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The Differentiation Myth

You should differentiate your lessons more, right?

You can ignore the spectre in a noisy room at a busy time, but as a teacher, it is ever present, stalking you, gently tapping you on the shoulder. You dare not look around because the horrifying visage is too much to bear. 'I am already stretched as thin as linguine, perhaps even spaghetti,' you think, 'where could I find the time to plan for yet more *differentiation*?'

I have good news. I absolve you from your years of guilt. The apparition will haunt you no longer. Differentiation as we know it is overhyped. There is very little evidence that practices that are commonly classified as aspects of differentiation make any significant difference to the quality of teaching and, in some instances, good reasons to suspect that they may have a negative effect. Moreover, at its heart, the whole concept of differentiation encompasses opposite approaches, so different people could be using the same term to describe contradictory practices.

First, the bad news. Education academics and bureaucrats demand differentiation when they write regulations for teachers. For instance, the 2011 *Teacher Standards* for schools in England state that teachers must, '...know when and how to differentiate appropriately, using approaches which enable pupils to be taught effectively' (Department for Education, 2011). This is an international phenomenon, with the Australian Teaching Standards going further and including a scale. A graduate teacher who is just entering the profession can be expected to, 'Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities,' whereas an experienced 'lead' teachers will be able to, 'Lead colleagues to evaluate the effectiveness of learning and teaching programs differentiated for the specific learning needs of students across the full range of abilities' (Australian Institute for Teaching and School Leadership, 2011).

The regulatory enforcement of differentiation is worrying, given that I will cast doubt on the evidence supporting practices that sit under this term.

So, what is differentiation?

As Carol Ann Tomlinson, education professor and recognised authority on differentiation, states, 'At its most basic level, differentiation consists of the efforts of teachers to respond to variance among learners in the classroom' (Tomlinson, 2000). It is almost impossible to conceive of a teacher in an early years through to secondary school setting who does not respond to variance to some extent. In my everyday teaching, I often re-explain concepts to individuals or groups of students while other students work independently. We could also reasonably argue that the process of 'setting' or placing students into different classes within a subject based upon their prior level of performance is a form of differentiation because it is a response to variance among learners. Indeed, when I have expressed scepticism about differentiation in the past, proponents of setting have taken me to task on this basis.

However, it is clear that setting or making small adjustments to whole class teaching are not what advocates for differentiation generally propose. To Tomlinson, differentiation is a quite specific set of strategies. It involves planning 'multiple routes for students' rather than using 'one-size-fits-all' lesson plans, as well as the use of 'small, flexible groupings' of students, materials with varying reading levels, a flexible pace and a focus on each individual student's interests and needs by giving them choice and taking account of their preferred learning styles (Tomlinson, 2005).

One part of this picture should immediately strike us as ill-founded. In recent years, the notion of catering to students' learning styles has been systematically debunked by cognitive scientists and other learning experts (see e.g. No evidence to back idea of learning styles, 2017). Tomlinson has since responded to these efforts without entirely walking away from the concept (Tomlinson, 2010).

If we accept that learning styles lack evidence, then an interesting question arises: why would we seek to posit additional differences for which we have little evidence, when there are so many *real* differences between students, particularly in their prior knowledge? My hypothesis is that differentiation, at least in part, has evolved to meet ideological needs, one of which is an exaggerated form of individualism. An individualistic educational philosophy was expressed by John Dewey in the early part of the 20th century when he wrote, 'Not knowledge or information, but self-realization, is the goal. To possess all the world of knowledge and lose one's own self is as awful a fate in education as religion,' (Dewey 1902) and, 'There is... no point in the philosophy of progressive education which is sounder than its emphasis upon the importance of the participation of the learner in the formation of the purposes which direct his activities in the learning process,' (Dewey, 1938). Dewey is still highly influential in university education faculties and education bureaucracies and this tradition carries through to today when advocates call for a *student-centred* or *learner-centred* approach to teaching and the curriculum.

