



Differentiation in the Secondary School Classroom

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ABSTRACT

Before graduating from my year as a student in an initial teacher education programme, I am tasked with demonstrating my ability to show how I am able to achieve equitable outcomes for 'priority student groups'. My success or failure in this hinges on a number of factors. Arguably, the most important factor is the quality of practice I observe during this time. In this paper, I describe my experience in a secondary geography classroom where my teacher mentor places the learners at the forefront of her professional decisions. I highlight differentiated learning as it is applied to a diverse group of students. The effective use of teacher resources to support differentiated learning are identified and the influence of the opportunity to see this practice is discussed.

Practice papers

Keywords:

classroom, differentiation, diversity, learning, student teacher

INTRODUCTION

This article highlights the importance of student teachers receiving opportunities to observe and experience practice that aligns with literature describing effective ways to meet the needs of diverse learners in New Zealand classrooms. In particular, student teachers need to be able to observe their mentors using evidence-based strategies to engage priority student groups. This is especially important for students in secondary schools, where national qualifications like the national certificate of educational achievement (NCEA) provide multiple opportunities for students to achieve success at a range of levels.

INITIAL TEACHER EDUCATION PREPARATION

I am a student teacher studying in a Masters-level initial teacher education programme (ITE). In a move aimed at raising the quality of ITE in New Zealand, the government made funding available for the establishment of 'exemplary' postgraduate programmes. These programmes were tasked

with achieving outcomes that included graduates demonstrating "agency to achieve equitable outcomes for priority student groups" (Ministry of Education, 2015 n.p.). Priority learners are described as:

... groups of students who have been identified as historically not experiencing success in the New Zealand schooling system. These include many Māori and Pacific learners, those from low socio-economic backgrounds, and students with special education needs.

As a prospective secondary school teacher in one such programme, I am required to understand how I can operationalise this aspiration. I must demonstrate that I am able to meet each of the graduating teacher standards (GTS) including the global requirement for me to "understand the critical role teachers play in enabling the educational achievement of all learners" (Education Council, 2015, n.p.). In this article, I describe the ways in which my teacher mentor (TM) - with whom I spend two days each week, and a longer teaching block of seven weeks - provides me with a model to motivate and enthuse priority learners while ensuring the learning is accessible to all. Finally, I describe the effect observing this mastery has on my emerging practice.

Priority Learners

The Ministry provides a wide range of strategies and resources that aim to support New Zealand teachers develop learning environments that provide meaningful participation for all students within the classroom. To achieve this, teachers need to make decisions around curriculum content and level, environment, teaching and learning materials, and responses expected for and by students (Ministry of Education, 2016). An effective means of doing this is through the provision of a differentiated programme. Timperley (2009) suggests that differentiation requires the teacher to move from being a "routine expert" to an "adaptive expert". Research suggests that addressing diversity within the New Zealand classroom is extremely complex, and while there is no panacea for ultimate classroom success, there are solutions that warrant widespread implementation (Robertson & Earl, 2014).

Differentiated Instruction

In the classroom, diversity may be reflected through students' complex social, behavioural and psychological needs, cultural identity and academic competency. Tomlinson (2014a) explained that differentiated instruction responds to classroom diversity and attempts to answer the question, "How do I divide my time, my resources and myself so that I am an effective catalyst for maximising my talent in all my students?" (p.2). Furthermore, she suggested that differentiated instruction should not necessarily be considered a teaching discipline or a strategy for teachers to promote in the classroom, but as a philosophy pillared by a set of beliefs. According to Tomlinson, these beliefs include recognising that student readiness to engage with tasks varies, as do the students in terms of their interests, life experiences and life circumstances. She further described the impact these differences have on students' learning, the pace they learn, and ultimately, whether or not they fulfil their academic potential. Tomlinson highlighted the importance of students receiving adult support, identifying connections between the curriculum and their personal interests and life experiences, and of the need for them to experience classrooms in which they feel safe and valued. She described differentiated instruction as a means of meeting the needs of individual students, through opportunities for differentiated content, process and product (Tomlinson, 2000).

