Differentiated instruction within senior secondary curriculum frameworks: A small-scale study of teacher views from an independent South Australian school

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Abstract
There is a paucity of research around Differentiated Instruction (DI) in Australian senior secondary education even though this approach has been shown to have the potential to cater for diverse learning needs in inclusive classrooms in other school contexts. Investigating how DI is understood and implemented by teachers in a senior secondary context will allow for a deeper insight into, and possible improvement in, teachers' knowledge and use of the DI approach. This qualitative study focussed on how four teachers from one school viewed DI and how they employed and documented DI practices in their senior secondary classrooms when catering for the needs of diverse learners. The teachers noted positive outcomes such as happy students and a sense of fulfilment for the teacher, as well as enablers for implementing DI effectively, including teacher collaboration and reflection. Challenges to effectively implementing DI were mentioned, such as a lack of time and large class sizes.

KEYWORDS
differentiated instruction, inclusion, professional development, senior secondary education

GIVEN THE VARIOUS SENIOR SECONDARY CURRICULUMS ACROSS AUSTRALIA AND THAT “STATE AND TERRITORY CURRICULUM, ASSESSMENT AND CERTIFICATION AUTHORITIES ARE RESPONSIBLE FOR DETERMINING HOW THE [SENIOR SECONDARY] AUSTRALIAN CURRICULUM CONTENT AND ACHIEVEMENT STANDARDS ARE TO BE INTEGRATED INTO THEIR COURSES” (AUSTRALIAN CURRICULUM ASSESSMENT & REPORTING AUTHORITY, 2018, PARA. 3), KNOWING HOW SENIOR SECONDARY TEACHERS UNDERSTAND AND IMPLEMENT DIFFERENTIATION AND EXPLORE THEIR PERCEPTION OF THE BARRIERS TO DELIVERING DI EFFECTIVELY IS IMPORTANT. DI UNDERSTANDING WILL ENABLE MORE TARGETED PROFESSIONAL DEVELOPMENT RELATED TO SENIOR SECONDARY CONTEXTS AND INCREASED COLLABORATION AMONG TEACHERS TO IMPROVE PRACTICE FOR STUDENTS WITH DIVERSE LEARNING NEEDS WITHIN THE CONSTRAINTS OF HIGH EDUCATION CERTIFICATE BODIES SUCH AS THE SACE. HIGHLIGHTING TEACHER ENABLERS AND CHALLENGES FOR EFFECTIVE DI MAY ADDRESS THE GAP IN THE LITERATURE AROUND IMPLEMENTATION OF DI IN SENIOR SECONDARY EDUCATION, GIVEN VARIOUS TIMETABLE AND SUBJECT REQUIREMENTS IN SECONDARY SCHOOLING COMPARED TO PRIMARY AND MIDDLE EDUCATION. LAST, THIS STUDY AIDS TO FURTHER ILLUSTRATE DI IN THE AUSTRALIAN LANDSCAPE AS
much of the literature on DI over the last 20 years has originated in the United States and the northern hemisphere (Graham et al., 2021).

**Tomlinson's framework for DI**

DI is the method many schools worldwide use to ensure an inclusive classroom environment (Jarvis et al., 2017), and the framework by Tomlinson (2014) is widely known. A review of relevant research literature, however, revealed a limited number of studies into inclusive teaching practices within a senior secondary education context (Smale-Jacobse et al., 2019). Specifically, there is little research on accommodating learner diversity (Whittle et al., 2019) and how use of frameworks such as DI can support students’ academic achievements in a senior secondary setting. Differentiation allows teachers to plan strategically while operating within a common curriculum framework and is considered as such when teachers deliberately plan adaptations to facilitate student learning (Smale-Jacobse et al., 2019). Schwab et al. (2019) asserted that inclusion reduces barriers to participation and requires teachers to adapt to learners’ needs. DI implementation and use have been criticised, with Gheyssens et al. (2020) arguing teachers feel stressed by the pressure to create inclusive classrooms. The problem is exacerbated by teachers having no time to make the required changes (Yngve et al., 2019). Tomlinson (2013) noted some educators find the framework too ambitious. This research seeks senior secondary teachers’ perspectives on DI implementation in subject-specific classrooms to examine these issues.

