

LEADING DIFFERENTIATED LEARNING FOR THE GIFTED

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Dedication

This thesis is dedicated to my grandma for always being an inspiration to me.

The following words that she would often sing in her homespun language

continue to be my guiding compass:

Always strive for the moon because even if you fail,

you will land on the stars.

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Abstract

The purpose of the study was to investigate teachers', principals', and students' attitudes towards giftedness and their perceptions of differentiated practices for gifted learners. Differentiation for the gifted is critical to meet their unique learning needs. To date, however, no research has investigated the phenomenon of differentiated learning for the gifted through the combined perspectives of teachers, principals, and gifted students. Undertaking research through the perspectives of key stakeholders is important because school-wide differentiation requires a shared, collective approach at systems level. The present study addresses these concerns by analysing teachers' perceptions of giftedness and their own teaching practices for gifted learners; by comparing these perceptions with those of students and principals; and by asking principals about their leadership actions for school-wide differentiation. Participants included 867 teachers, 120 principals, and 802 students from government schools in Sydney, Australia. A mixed-method approach was used. Online questionnaires were administered to assess teachers', principals', and students' perceptions of differentiated practices. Next, student-teacher interviews, co-designed by Years 5-12 gifted student "co-researchers" ($n = 38$), were conducted to investigate teachers' ($n = 32$) pedagogical strategies. Finally, case studies with four principals, nominated for their exemplary leadership, were used to develop a deeper understanding of effective school-wide approaches to gifted education at the leadership level.

Results revealed that teachers' positive attitudes towards gifted learners and their self-reported use of pedagogical approaches for the gifted were significantly higher for teachers who worked with gifted learners, held qualifications or positions of responsibility, and engaged in professional learning in educating the gifted. In contrast, years of general teaching experience had significantly less influence on teachers' attitudes towards gifted

learners and their pedagogical approaches for the gifted. More experienced teachers, however, were found to be more supportive of the provision of acceleration than less experienced teachers. Significant differences were also found between students' and teachers' perceptions of differentiated pedagogical strategies, classroom engagement, and the qualities of an effective teacher; and between principals' and teachers' perceptions of differentiated practices for educating the gifted. Finally, findings from the case studies revealed that exemplary principals aim to continually enhance their understanding of differentiated learning for gifted students, to build the collective capacity of teachers for educating the gifted, and to enable gifted students' voices for enhancing teaching and increasing student engagement.

Taken together, the study's findings indicated the need for ongoing professional learning of principals and teachers in gifted education, and greater student voice to transform learning and teaching and foster school reform. The findings also highlighted the need for stronger pedagogical congruence between principals and teachers for unified approaches to leading and educating the gifted. To achieve this strong congruence, specific leadership actions for school-wide differentiation are discussed.

Declaration

I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials which have been accepted for the award of any other degree or diploma at Macquarie University or any other educational institution, or previously published or written by another person, except where due acknowledgement has been made in the thesis.



.....
Manoj Chandra Handa

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“I can no other answer make, but thanks / And thanks, and ever thanks.”

William Shakespeare, *Twelfth Night* (3.3.14-15)

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I express my gratitude to the four school leaders who generously shared their rich experiences and practices in leading differentiated learning for gifted students. Indeed, I sincerely express my thanks to all principals and teachers in Northern Sydney government schools who participated in this study and offered their rich insights.

As a learner, I believe my greatest teachers have been my students. I salute all young learners who have challenged and inspired me with their ongoing quest for excellence. In particular, I thank the 38 gifted learners who participated in this study as “co-researchers”. These gifted thought-workers epitomise for me the Gandhian wisdom:

“We must be the change we wish to see in the world.”

CHAPTER 1

INTRODUCTION

Differentiation is rooted in and asks practitioners to grow in the ability to dignify human potential. (Tomlinson, 2014a, p. 26)

The purpose of this thesis was to investigate attitudes towards gifted learners and perceptions of educating the gifted across three key stakeholders: principals, teachers, and students themselves. In the present system of formal schooling, gifted students may be “sorely neglected” unless all teachers are aware of their needs and have the skills to plan for them effectively (VanTassel-Baska & Stambaugh, 2005, p. 212). Differentiation of curriculum and practices for gifted learners is a crucial aspect of such planning. It is unclear, however, whether the stakeholders—teachers, gifted students, and principals—perceive differentiated curriculum and practices in similar ways.

