency of system varies
- Differentiated pathways and fragmented assessmented in Years 11-13
- Inequities within group assignment

The study

- Three mid-high decile secondary schools
- \bullet Self-initiated transition to reduce or eliminate streaming at Years 9-10
- Three teachers from each school and two researchers
- Four day-long co-generative dialogues across Terms 1-3, discussing:
 - Why change?
 - What is/needs to change?
 - Barriers to and enablers of change?





Pedagogical experimentation

- Changing classroom layout
- Assignment to groups
- Introducing group tasks, practical problems, thematic units
- Co-constructing new classroom norms/culture
- Supporting mathematical talk: plenary discussion
- Adapting assessment practices

Challenges

• Lack of professional support:

"I'm winging it" "I don't know what to do"

Lack of resources:

"there are a lot of really cool resources, like NRICH, but your can't just take it and chuck it in front of your class; you have to try the task first, cause some of the tasks will be great, but not necessarily for your class.

- Lack of time:
 - "Trying to change in a sustainable way when we're so time-poor"
- Coping with multiple changes within school:

"the landscape is changing so much, so quickly, and our workloads are huge"

Tensions

- What is the goal raising the bar vs closing the gap?
- Perception that high achievers are 'sacrificed' to teach the low achievers
- Direct instruction vs ambitious teaching
- Rich tasks versus explicit teaching of content
- Personal history and teacher beliefs countering and affirming personal experience

What is the goal: what success are we aiming for"

"That all the students are travelling the trajectory that they would in streamed classes, or are we trying to move the gap so the accelerated kids are already performing at the top and we are going to bring the bottom up?"

"We wondered if it is fair to 'close the gap', because surely the high achieving students are high achieving cause that's what they want to be and they wouldn't want to be closing the gap because that's what they want: to achieve better, higher."

Sacrificing excellence

"So **why do we have to sacrifice, or dismantle**, the socially well, happy, high achieving students who want to learn something more advanced?"

And in response ...

I have a philosophy that the **cream will go to the top**, it doesn't matter what you put in, and so I'm quite happy with what I'm doing

Teachers' understanding of learning

- Learning is knowledge transmission, and it only flows downhill
- The rich tasks is good, but they still need the basic skills to start these, when will we teach these.?" How much time should I spend on rich tasks, how often - Friday routine?
- The lower kids cannot learn something from another lower kid"

Assessment: constant hum

- Reduce assessment vs need to compare and rank
- Right to know where you areat
- What are we assessing Process/thinking vs skills; well-being, role of key competencies in the mathematics classroom
- "Socially, streaming doesn't work for those lower band kids. So we are getting a result socially, it's still better than when we banded - so even if it is a 'social' yeah - I'm quite happy with that as well. I'm looking for a wellrounded, happy child that wants to come to maths and do stuff."

Teachers' biographies matter

- I was in a very high flying class, and I was the bottom of the class, at the end of the year many kids got scholarships and I felt for two years a failure. ... and I don't want any of my kids to feel like I felt.
- When I was in Y11, I was put in a top class and my teacher started the year off saying 'lets just make it that to pass a test you get 75% and so I failed every test according to that standard – because I wasn't like the top of the brightest. And that had a really bad impact on my belief about whether I was okay at maths or not.

It's a long journey ... not for the fainthearted!

- Evidence of change for the better (students, teachers) helps sustain the journey
 - "I have seen with my own eyes that top kids are still thriving"
 - "I feel more comfortable in my own skin in my classroom now"
 - "Their thought of what mathematics was has moved massively to problem solving, finding patterns, arguing your point, learning how to argue with each other"
- Working within a whole school/education change/uncertainty environment was not helpful
- Without support, before and during, making and sustaining change is overwhelming.

Conclusions

- Teachers' perceptions of student flourishing and suffering are powerful motivators
- Fixed views of ability and linear views of learning make mixed attainment a hard sell
- Necessary but probably insufficient conditions for a successful transition to mixed attainment
 - An understanding or evidence of the potential benefits of mixed attainment grouping
 - A supported adaption of teaching practices
 - A well-communicated and shared commitment to giving it a try

More "ethical orientation" (Valiandes et al., 2019)

- Wellbeing agenda
- Interculturally differentiated teaching.
- it remains vitally important to continue to research how teachers proactively and rationally support differences between students, and "how they differentiate unconsciously and intuitively" (Denessen, 2017, p. 11), and in what contexts?