Setting aside learning styles, other aspects of the Tomlinson model raise their own questions. The possible benefits of tailoring teaching more closely to each student's needs are foremost in our minds when we decide to differentiate, but what about the costs? If we arrange students in groups then we create a number of potential costs. For instance, imagine a class that runs for one hour and has the students split into six groups. If the teacher addresses the whole class then the grouping arrangement becomes pointless. If he or she instead decides to spend time with each group in turn then that equates to roughly ten minutes per group of direct teacher input. In addition, when the teacher is working directly with one of the groups, what will the other groups be doing? There is likely to be a need for the teacher to often break-off from one group to redirect the students in a different group. Under such conditions, it is not entirely clear that up to ten minutes of more tailored teaching is superior to sixty minutes of less tailored teaching.

In 1975, researchers at the University of Leicester initiated the Observational Research And Classroom Evaluation (ORACLE) project (Galton, 1987). Spurred in part by the publication in England of the Plowden Committee report into primary education, teachers had begun to move away from whole-class teaching. Many used a system of individualised instruction where teachers interacted with students individually while the rest of the class completed tasks. Some teachers made more use of group work. In each case, researchers had cause to question the value of many of the activities that took place when the teacher's attention was elsewhere.

It may be because of these practical issues that strong evidence in support of differentiation is so scarce. One promising experimental study sought to compare the effect of professional development in differentiated instruction with professional development in 'differentiated authentic assessment' and a control group of teachers who did not receive professional development. Despite Tomlinson being one of the researchers involved in the project, they found few significant benefits of differentiated instruction versus the control (Brighton, Hertberg, Moon, Tomlinson & Callahan, 2005). The authors suggest that many schools lack the structures necessary for differentiation to be effectively developed and that differentiation requires teachers to, 'dismantle their existing, persistent beliefs about teaching and learning.' So either it doesn't work in principle or it doesn't work in practice. At the very least, it seems an unlikely bet for any school seeking a professional development focus that will produce significant benefits for the learning of their students.

One approach to differentiation that has been recommended to Australian teachers by academics is known as 'Universal Design for Learning' (UDL) (Graham & Cologon, 2016). If you have grown weary of the breathless claims made for different educational programmes, you may find the UDL website (<http://udlguidelines.cast.org/>) somewhat off-putting, with its images of brains with different regions shaded in different colours.

UDL offers teachers a range of principles to consider when planning lessons. There should be a range of approaches for representing knowledge to students and students should be able to demonstrate their understanding in multiple ways. By providing students with more control over their learning and a

choice of activities, the hope is that they will become more engaged. A 2017 meta-analysis of research into UDL found that, although it improved the 'learning process', the effect on educational outcomes had not been demonstrated (Capp, 2017).

The lack of an effect may be due to limitations in the available research, but it may also be directly due to the application of the UDL principles. Although it may seem obvious that it is a good idea to enable students to demonstrate their understanding in multiple ways and to give them choices, these strategies could potentially cause problems.

Students do not always know the best strategy to follow. As far back as 1982, Richard Clark noted that in a number of *aptitude-treatment interaction* studies, there was a mismatch between the learning strategies that students most enjoyed and those from which they learnt the most. Less advanced students reported enjoying open-ended tasks, whereas they learnt more from highly structured tasks. Conversely, more advanced students reported enjoying highly structured tasks, whereas they learnt more from open-ended tasks (Clark, 1982). Similar effects, where students prefer a method from which they learn less, have been found in a range of situations such as reading digital media versus reading print media (Singer & Alexander, 2017) and studying worked examples versus solving problems (Foster, Rawson & Dunlosky, 2018). Even if there are times when students make the right choices, the fact that they can make the wrong choices means that we should pause before exalting student choice as an unqualified good.

Think of it this way – who is best placed to make a decision about the next step in learning? Is it a student who does not know what she does not know and who has never been in this situation before, or is it a teacher who understands where the learning is going and who has taught students with similar profiles in the past?

Furthermore, the idea of allowing students to demonstrate understanding in multiple ways leads us directly to the contradiction at the heart of differentiation.

Imagine a student who struggles with her writing. She is a member of a science class that has conducted a number of experiments and the students are expected to present their findings in a written report. How should we differentiate to meet her needs?