A key principle underlying curriculum development for gifted and talented learners is that the experiences for these children must be “qualitatively different” from the curriculum provided for non-gifted children (Maker, 1982; Maker & Schiever, 2010, p. 4). The notion of “qualitative difference” implies that the curriculum must provide for the unique characteristics of gifted students (Feldhusen, Hansen, & Kennedy, 1989; Robinson, Shore, & Enersen, 2007) such as the capacity to comprehend complex ideas at faster pace (Colangelo, Assouline, & Gross, 2004); the capacity to find, solve, and act on problems more readily (Davis, Rimm, & Siegle, 2011); the advanced capacity to manipulate abstract ideas and make connections about seemingly unconnected concepts more readily (Gallagher & Gallagher, 1994; VanTassel-Baska, & Stambaugh, 2006); the capacity to generate original ideas (Clark, 2008, 2013; Duke TIP, n.d.); and the inclination to engage in independent learning (Davis et al., 2011). Thus, differentiated learning experiences

should be based on these differences, and should address these differences in the learner population if the differentiated curriculum is to meet their diverse needs.

Notwithstanding the importance of differentiation for gifted learners, it is consistently reported in studies that little curriculum differentiation occurs for gifted students in regular classrooms, despite efforts in professional development (VanTassel-Baska, Quek, & Feng, 2006; Westberg, Archambault, Dobyns, & Salvin, 1993; Westberg & Daoust, 2004). Major barriers to differentiating learning for gifted learners are teachers' attitudes towards gifted learners and their needs, lack of depth of understanding about the degree of differentiation required, lack of relevant pedagogical skills, lack of planning time, and lack of leadership support for differentiated practices (Van Tassel-Baska & Stambaugh, 2005). Vialle and Rogers (2012) have argued that educational disadvantages for gifted students occur in classrooms where teachers do not appropriately differentiate learning to match the needs of the gifted. Underachievement of gifted students remains the most significant problem in schools (Landis & Reschly, 2013; Reis & McCoach, 2000; Siegle, 2013). Underachievement is more likely in schools where gifted students are required to study previously learned concepts again (Rogers, 2002), where students remain under-challenged (Schlichte-Hiersemenzel, 2001), or where curriculum content is not differentiated to suit individual interests or abilities (Matthews & McBee, 2007).

While teachers are directly responsible for designing differentiated learning opportunities for students, the school principals' leadership support may also be essential in enabling this differentiation to occur (Tomlinson & Allan, 2000; VanTassel-Baska & Little, 2003). The principals create conditions in the school for teachers to undertake professional learning opportunities in educating the gifted, and ensure school-wide approaches to differentiation (Tomlinson & Allan, 2000; Tomlinson, Brimjoin, & Narvaez, 2008; Tomlinson & Imbeau, 2010). Research in educational leadership shows that

successful principals motivate and support teachers' own learning through a range of effective professional learning opportunities (Fullan, 2016; Hargreaves & Fullan, 2013; Robinson, 2011; Tomlinson & Allan, 2000). Notwithstanding this important role, there is little research directly examining principals' perceptions of teachers' pedagogical practices for educating gifted learners. It is not known whether such perceptions are similar or different to those of teachers, and if differences are detected, what factors might drive these differences. It is also not known what specific actions highly effective principals take to best lead *differentiated learning* for gifted learners.