Differentiation in the Classroom

Literature relating to differentiation and curriculum suggests there is a paucity of research around differentiated learning in the geography classroom in New Zealand. Much of the extant research on differentiation relates to primary classrooms (Hillier, 2011), describes international practice (Hsieh, 2016; Latz, Speirs Neumeister, Adams & Pierce, 2008), or relates to other curriculum areas, such as music (Hillier, 2011; Standerfer 2011). However, two recent studies have considered the role of differentiation in geography classes, with one describing teacher outrage at an initiative that removes differentiation from student learning in geography. Dunn and Darlington (2016) identified teachers' perceptions of the impact of removing 'tiering' from geography examinations. Practice has previously allowed for teachers to tier student learning by offering either 'higher' or 'foundation' learning or examinations. However, changes to the examination system will mean that all students – regardless of their ability – will be required to sit exactly the same examination. Teachers in this study argued that, while they may find it challenging to differentiate the learning, this change to examination practice will negatively affect students' examination performance.

Swanson and Pose (2016) identified and described the challenge for teachers of geography when planning to differentiate a field trip. Their practical approach to providing a resource for teachers considered those learners who may be gifted and talented and those who may have learning or physical disabilities who require a differentiated curriculum. Importantly, this article provides practical suggestions for these teachers to enable students in their class to participate in learning experiences both inside and outside of the classroom.

One additional study focused on the integration of a revised version of Bloom's taxonomy (RBT) and Gardner's theory of multiple intelligences (MI) as a framework for differentiation in the classroom (Noble, 2004). Sixteen teachers working with students of various age groups were provided with a matrix incorporating RBT and MI that was used to develop a differentiated lesson plan. The research indicated that by combining MI and RBT teachers gained a better comprehension of their students' intellectual capabilities. Moreover, teachers found the MI/RBT model a useful tool for adopting a differentiated environment in the classroom and students felt the teacher's new approach to be encouraging and meaningful (Noble, 2004).

Classroom Context

As an important component of my teaching practice, I am required to make formal observations of my TM. Following each of these, we meet and discuss what I have observed alongside my learning from initial teacher education courses. All observations and data collected during practicum are guided by New Zealand Association for Research in Education (NZARE) ethical principles, with students required to sign documentation to show their understanding of, and agreement to abide by, ethical practice and protocols. In this paper, I describe what I have observed and discussed with my TM and how this has assisted me develop an understanding of the role of differentiation in the diverse secondary classroom in which I am teaching for the year. Diversity observed in the geography classroom includes students: identified as Maori or Pacifica; who are English speakers of other languages (ESOL); with a range of special learning or behavioural needs; and, students from varying socio-economic backgrounds. Due to the array of student diversity in the classroom, a differentiated teaching approach is needed to ensure equitable learning opportunities are provided for all students, including those defined as priority learners through to higher achieving students.

My TM has chosen to embed this unit in the local community, thus using a place-based approach to learning. She has explained the advantage of the school's location on the coast, and stressed the

importance of using the local environment as a space for learning and interpretation – a consideration that aligns with principles of place-based education in New Zealand. Penitito (2009) suggested that one of the key ideas that place-based education addresses in New Zealand schools is the relationship between that place and the school. This approach to learning aims to strengthen students' understanding of the environment and their relationship to that environment.

Differentiation in Practice

During a discussion early in my teaching experience, my TM outlined the essential objectives of her classroom practice. She placed heavy emphasis on the importance of differentiated instruction and creating a student-centred environment to accommodate classroom diversity, illustrating strong concordance with Tomlinson's (2014b) philosophy. Two key resources enabled me to better-understand differentiation. The first one outlined Gardner's (2011) MI theory. This theory suggested that standardised intelligence testing, closely corresponding with standards-based testing at school, leaves little space for young learners to explore other avenues of intellect. The second resource was Bloom's (1956) Taxonomy, a framework to assist teachers in strategising their classroom (Noble, 2004). Bloom's taxonomy of cognitive domain suggested that initial low-level learning of knowledge and comprehension must be made before a learner can develop higher levels of cognitive intellect. Once this fundamental criterion is acknowledged, a space is created for a student's creativity through synthesis and evaluation (Bloom et al., 1956).