One solution would be to offer her intensive writing support outside of the science class in order to improve her writing overall. Another option, directly tailored to the science lesson, may be to provide a writing frame or split the writing task down into small chunks, offering feedback at each stage. All of these strategies *address*, head-on, her difficulties with writing.

However, we may also picture an alternative. Perhaps we ask her to present her findings orally or in the form of a poster. Both of these options will involve doing a reduced volume of formal writing. Perhaps we place her in a group to construct the poster – a group where she provides the artwork and a different group member completes the writing. In this case, we are *accommodating* rather than addressing her difficulties with writing.

Accommodating is the direct opposite of addressing, and yet *all* of the options I have described could plausibly be labelled as 'differentiation'. It may sometimes be appropriate to address and it may sometimes be appropriate to accommodate, but what is the value of a term that encompasses both without distinguishing between them? Clearly, if all we ever do is accommodate a difficulty, the student will never make progress in that area of difficulty. Presumably, we would not want to do this, but we could nevertheless claim to be differentiating.

When differentiation does appear to be effective, the conditions are often different to the ones we may expect if we follow the models developed by Tomlinson or UDL. In one study, middle school science students were randomly allocated into one of two conditions. In both conditions, students listened to the same teacher presentations. However, in the control condition, students completed worksheets

whereas in the differentiated condition, students completed activities of varying difficulties that were assigned to them by the teacher. They were also placed in groups so that less advanced students were assisted by more advanced partners. The researchers found some evidence of a positive effect on standardised assessments for all students for this kind of differentiation when compared with the control (Mastropieri, Scruggs, Norland, Berkeley, McDuffie, Tornquist & Connors, 2006).

Significantly, students had no control over their own learning in this study, with less advanced students being initially assigned the lowest level activity. They were also assigned to work with other students who could help them address their learning needs.

Although it is not experimental data, evidence from the Programme for International Student Assessment (PISA) is also suggestive of the potential value of practices commonly associated with differentiation. The Organisation for Economic Cooperation and Development (OECD) who run PISA also survey teachers about their practice and so it is possible to map the answers to various survey questions to PISA scores. In 2013, teachers were asked how often they 'give different work to the students who have difficulties learning and/or to those who can advance faster'. If you plot the average response for each country against the same country's 2012 PISA maths score, there is a slight negative correlation. In other words, in countries where teachers report more of this kind of differentiation, students do less well in maths (Ashman, 2014).

This is clearly a fairly crude level of analysis, but more sophisticated approaches tell a similar story. The OECD considers the practice of giving different work to students based upon their ability as one facet of what it defines as 'student-oriented instruction'. Other elements include assigning projects, assigning students to work on tasks in small groups and asking students to make choices about classroom activities (Echazarra, Salinas, Méndez, Denis & Rech, 2016). These are all practices associated with different forms of differentiation.

As well as teachers, PISA also asks students about the practices they encounter in their lessons and Caro, Lenkeit and Kyriakides (2016) were able to examine the correlation between these survey responses and maths scores for the 2012 PISA round of assessment (maths was a focus area of PISA 2012). They were able to look at the relationship for data within a participating country. Across the 62 education systems they analysed, there was a consistently negative relationship between student-oriented instruction, as reported by students, and PISA maths score. The more of these practices that were present, the lower the maths performance.

As with all correlational data, it cannot be used to prove that student-oriented instruction *caused* lower maths scores. There could be some other factor involved. For instance, it is plausible that in classrooms where behaviour is poor, teachers make more use of these strategies and it is actually the poor behaviour that leads to lower maths scores. However, such a trend is highly suggestive. If differentiation were the panacea that it is often presented as being, we would expect to find a positive association.

So there is clearly something spectral about differentiation. Stare too hard and it fades away. Try to reason with it and you encounter its internal contradictions. Should you accommodate students' needs or address them? The spectre cannot say. Instead, we need a more specific language to describe how to deal with the variance between different students. Instead of one, mushy and vague term that acts as a barrier to communication, we need clearer and more specific ones that generate testable predictions.

Is differentiation a myth? It depends what you mean by *differentiation*. And that's the problem.

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