As noted above, few studies have been undertaken to examine the confluence of principals', teachers', and gifted students' perceptions and perspectives of the use of differentiated pedagogical strategies. Undertaking research through the perspectives of key stakeholders is important because school-wide differentiation requires a shared, collective approach at systems level. More than one leader needs to share ownership of the change vision, and the principal as a lead learner is in a great position to inspire others with a well-crafted vision (Tomlinson & Allan, 2000). The principals are also more effective when they understand how teachers differentiate learning, and "how to establish environments...that influence teachers and students to work together" (Fullan, 2016, p. 133). Similarly, teachers and gifted learners need to collaborate in ways that maximise student learning and growth. Mockler and Groundwater-Smith (2015) emphasise "the necessity of engaging with young people in ongoing and authentic dialogue if we are to realise the democratic, pedagogical and social aims of education in the twenty-first century" (p. 5).

In this study, new ways of "leading differentiated learning for the gifted" were explored through the perspectives of teachers, students, and principals. First, using three large-scale quantitative surveys, teachers', students', and principals' attitudes and

perceptions of differentiated teaching and learning practices were compared for the first time. Second, using case-study interviews with four principals, selected for their exemplary practice in school-wide differentiation for gifted learners, insights into effective leadership practices for differentiation were determined. Drawing on these two approaches, four general aims of the study were identified for the development of research questions: (a) investigate teachers' attitudes towards giftedness and gifted learners, and perceptions of their own differentiated practices for gifted learners; (b) investigate students' perceptions of teachers' differentiated pedagogical strategies, and their perspectives of classroom engagement and the qualities of an effective teacher; and compare student perceptions with those of teachers; (c) examine similarities and differences in the perceptions of principals and teachers about the use of differentiated strategies; and (d) study principals' perceived understanding of, and their self-reported leadership actions for, school-wide differentiation.

The study draws explicitly on a philosophy of learner-centredness. First, across all discussions of differentiation, the term *differentiated learning* is used. *Differentiated learning* is conceptualised as a learner-centred approach to addressing gifted learners' needs, readiness, interests, and learning preferences. This construct builds on the established concepts of *differentiated instruction* (Tomlinson, 1999, 2014a) and *curriculum differentiation* (Kaplan, 2009; Maker, 1982; Maker & Schiever, 2010) for gifted learners, but extends them to make explicit the learner-centred approaches to differentiation for meeting the needs of gifted learners. Further discussion of this term is included in Chapter 2. Second, student voice was actively promoted in the study. While understandings of student voice vary (see Fielding, 2011; Mitra, 2003; Mockler & Groundwater-Smith, 2015), central to all understandings is the notion that students' own views and experiences should be used to transform learning and teaching (Fielding, 2012;

Mitra, 2003, 2004; Rudduck & Flutter, 2000; Thomson & Gunter, 2007). Not only were gifted students asked about their perceptions of differentiation in their own education, they also participated in this study as “co-researchers”: assisting in the development of student survey and teacher interview questions, and conducting supplementary interviews with their teachers.

Structure of the Thesis

In this introductory chapter, I provide a brief overview of the thesis. I then expand this overview in the chapters that follow. In Chapter 2, I present key conceptions of learner-centred differentiation for gifted students, teachers, and principals. Drawing on empirical and theoretical work from experts in the field, recognised best practice in differentiation for gifted learners is identified in this chapter. I then present the literature review about the perceptions of teachers, students, and principals in Chapters 3-5. The literature about teachers’ attitudes towards giftedness and their perceived understanding of differentiated learning for gifted students is explored in Chapter 3. The importance of student voice and the literature regarding gifted students’ perceptions of differentiated learning, classroom engagement, and the qualities of an effective teacher of the gifted are reviewed in Chapter 4. Principals’ understanding of, and leadership actions for, school-wide differentiation for gifted learners are examined in Chapter 5.

I describe the research design and method in Chapter 6, and then present results in Chapters 7-9 containing findings for teachers, students, and principals respectively. In Chapter 7, the findings of the study related to teachers’ attitudes towards giftedness and their perceived understanding of pedagogical practices for differentiated learning in schools are presented. Students’ perceptions of their teachers’ differentiated pedagogical practices, their perspectives of classroom engagement, and the qualities of an effective teacher for educating gifted learners are reported in Chapter 8. Gifted students’ perceptions

are directly compared with those of their teachers. In Chapter 9, the findings of the study related to principals' perceptions of the use of the teachers' differentiated practices are presented. As was the case for students, the principals' perceptions are also directly compared with those of teachers. Finally, the principals' understanding of their self-reported leadership actions for implementing and sustaining school-wide differentiation are presented.