My TM explained that while the New Zealand secondary curriculum is outcomes-based and facilitated through standardised assessment practices, there have been big shifts in the way teachers enable learning in the classroom (Teacher Mentor, personal communication, January 2017). This shift comes with the knowledge and awareness that students with a wide range of 'special needs' may be placed in the same classroom. These students' needs may include physical or intellectual disabilities, behavioural problems that impact on learning, a wide range of ethnic, cultural and linguistic backgrounds, and gifted learners. Differentiating the learning enables my TM to respond to such diversity by supporting students with a variety of learning strategies which best suit their learning needs.

As an experienced geography teacher, my TM has identified opportunities to expand the learning content and open the space for multiple learning platforms in the classroom. She emphasises the importance of creating different learning pathways in the class which could not be achieved without first building

relationships with the students, understanding their study habits, and acknowledging their differences. By building these foundational blocks, she explains, teachers can better-understand the learning preferences of individuals within the class and develop effective, individualised learning pathways. Fitzgerald (2016) concurred, stating that differentiation cannot be achieved without teachers knowing their students' educational histories, prior knowledge, conceptual abilities, learning needs and preferences, and their readiness to engage. With the development of strong student-teacher relationships, teachers can create learning that responds to the complex social, cultural and cognitive needs of their students. For example, some students thrive receiving classroom instruction with the teacher at the front of the class while students listen and take their own notes; others prefer discussion with opportunities to question what they know. Some students prefer to use images or videos to acquire knowledge, and others prefer to work alone on their device (Gardner, 2011). This can create challenges for ITE students who are new to the classroom, and implies an urgency for them to collect as much data as they can on their students.

Our classroom's cognitive diversity identified by my TM closely corresponds to Gardner's (2011) theory of MI, with students displaying the learning behaviours described by him. Gardner recognised that people possess different intellectual strengths paired with contrasting styles, and identified nine types of learners, each with distinctive means by which they learn most effectively. Gardner consequently suggested that through understanding of students' learning needs, teachers can develop effective lesson planning, thus optimising the learning outcomes for every student.

Classroom Experiences

From the beginning of the school year, I have observed my TM establish a Year 13 classroom, creating a community of learners. I have kept careful notes and recorded the routines she established, examples of the pedagogical strategies she employed, and the approaches she used to meet the needs of her diverse learners. This Year 13 geography class is open entry, which means that any student in Year 13 can pick up the subject regardless of whether or not they have completed Year 11 or Year 12 geography, highlighting the importance of differentiating the classroom.

She has used a range of activities to get to know her learners, to identify strengths and weakness, and to understand how best to meet their needs within her classroom. Consistent with Tomlinson's (2014a) recommendations, the learning I have observed and explain in this article was differentiated through content, process and product.

Content

The topic being studied was ‘Waves’ and the aim of the learning was for students to understand basic concepts of wave action processes. The content of the students’ resources varied in difficulty and interpretation. This meant that a student who might struggle with more complex material could focus on one appropriate resource while still being challenged to understand key concepts (in this case, wave action processes). Simultaneously, a gifted learner in the same class would interpret a resource which would challenge them to make deeper connections to their learning, providing opportunities for growth through applying deeper analysis. These resources required the learner to build on more complex sentence structures, wider vocabulary, and connecting the processes with other phenomena.

As previously discussed, Bloom (1956) suggested that initial low-level learning of knowledge and comprehension must be made before a learner can develop higher levels of cognitive intellect, with space created for a student’s creativity through synthesis and evaluation. Applying this principle to student thinking skills aligns with learning outcomes outlined by both my TM and the national curriculum. National assessment in Year 13 provides for students to respond with a range of understanding in relation to content. For example, the achievement standard for geography 3.1 - demonstrate understanding of how interacting natural processes shape a New Zealand geographic environment - is outlined in Table 1.

Table 1
Achievement Standards for NCEA Geography Standard 3.1

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of how interacting natural processes shape a New Zealand geographic environment	Demonstrate in-depth understanding of how interacting natural processes shape a New Zealand geographic environment	Demonstrate comprehensive understanding of how interacting natural processes shape a New Zealand geographic environment.