The contemporary framework by Tomlinson (2014) highlights ways teachers can differentiate. For example, DI through content involves adaptations to the knowledge and skills teachers impart to their students, while DI through process relates to how content is taught. Furthermore, DI through product involves how students demonstrate what they have learned, while DI through environment looks to create a safe and engaging classroom. Teachers need to differentiate according to students’ interests, readiness (i.e., how ready they are to learn the content being taught), and their learning profile (Tomlinson, 2014). While the one-size-fits-all approach is now seen as a drawback in teaching (Sun & Xiao, 2021), historical perspective has shaped DI into a philosophy and praxis (Gibbs & Beamish, 2020). There is, however, the standpoint that DI is seen as an individual process that teachers are required to engage with, particularly when it is mandated in policy (Tomlinson et al., 2008). Tomlinson et al. (2008) argued that when differentiation becomes a collective process and a responsibility by teachers, that the “collective efforts [become] greater than the sum of their parts” (p. 166). Meaning that DI can be effective when adopted as a philosophy by all, rather than individually.

According to Graham et al. (2021), who conducted a scoping review on 20 years of research on differentiation, found that internationally only five studies focused on secondary schooling through the lens of the DI framework by Tomlinson (2014). Smit and Humpert (2012), who conducted a study on primary and secondary schools in Switzerland found that DI was not implemented daily and was seen as an ‘add-on’ to regular instruction. They further found that a collaborative team culture had a positive influence on teachers' DI practice and student achievement. In contrast, Pozas et al. (2019) found in their study, which looked at differentiation in German secondary schools, that tiered assignments were the most applied DI practice.
Differentiated instruction in the Australian context

In contemporary education, DI is represented in policy documents such as the Australian Curriculum as a response to the diversity that exists in all classrooms (Sharp et al., 2018). The Australian Professional Standards for Teachers (APST), created by the Australian Institute for Teaching and School Leadership (AITSL, 2017), outlines standards that guide teachers. For example, within the domain of professional knowledge and standard 1, “know students and how they learn”, teachers at a graduate level must “demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across the full range of abilities” (AITSL, 2011, p. 11). The Disability Discrimination Act (Commonwealth Government, 1992) and Disability Standards for Education (Commonwealth Government, 2005) are national policies that further support the implementation of DI practices. These two crucial documents highlight the need for teachers to be proactive in meeting the diverse needs of learners.

According to Gibbs and McKay (2021), only six Australian studies concerning DI have been conducted in secondary schools, with no study directly focused on senior secondary education in Years 10–12. In Australia, the Australian curriculum focuses on Foundation Year to Year 10, while each state has a different framework and educational body for senior secondary years and may therefore differ in their approach to DI policies for that age group. Sharp et al. (2018) completed a study on professional development of DI in a senior secondary school in Australia and found attitudes towards DI has moved in a positive direction. Similarly, Jarvis et al. (2016) conducted semi-structured interviews of middle and secondary school staff and found that many participants were urging colleagues towards a differentiated approach, highlighting the need for targeted professional development on DI and a school leadership team that promotes collaboration and DI.

Mills et al. (2014) concluded that DI was complex and the practice from implementing DI in the classroom from policy required more support and careful explication. This notion was further supported by Monk et al. (2013), whose study on DI in the secondary music curriculum found that teachers could differentiate and identify student needs effectively, although there was friction between what they felt they knew about DI and what they could deliver. Therefore, gauging an understanding of what teachers know about DI and how they implement DI is important. In contrast, Whipp et al. (2014) found that teachers differentiated quite well according to content and process, which are key areas in the DI framework by Tomlinson (2014). The study conducted by Whipp et al. (2014), however, was completed in a secondary PE context with a focus on swimming, and may not reflect other subject areas. Their focus on a single subject highlights the need to investigate teacher understanding of DI in a range of subject areas.

In consideration of the fact that teachers may know what DI is, but struggle in their implementation and the effect that professional development may have on fostering a collaborative culture of DI, this study explored the following research questions:

- What do these teachers know and understand about the term Differentiated Instruction (DI)?
- How do these teachers implement and use DI in the classroom and where do they document their DI practices?
- What professional development have these teachers completed around implementing DI?
- What are the enablers and challenges for these teachers in implementing and using DI in their senior secondary classrooms?
DATA COLLECTION

Research site

The research was conducted at an independent school catering for early years to Year 12, with an Index of Community Socio-Educational Advantage (ICSEA) of 1145[^1], whereby an ICSEA closer to 1300 represents schools with “extremely advantaged student backgrounds” (Australian Curriculum Assessment & Reporting Authority, 2020, p. 1). The school is in Adelaide, South Australia, and currently teaches both SACE and IBDP in Years 11 and 12.