In the final two chapters, I discuss and conclude the findings of the study. In Chapter 10, teachers', students', and principals' perceptions of giftedness and of differentiated learning for the gifted are discussed. Next, the findings related to three groups are drawn together by illustrating a representation of school-wide differentiation for gifted learners. Finally, implications for practice, and limitations of the study and implications for future research, are examined. In Chapter 11, the conclusion in relation to the findings about the research questions of the study is presented.

CHAPTER 2

CONCEPTUALISING LEARNER-CENTRED DIFFERENTIATED LEARNING

In this chapter, the key concepts that underpin this thesis are presented. First, *learner-centred differentiated learning* is examined. Learner-centred differentiation is a philosophical approach drawing together the conceptions of curriculum differentiation and learner-centredness. This construct builds on the earlier conceptions of differentiation such as *differentiated instruction* (Tomlinson, 1999, 2014a) and *curriculum differentiation* (Kaplan, 2009; Maker, 1982), and incorporates collaborative learning partnership between teachers and students. Second, a formal definition of giftedness is provided. Gifted students' characteristics and engagement are examined, and the implications of giftedness for differentiated learning are discussed. Curriculum models which highlight specific ways to differentiate curriculum for gifted learners are presented, and the role that these models play in clarifying and supporting teachers' pedagogy is discussed. Finally, the concept of *learner-centred leadership* is examined. Such leadership is critical for principals to model as leaders of collaborative learning, and to enact school-wide approaches to differentiated learning for the gifted.

Learner-centred Differentiated Learning for Gifted Students

In this section, the conception of learner-centred differentiation for gifted students is presented. The concept of *differentiated learning* is defined first and its relationship with the earlier conceptions of differentiation is examined. The concept's relationship with the *learner-centred* paradigm is examined next.

Defining differentiated learning. Differentiation means making modifications to curriculum or instruction to meet the unique needs of students in the classroom (Kaplan, 2009; Maker, 1982; Maker & Schiever, 2010; Tomlinson, 1999, 2014a; VanTassel-Baska & Little, 2011). More recently, the term has taken on an expanded meaning in the field of

education and includes making modifications to curriculum and instruction that are necessary to support students with diverse learning needs including gifted learners, mainstream learners, and students with special learning needs (Tomlinson, 2001, 2003; Tomlinson & Imbeau, 2010). According to this expanded use of the term, differentiation includes making modifications to content (what gifted students learn), process (how they learn), products (how they demonstrate what they have learnt), and learning environment (where they learn) based on student needs (Maker & Schiever, 2010; Tomlinson, 1999, 2003, 2014b).

Researchers and scholars argue that students learn best when the tasks are based on student needs such as interest and readiness, when the tasks are at a degree of difficulty that moderately challenges them, and when the students are provided support to help them succeed at a higher level of proficiency than they would otherwise be capable of achieving (Csikszentmihalyi, Rathunde, & Whalen, 1993; Sousa & Tomlinson, 2010; Tomlinson, 2014a; Vygotsky, 1978, 1986). When teachers diagnose students' readiness relative to learning goals and provide work appropriate for student needs, their achievement increases (Tomlinson et al., 2003). Interest-based differentiated instruction is supported by theory and research as a means for enhancing student motivation, productivity, and achievement (Amabile, 1983; Torrance, 1995). Interest-based differentiation appears to influence positive learning outcomes in both the short and long term (Ainley, Hidi, & Berndoff, 2002; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). In an investigation of the effects of a differentiated reading approach on fourth grade students' reading comprehension ($n = 358$), Shaunessy-Dedrick, Evans, Ferron, & Lindo (2015) found that students in treatment schools had significantly higher scores on the comprehension post-test than the students in control schools. Positive effects on student achievement have also been reported when teachers consistently make modifications to curriculum and instruction

to address student needs based on learner readiness, interest, and learning profiles in their classrooms (Beecher & Sweeny, 2008; Callahan, Tomlinson, Moon, Brighton, & Hertberg, 2003; Sternberg, Torff, & Grigorenko, 1998; Tieso, 2005).