Achievement Criteria (NZQA, 2017)

As Table 1 shows, the level and depth of content required to gain achieved, merit or excellence varies according to the amount of detail provided, level of analysis and number of examples cited. For example, to attain ‘Achievement’ the student must include some supportive case studies and describe or infer variations, either written or presented visually. To obtain ‘Achievement with Merit’ there must be evidence of a more detailed understanding of the

task by providing a comprehensive analysis and explanation of natural process interactions. These need to be supported by numerous examples in written and visual forms, thus aligning with Bloom’s (1956) identification of low-level learning laying a foundation for higher-level cognitive learning. My TM’s utilisation of Bloom’s model in this classroom provides student access to a wide range of resources that enable the learners to select content that is appropriate to their needs.

Process

Comprehensive planning appears critical to the success of differentiated instruction. Access to my TM’s plans enabled me to understand the way in which a plan for differentiated learning was developed and enacted in the classroom.

My TM differentiates the process by which students learn, providing a range of resources they access through digital technology. This approach benefits the learners by incorporating and encouraging the use of digital technology in the classroom through a platform (such as Google Docs) where file sharing is available on a user-friendly interface. Additionally, it permits the teacher more time to walk the classroom and promote individualised learning because marking and feedback is provided in real time, thus allowing my TM to support those who may need extra assistance, such as priority learners. By incorporating the Google Docs platform, my TM opened a range of resources to the students, giving them the choice of which resources to employ to enable their learning. These resources also include the more traditional learning platforms such as topographical and geological maps, textbooks, activity books and videos that are available to the students. Essentially, while all resources lead to similar understandings, they offer students a range of varied platforms for learning thus differentiating the process by which they are learning.

Product

Table 2 provides an example of different learning outcomes for the class focusing on wave action processes on the local coast, where all learners will gain fundamental understandings of the concepts outlined, and high-ability students are provided an opportunity for excelled learning. Outlined in the table, learning outcomes vary in complexity, thus providing learners at a lower level with opportunities to succeed in their learning, whilst providing the same opportunity to learners who demonstrate high-ability, albeit through the expectation their product will involve critical evaluation, requiring a deeper level of thinking.

Table 2
Examples of Differentiated Product Year 13 Geography

Learning Ability	Learning Outcome
Low-level learner	Using the resources provided, identify the various wave action processes on the coast.
	Using the resources provided, identify and define the various wave action processes on the coast.
Mid-level learner	Comprehensively explain the various wave action processes on the coast, using definitions and diagrams to show how they shape the natural environment.
	Explain the wave action processes on the coast, and how they interact with other natural processes in the area.
High-level learner	Using diagrams, critically evaluate the various wave action processes on the coast, explaining how they have shaped the environment, and describe how they may adapt to various human interventions.

Student products to show evidence of their learning aligned with the outcomes described above and again, gave students choice in how they demonstrated their understanding.

CONCLUSION

While evidence of learning as shown through student attainment in NCEA must take into consideration a range of additional influences, my observations suggest that the students in this class have opportunities to engage and learn at a range of different levels. However, given the complexity of my TM's planning, I understand why there might be resistance by some teachers to adopt a differentiated approach to teaching and learning. Pennington (2009) suggested that there are multiple reasons why teachers may choose not to differentiate, including a preference to teach in the way they have always taught and the time involved in developing differentiated plans. However, given the diverse range of learners' needs identified in my TM's classroom, I cannot conceive that using one means of approaching learning could mean success for all. Through an understanding of the learners' complex

backgrounds, learning styles and needs, coupled with the use of digital technologies in the classroom, my TM has demonstrated an individualised approach to teaching and learning.

As an emerging teacher I feel privileged to have observed the effective use of differentiated instruction to support the learning needs of a diverse group of students. I still have plenty to learn in order to become the type of teacher I aspire to be, but I take comfort from the words of Tomlinson, who wrote: *"Becoming an expert at differentiation is a career-long goal. One step at a time, you will get there"* (2014b, n.p.). My steps are baby steps, but thanks to the opportunity to be mentored by someone who is attuned to both her students' and student-teacher's needs, I feel sure that I am gaining in capability to establish the type of classroom where every learner is provided with opportunities to achieve 'equitable outcomes'.

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¹Tane is the Māori God of the forest and birds