Methodology

A case study methodology was chosen as they constitute the study of real people in real situations (Cohen et al., 2017), befitting to the study of teacher use and understanding of DI practices in their curriculum contexts. Yin (2012) argued that a case study is the study of a case in context, with Merriam (1998) further adding that a case is a unit with boundaries and an effective case study should specify the phenomenon of interest and ‘fence in’ what the case will inquire. The boundaries for this case study included the curriculum framework and year levels taught, and that the research was conducted with four teachers from the one school. Yin (2012) stated that when research addresses a descriptive question (the ‘what’) or an explanatory question (the ‘how’) — both the focus of this research — a case study is appropriate. Ethical approval for the study was gained from the Human Research Ethics Committee at the University of Southern Queensland. Permission was first granted by the school Principal to conduct the research in this setting, allowing the researcher to then recruit participants. Permission from the local authority was not needed as the school is an independent school.

Participants

Four senior secondary teachers participated in semi-structured interviews of 28 min to 1 h. Appendix 1 lists the questions asked. Participants were recruited using a purposive sampling technique to ensure a wide range of perspectives. Each participant was personally approached with all four teachers agreeing to participate. They were chosen based on factors such as years in teaching, senior secondary subjects taught, curriculum syllabus taught (IB, SACE or both), and year levels taught (from Years 10 to 12). Zerai et al. (2021) noted teachers had different teaching methods depending on subject areas and may, therefore, offer different opinions on teaching methods related to the DI framework.

Furthermore, participants were asked to bring a planning document to highlight their definition of DI and provide greater insight into how they document their use of DI. Merriam and Tisdell (2015) argued that personal documents are like observations, giving the researcher a snapshot into the participant’s personal perspective and what they think is important, allowing the researcher to explore the value teachers’ place on DI. Furthermore, personal documents allow a deeper narrative to be explored (Bogdan & Biklen, 2011). Graham et al. (2021) acknowledged the need for further research into how teachers plan for differentiation in secondary settings, which this study aims to satisfy. Participants took part in face-to-face interviews at the school and were briefed on the benefits and limitations of the research. The interviews were audio recorded to allow for transcription of the data. Teachers discussed their planning document after the interview. Participants had two weeks to review their interview transcript, allowing for alterations or acceptance of the data. Each participant was
<table>
<thead>
<tr>
<th>Name</th>
<th>Teaching experience (years)</th>
<th>Curriculum framework taught</th>
<th>Subjects taught (previous and current)</th>
<th>University qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathy</td>
<td>45</td>
<td>SACE</td>
<td>• Economics • Business Innovation • Business, Economics, Law (BEL) • Accounting • Legal Studies</td>
<td>• Advanced Diploma in Education • Undergraduate degree in Economics</td>
</tr>
<tr>
<td>Barbara</td>
<td>10</td>
<td>SACE/IB</td>
<td>• Global Politics • Geography • German • History • Legal Studies • Philosophy</td>
<td>• Honours Arts degree • Two graduate diplomas (Law and Education)</td>
</tr>
<tr>
<td>Judy</td>
<td>44</td>
<td>SACE</td>
<td>• Essential Mathematics • Mathematical Methods • Specialist Mathematics • General Mathematics • Integrated Learning</td>
<td>• Bachelor of Economics • Diploma of Teaching</td>
</tr>
<tr>
<td>Christopher</td>
<td>3</td>
<td>SACE/IB</td>
<td>• Modern History • Business Innovation • Economics</td>
<td>• Bachelor of Teaching • Bachelor of Economics</td>
</tr>
</tbody>
</table>
given a pseudonym, as not to compromise their identity, with the demographics of each participant described in Table 1 to give context to their responses.

**Data analysis**

Qualitative data were analysed using NVivo12 (QSR International Pty Ltd, 2020) and through an inductive thematic analysis based on the six-phase criteria set out by Braun and Clarke (2006). A thematic analysis is a “method for identifying, analysing, and interpreting patterns of meaning (‘themes’) within qualitative data” (Clarke & Braun, 2017, p. 297). An inductive approach was selected instead of a deductive approach, as Clarke and Braun (2017) outlined how inductive approaches are beneficial when exploring new terrain. This approach was relevant to this study, which sought to avoid data acquired in primary and middle school settings. One significant advantage of a thematic analysis is that they enable thick description of the dataset (Braun & Clarke, 2006) by providing vignettes of situations and personal experience.