In past literature about the education of gifted learners, differentiation has been conceptualised both as *differentiated instruction* (Tomlinson, 1999, 2014a) and as *curriculum differentiation* (Kaplan, 2009; Maker, 1982; Maker & Schiever, 2010; VanTassel-Baska & Little, 2011). Tomlinson (2014b) defines *differentiated instruction* as

adaptations in content, process, product, affect, and learning environment in response to student readiness (proximity to learning goals), interests, and learning profile (preferences for taking in, processing, and presenting ideas) to ensure appropriate challenge and support for the full range of learners in a classroom. (p. 198)

Tomlinson (2014a) emphasises the collaborative partnership between teachers and students, and points out that a “differentiated classroom is, of necessity, student-centred” (p. 21).

Maker (1982; Maker & Schiever, 2010) suggests that *curriculum differentiation* can be made through modifications in four areas: content, process, product, and learning environment. Similarly, the Kaplan model (2009) also examines the differentiation of curriculum in these four areas. Furthermore, VanTassel-Baska and Little (2011) highlight the inter-related importance of curriculum, instruction, and assessment:

A differentiated curriculum for the gifted is one that is tailored to the needs of groups of gifted learners and/or individual students, that provides experiences sufficiently different from the norm to justify specialised intervention, and that is delivered by a trained educator of the gifted using appropriate instructional and assessment processes to optimize learning. (p.10)

These conceptions of *differentiated instruction* and *curriculum differentiation* are highly regarded among the scholars and educators of gifted learners (e.g., Azano, 2013; Hertberg-Davis & Callahan, 2013; Kanevsky, 2011; Rogers, 2009). However, these conceptions tend to rely on *student-centred* approaches to differentiation. In this thesis, I make an argument for the use of a new term, “differentiated learning”, that is based on *learner-centred approaches* to differentiation for gifted learners. Both student-centred approaches and learner-centred approaches to differentiation represent a significant advance on teacher-centred approaches which position students as passive recipients of knowledge bestowed by their teacher. Similarly, both student-centred approaches and learner-centred approaches are focused on designing learning with the student at the centre and imply collaborative partnership between teachers and students. However, the term, *learner-centred*, is adopted in this thesis to denote a relationship to the learner-centred paradigm (described below) which makes the collaborative learning partnership between students and teachers strongly explicit. To this end, the construct, *differentiated learning*, builds on the earlier conceptions of differentiation (i.e., *differentiated instruction* and *curriculum differentiation*). Learner-centred approaches to differentiation, therefore, extend these previous conceptions while retaining their important contributions. The potential value of this approach is explained below.

The learner-centred paradigm. There is extensive related research on differentiated instruction and curriculum differentiation but little research has been conducted with the learner-centred paradigm that makes *differentiated learning* unique. The learner-centred paradigm signifies an explicit shift from instruction to construction, from control to connection, and from “what teachers teach” to “what students learn” (McCombs, 2003, p. 96). In this paradigm, teachers not only know the subject-matter they teach but also understand that they—along with their students—are learners (McCombs &

Miller, 2007, 2009). As co-learners, learner-centred teachers “can share the ownership of learning with their students as appropriate” (McCombs & Miller, 2007, p. 7). In learner-centred systems, teachers co-construct meaning with their students as learning partners (Cullen, Harris, & Hill, 2012; Jenkins & Keefe, 2002; McCombs & Miller, 2007; Weimer, 2013). Mockler and Groundwater-Smith (2015) assert that teachers need to “honour the capacity of children and young people [and] engage in inquiry as partners rather than as subjects, or even objects” (p. 53). Engaging with young people in an ongoing and authentic learning partnership is necessary if we are to realise “the democratic, pedagogical and social aims of education in the twenty-first century” (Mockler & Groundwater-Smith, 2015, p. 5).