Initial coding was performed based on familiarisation with the transcripts, with initial coding including, but not limited to confidence, connection, challenges, policy and supporting students. Themes were then generated and refined through the reviewing phase, allowing a thematic map to be created and further refinements to be made. Themes were refined to ensure they worked with the coded extracts. Extracts from the transcripts linking to the research questions were utilised to provide examples of discussed themes, which allowed for thick description. The content of the personal documents was not coded as they were used as discussion points to allow participants to demonstrate their understanding of DI in another way.

Member checking of interview data post-interview was undertaken to establish rigour and enhance the credibility of the data (Merriam & Tisdell, 2015). Interviews were emailed to the participants for member checking to revise and confirm the accuracy of the transcriptions. All participants confirmed the content of their data, with only changes being made to transcription errors.

This research was conducted through a social constructionist lens, according to which the world and reality are constructed not just through language but through people and their ongoing interactions and activities (Berger & Luckmann, 1966). Teachers interact with students and colleagues daily, further shaping their reality and their view of DI.

**RESULTS AND DISCUSSION**

Three themes were identified through coding of key words and phrases into categories of similar meaning. Coding was revised after the initial coding was complete, to ensure accurate representations of the data and appropriate categorisation. The three final themes were: (1) Knowledge and application of DI, (2) Formal and informal professional development, and (3) Positive outcomes, enablers and challenges.

**Knowledge and application of DI**

The teachers in this study generally viewed DI in terms of knowing their students and supporting students in the classroom and through individual instruction. In contrast to Sharp et al. (2018), who stated teachers typically used the terms “DI” and “learning support” interchangeably, teachers understood differentiation was not just about “dumbing things down”
but was about knowing their students and their learning potential. While none of the teachers made reference to the DI framework by Tomlinson (2014), they showed a varied understanding of some of the concepts upon which this framework is built. For example, Barbara noted “differentiated instruction is about the teaching … less about the assessment”, while Judy acknowledged “differentiation means being able to present the subject material and the content the students need to master in a variety of ways”, stating DI was something she had always done without giving DI that particular label. Barbara teaches the IB Diploma which for which most of the assessment is part of an external examination. It is possible that Barbara believes DI is about teaching and less about assessment as she has more control over differentiating the instruction, than the external assessment. This is comparably different from Kathy who indicated that she was able to give choice of assessment to her students studying the SACE, particularly as SACE external assessments have a lower weighting when compared to the IB Diploma. This could indicate that the curriculum framework for which a senior secondary teacher works in, may shape their understanding and implementation of DI. Hence, teachers who lack control over the assessment in senior secondary, may not value differentiation by assessment compared to teachers who have control over assessment. Pozas et al. (2019) outlined that tiered assessments were the most use DI practice in secondary schooling, which was not mirrored in this research. As their study focused on Year 9 students, who do not fall in the senior secondary category, the results could indicate further that senior secondary differentiation sees a move away from differentiation of assessment to differentiation of content and process. Barbara placed less importance on differentiating assessment in her IB Diploma class, which could be considered differentiation by product (Dulfer, 2019). This may be due to the constraints in senior secondary assessment.

The four teachers discussed the DI strategies implemented in their classrooms across a range of subject areas. Judy acknowledged that her mathematics class often involves different approaches to teaching and learning than in other subject areas, stating that in a mathematics class “it’s often broken up with instruction, practice, instruction, practice”, frequently employing groupwork where students have to teach each other, building upon the idea of the use of flexible grouping as a strategy for DI (Santangelo & Tomlinson, 2012). Similarly, Kathy acknowledged in her economics class, “groupwork is an ideal way for inclusive diversity [and that] sometimes you put [the girls] among [other] girls, but other times you put them on their own”, which suggests that she understands her learners enough to know when groupwork and individual instruction are needed. Christopher further acknowledged the use of mixed ability grouping; however, he held a more flexible view compared to Kathy, expressing the need to create mixed ability groupings based on a variety of factors. He stated, “I wouldn’t do it [grouping] based on grade bands necessarily but just based on—for example, some of [the students] are more active in the classroom, some of them are less active”. Christopher’s perspective shows a positive view towards inclusive practices, given he noted that he avoids confining students into the same groups each time groupwork is utilised—avoiding segregation. The strategies employed by these teachers, particularly those who utilised groupwork, indicate that the teacher has the sole control for the workings of the classroom, rather than providing agency and a shared responsibility between students and teachers. Boaler (2008) outlined that when teachers provide opportunities for shared responsibility in groupwork, that opportunities for success in student learning increased. This was not the view held by teachers in this study. The implication is that not only do senior secondary teachers need to continue to build their knowledge of DI strategies and practices, but they may also require instruction in how to implement these strategies in such a way that create student agency. Hence, professional development that focuses on practical mastery, not just theoretical knowledge, is needed.

Overall, the four teachers had varied knowledge and understanding of DI-specific strategies, but each has their own subject-specific repertoire for what they find effective in catering
to students' needs and upholding a student-centred approach. This highlights the importance of different subject curriculums on teachers' repertoire of DI strategies. Furthermore, the fact that the teachers of different subject curriculums have showed various DI strategies reflects two key points. Teachers who may struggle with DI, could benefit from being mentored by teachers in their curriculum areas in developing contextualised DI strategies that suit their subject needs. Further, teachers may benefit from engaging in professional development from others beyond their curriculum areas, as they may add new strategies to their pedagogical repertoire. Tomlinson (2005) argued that effective DI is when teachers employ a range of methods, including whole class, small groups, and individual instruction, thus showing teachers in this study employ multiple means to address learner needs, however, continuing to build their repertoire beyond their curriculum contexts may lead to more effective DI implementation. These findings differ from Smit and Humpert (2012) who found secondary school teachers typically differentiated through use of tiered assessments and adapting the number of tasks, rather than a range of strategies. It can be noted that the teachers in this study focused more on content and process differentiation, rather than the final product, since they require a certain number of assessment tasks throughout the year, aligned to their subject outline (Government of South Australia, 2021b). It can be said that while these teachers' employed various DI strategies in their classrooms, they viewed DI as a set of strategies that can be incorporated into existing ways of working, rather than as a multifaceted philosophy. This was particularly so for the teachers that employed groupwork strategies. Jarvis et al. (2016) found that educators in their middle and secondary study were moving towards more collective approaches with one another, a shift away from employing an individual set of DI strategies and was therefore leading to more sustained use of DI. The teachers in this study have shown more individualised approaches to DI, thus, opportunities for collaboration in senior secondary settings are required.

All teachers indicated there needed to be a connection with the students and that the class needed to be taught as a whole, while respecting the individual. Barbara stated, “it’s so much about trusting the teacher … because they’ve been burnt so many times before by their teachers, just being left behind”, while Christopher spoke about effective differentiation occurring when students “trust that a certain activity is in their best interest”. Kathy noted that effective teaching was a “balance of teaching a group of students, but every student feeling they’ve got a connection with me that’s valuable”. Judy stated, “that beautiful moment, when you teach something to a kid and they’re really enjoying learning it, is the thing”. Tomlinson (2008) emphasised the importance of building trust in the classroom, which further allows students to care about their work and be more connected to it, thus, it can be said these teachers each try to build trust in their classroom, regardless of students’ diverse learning needs. Much like the research by Monk et al. (2013), these examples highlight how secondary teachers want to increase student opportunities and motivation. The implication in this research is that the teachers value building trust in senior secondary classrooms just as much as lower secondary classrooms. Therefore, there needs to be an awareness made that not only is DI a requirement, but in senior schooling is crucial for developing connections with students.

The teachers included DI in their planning documents in various ways, although these diverse documentation methods do not appear to have affected their abilities to implement and use DI. Kathy utilised the Learning and Assessment Plan, which is a requirement of all SACE subjects, as a method for documenting her differentiation. She acknowledged “[the students] have got alternative mediums” with a choice of video, podcast, or a report, allowing them choice in their final product. Like Dulfer (2019), this method allowed students to control their individual projects and follow their interests. The view by Dulfer (2019) contrasts significantly with IBDP guidelines, which, according to Barbara, who teaches IBDP global politics, asserts that “assessment has to be accessible [which is] absolutely [not true]
because they’ve got an 80% exam”. Dulfer (2019) also acknowledged that the 80% external examinations have a significant impact on how teachers differentiate by product. While Barbara recognised difficulties, she documented her use of DI within her course planner and on the school’s learner management system, placing emphasis on living documents and adapting materials and resources as needed. She acknowledged the prescriptive nature of the IBDP, stating the whole course is written in a “huge textbook we’ve got in PDF”. She recognised the rigour the IBDP has and its lack of flexibility to differentiate. In contrast to Barbara’s approach, Judy stated “I don’t do a lesson plan. I do a topic plan. I do it from the beginning to end in one hit. I know what it’s going to look like for the next four to five weeks.” She further acknowledged she knew what she was going to do in her lessons and understood the end goal of her lessons, working backwards from there. While this approach could be considered a reactive one, making adjustments in the moment (Jarvis et al., 2016), it is evident Judy tries to take a proactive approach by applying flexibility to students’ current and developing needs (Jarvis et al., 2016). In contrast to Barbara’s approach, Christopher documented his use of DI in both a lesson plan and his task sheets, stating “I still do lesson plans and I still write down what needs I can meet”, indicating a more proactive approach to DI.

The results contradict the findings by Smit and Humpert (2012) as the teachers in this study did not state that they plan for differentiation though pre-assessment and formative work. This may be attributed to the fact that SACE LAPs for each subject, need to be completed at the beginning of the year as they show teachers’ intended learning. Similarly, topic plans, such as the one Judy mentioned engaging in, are typically completed before a unit of work. Thus, while both these plans reflect the teachers’ planning of DI, they do not consider the proactive nature of DI in adapting to student need as it becomes apparent. Therefore, there is a need for modes of planning that allow teachers to revisit their planning documents and make adjustments as they learn more about their students. Changes to the LAP need to be approved by the Principal's delegate and this may make teachers less likely to want to adapt their plan and may be seen as a constraint. Thus, the LAP may inhibit teachers from differentiating effectively. Therefore, authorities like the SACE Board need to revisit the ways they can support teachers to plan for DI more effectively. Similarly, there could be further encouragement for teachers to revisit and adapt topic plans.

Formal and informal professional development

When teachers are given the opportunity to professionally learn about DI, their knowledge, confidence, and skills likely increase (Kousa & Aksela, 2019), thus, to understand how teachers view DI, it is necessary to first explore how they have developed their knowledge DI. Kathy and Judy, who had been teaching for 45 and 44 years, respectively, acknowledged DI was a praxis that was performed without being labelled. For example, Kathy stated “some things that were innate to me as a teacher, were formalised when we have some people from universities [come to the school]”. Judy further stated, “I was given the label of what differentiation was about [when I came to this school] and extended beyond my notion in my earlier career”. Both teachers felt confident in utilising DI practices—for example, Judy noted that “when I first started [to differentiate] it was very jarring to be trying to do it. I felt like I was all over the place, but now I don’t see it [DI] as having to be a constant success for every minute of every lesson”. This notion mirrors research by Dixon et al. (2014), who found engagement in professional development was associated with increased teacher efficacy for differentiating for diverse learners, thus, while Kathy and Judy had not learned formally about DI at university, they had been applying principles of DI long before the term was formally applied.

Kathy and Judy stated that they learnt directly about DI during their work. Barbara, having taught for 10 years, claimed that she first learned about DI during tertiary studies. She
noted university training on DI was “just a total waste of time … because doing it from a theoretical perspective with people that never taught [was] completely meaningless”. Barbara further acknowledged she did not have as much knowledge about DI as she would have liked. Christopher, having taught for two years expressed a similar view, further noting “you can be in uni and you can theoretically learn about what the impacts of it [DI] are and the different schools of thought, but I think that when you actually start and you start implementing it [DI] multiple times, you just get better at it”, exhibiting a more practical view towards DI professional development whilst on the job. Barbara acknowledged the informal professional development attained through conversations in meetings, expressing the need for a “little differentiation fairy that could fly in and give us [her faculty] a hand”. Barbara and Christopher, who have both taught for less than 10 years, stated their first introduction to DI was at university, while Judy and Kathy, who have each taught for over 40 years, recognised the importance of introducing DI while working, suggesting that, at this point in time, teachers whose initial training was many decades ago may be less aware of the DI framework.

Kathy acknowledged the disjointed nature of DI-specific professional development, stating “I don’t think that it’s been given the same emphasis that it deserves”. Sogo and Jeremiah (2018) found that one of the biggest reasons for teachers not implementing DI in their business studies classrooms was a lack of knowledge and understanding of DI practices. This issue underlines the importance of ensuring regular professional development led by effective role models with skills and knowledge to influence others (Pozas & Letzel, 2019). This need was mirrored by Sharp et al. (2018), who found 55% of participants in their survey valued a presenter who was practising in their field. Research by Main et al. (2016) revealed that when teachers have limited experience differentiating the curriculum, they may require assistance in doing so, to assist students in meeting their learning objectives. This view may hold true, given Christopher felt “the more you teach the more you can learn how to do that, how to differentiate”, reflecting positively on the impact of implementing various DI strategies.

Senior secondary schooling are critical years for students, and it is essential teachers of these years understand and utilise practices that allow students to achieve their best. This goal may be achieved by increasing teachers’ knowledge and capacity of DI. While the study by Jarvis et al. (2016) outlined the need for professional development in DI, this study highlights the need for practical-based development during university training coupled with ongoing development as a way of increasing confidence in effective DI use. Furthermore, professional development could emphasise ways teachers can collaborate with each other thereby extending individual understandings and implementation of DI. This aspect of professional development further supplements the notion of building a collective approach to DI which Tomlinson et al. (2008) outlined as crucial.

Positive outcomes, enablers and challenges

Although they felt they implemented DI practices sufficiently, all four teachers recognised there were challenges to using DI, and each acknowledged personal challenges. Kathy felt that time was limited and that without time a lack of deep learning could not occur. To counter the effects of limited time in instruction, she suggested that subjects could be run for two years rather than one. Kathy, however, recognised the pitfall of this, stating: “I know it’s dollars, but if we’re really going to take the value of teaching seriously, then we need to embrace differentiation, but allow teachers the time”. Time was one of the biggest concerns raised by Gibbs and Beamish (2021), particularly for inhibiting DI use in secondary settings. One of Kathy’s noted catalysts for implementing DI related to the students rather than benefits for herself as a teacher. When referring to her past students, she stated, “is she [her student]
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Going to look back on it in future years and think, yeah I remember in Year 12 I nearly gave up, but you know what, I got there”, suggesting Kathy differentiates with a hope that students can look back at their schooling with her and feel they were pushed to grow as learners within a differentiated classroom.

Giving teachers time to plan and develop strategies, allowing them to reflect on what has worked and what has not (Jarvis et al., 2016) is just as important as classroom teaching time. Given the various pedagogies teachers have in senior secondary schooling, it is practical for them to work together to plan and develop strategies across curriculum contexts. Working together with teachers from a range of curriculum contexts is new knowledge that builds upon research by Jarvis et al. (2016) who acknowledged that working and leading colleagues in a collective manner allowed teachers' to develop an inclusive philosophy. This research shows that this could be achieved through professional development of teachers in different curriculum areas. Christopher acknowledged the need for teachers to “talk about more [about DI] at meetings … just to remind everyone that it [DI] is something to just keep at the back of [their] mind”, noting a sense of fulfilment from differentiating. Judy recalled a time when teachers were invited into a colleague’s classroom and the benefits that ensued:

I went in to observe one of his classes and so did another colleague. He went on and shared the structure of how he designed the whole unit. Then it rippled off way beyond that one person observing one lesson. We all started sharing. That was one of the real triggers of this open sharing thing.

Judy further acknowledged a result of implementing DI was that she was able to gain a sense of self-worth from the process, stating that when she differentiated, she noticed that her students were “happy”. Dulfer et al. (2021) stated that an active team culture led to more sophisticated DI practices and this research builds on this notion as a strong collaborative culture is not only needed with colleagues, but students too, particularly in building student agency (Boaler, 2008). Thus, involving students in the planning process may allow teachers to plan for more contextualised approaches towards DI.

Barbara noted that class sizes impacted her ability to differentiate well, stating “I think that the size of the class is key here … when I hear academics saying class size doesn't matter, it makes me so cross”. This view was not shared by Kathy and Judy, even though Tomlinson (2001) acknowledged large class sizes as an obstacle for effective DI use. Barbara’s driving force to differentiate was purely relational, expressing that utilising differentiation meant she had more time to spend with her students, creating greater and more meaningful relationships with them. The implication for large class sizes relies on school and timetable administrators to appropriately create classes that allow teachers to spend more time with their individual students to develop stronger connections.

Limitations and future research

This exploratory study has several limitations that affect the generalisability of the results. The first limitation was the small sample size, consisting of four teachers from one senior secondary school in South Australia. The research did not consider other geographical locations or schools from different socioeconomic backgrounds; hence, participants’ responses may not represent teachers’ views of DI across Australia. Further research should utilise a larger sample size to confirm this study’s identified key themes. Second, while the participants taught a range of senior secondary subjects, the research did not consider the organisational structure and school culture of the school. As school culture has been shown...
to impact on teachers’ implementation of approaches, future research could include an investigation of the impact on differentiation from senior school culture, including organizational structure and leadership. Third, although the semi-structured interviews and planning documents provided a means of exploring how teachers understand and implement differentiation, direct observation of classroom practice could supplement the investigation of DI implementation.

CONCLUSION

This study highlighted the need for universities to expand on courses that prepare pre-service teachers in developing their understanding and use of DI in senior secondary contexts by providing additional practical subject-specific examples of DI. Furthermore, the study confirmed the need for existing teachers to engage in ongoing professional development by engaging with other DI professionals and working together collaboratively to share best practices. This study, however, extends existing research findings (Jarvis et al., 2016; Sharp et al., 2018) by calling attention to professional development that allows teachers to work with each other beyond their main curriculum areas and curriculum frameworks in senior secondary schooling. For example, SACE teachers collaborating with IBDP teachers. This may result in a move beyond DI being seen as a set of strategies, and as something that is done individually, but rather, as a collective approach that can build an inclusive philosophy. Furthermore, this study found that differentiation through assessment may be less important to senior secondary teachers compared to lower secondary, given the lack of control senior secondary teachers have in certain curriculum frameworks. Some of the participants in this study felt pressure from the constraints of the senior secondary curriculum, namely the struggle to differentiate with an external examination in their subject. Therefore, this turns the spotlight on authorities that administer senior secondary frameworks, such as the SACE Board, to create opportunities for teachers to share good DI practices in examinable subjects and to also find ways teachers can plan for DI, in ways that promote collaboration with, and growth and development of students in the classroom. Considering ways teachers’ can plan for differentiation that allow them to revisit their planning documents and adjust accordingly as they know their students better is needed. Moreover, promoting ways teachers can differentiate in the assessments they can control, may allow them to broaden their DI knowledge. Many of the participants had good knowledge of DI without labelling DI as such, thus, building teacher capacity, which has been acknowledged in previous research, should now include acknowledgement of the ability to identify effective implementation of DI techniques.

Senior secondary schooling is complex; various pressures are placed on teachers which differ from those pressures in primary and middle school contexts. The teachers in this study demonstrated a willingness to implement DI in their senior classrooms, acknowledging that much of their classroom differentiation occurs reactively, rather than proactively. Challenges to using DI effectively were acknowledged however teachers in this study expressed a desire to work collaboratively to enhance their DI strategies, support each other, and improve the not only the academic outcomes of their students during school, but post-school too. This study provided an entry into research of DI in senior secondary education.

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CONFLICT OF INTEREST
The author has no financial interest (or other potential benefits) which will follow from the direct applications of the research.

ETHICS STATEMENT
This project adhered to ethical guidelines for educational research as required by the School of Education at the University of Southern Queensland and based on the British Educational Research Association's Ethical Guidelines for Educational Research. Ethical approval was granted on 19.05.2021 by the University of Southern Queensland's ethics committee.

GEOLOCATION INFORMATION
Data was collected in Adelaide, Australia.

DATA AVAILABILITY STATEMENT
Data is available upon reasonable request from the corresponding author.

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ENDNOTE
1 Providing a reference would compromise the identity of the school.

REFERENCES


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**APPENDIX**

**Interview Schedule**

- How many years have you been teaching for? Tell me about your teaching career.
- What is your education background?
- What senior secondary subjects taught do you teach currently and have taught in the past?
- What do you think is meant by the term differentiated instruction? What does this look like in a senior secondary classroom?
- When did you first come to know about DI?
- How have you learnt about differentiated instruction during your teaching career?
- What are the difficulties associated with using differentiation in your lessons?
- Describe a time when you successfully differentiated for your senior secondary school classes. How did this make you feel?
- Describe where differentiation instruction is, within the planning documents you have provided and how you have differentiated?