McCombs and Miller (2007) contend that when an educational paradigm or reform agenda “puts something other than the learner at the centre of instructional decision-making, all learners—teachers included—suffer. They know that the system is not about them and is not responsive to their needs” (p. 7). From learners’ perspectives, the system is out of balance if knowledge (content standards) or teaching and instruction are at the centre of instructional decision making. In such a system, learners recognise that they are not important because ‘who they are’ and ‘what they need’ are not at the heart of the learning process (McCombs & Miller, 2007). In learner-centred schools and classrooms, on the other hand, it is not the isolated focus on knowledge (content), process (performance skills), or products (achievement outcomes) that is the centre of instructional decision making (McCombs & Miller, 2007, 2009). It is the learners (both teachers and students) who occupy the centre stage. In such learner-centred systems, content, processes, and products are designed to match the learning needs of individual learners.

Research underlying the *learner-centred principles* adopted by the American Psychological Association (Alexander & Murphy, 2000) shows that learning is enhanced

in contexts in which learners have supportive, interpersonal relationships and connections; individual differences and diversity of learner needs are acknowledged and addressed; and learners have personal control and choice over the learning process. In learner-centred schools and classrooms, the decisions about programming and instructional practices begin with the knowledge of individual learners and their needs, strengths, and interests.

Learner-centred teaching practices “stem from the understanding that each student needs to feel known, cared about, and supported” (McCombs & Miller, 2007, p. 7). Students whose teachers use learner-centred practices are aware that their unique learning needs, interests, and talents are being valued and respected. In such systems, students are “partners with teachers in the learning process” (McCombs & Miller, 2007, p. 7). Research about teachers’ mindsets has also indicated that teachers who develop learner-centred orientation and growth mindsets become more skilled in providing personalised challenge to students (Dweck, 2012; Tomlinson, 2012). School cultures anchored in the learner-centred paradigm promote collaboration between teachers and students. Learning environments in these schools are conducive to building conditions that promote interactive dialogue, inquiry, and learning by doing; develop student expertise through purposeful and meaningful engagement in learning; and foster authentic student achievement (Jenkins & Keefe, 2002; McCombs & Miller, 2009; Sternberg, 2000). Thus, learner-centred differentiation promotes learning partnership between teachers and students, engages learners in critical inquiry and reflection about educational practice, and fosters ownership of their learning.

One of the most powerful aspects of using learner-centred practices is the opportunity to seek students’ perspectives of learning and teaching first-hand by engaging with student voice. Student voice, in a learner-centred context, empowers students to influence change in their own learning provisions (West, 2004). When learners feel

ownership of their learning and are given voice and choice, they are more willing to learn and become involved in their learning (McCombs & Miller, 2007). Seeking students' views on school problems and possible solutions is a constant reminder to teachers and leaders that "students possess unique knowledge and perspectives about their schools that adults cannot fully replicate" (Mitra, 2003, p. 290). Students tend to demonstrate sophisticated understandings of the qualities of an effective teacher, identify what good instruction looks like, and help teachers modify instructional approaches (Rudduck, 2007; Rudduck & McIntyre, 2007). Fostering student voice as an agent of change in schools requires a paradigm shift from the traditional teacher and student roles to more collaborative partnerships. In this collaborative learning, students engage with teachers as learning partners through the "enactment of participatory research and also through privileging of student voice" (Mockler & Groundwater-Smith, 2015, p. 5).

Problem-based learning (PBL) can provide the complex learning environment that is well suited to developing expertise using learner-centred approaches. The learner-centred environment is created through the combined impact of the aspects of PBL: ill-structured problem, advanced content, complex concepts, and the self-directed gifted learner who works as a stakeholder with the teacher in co-constructing meaning and solving the problem (Gallagher, 2015). Research indicates that gifted students have the capacity to build an expert's knowledge base (Clark, 2013; Gallagher, 2015); have expert-like dispositions such as perspective, forward problem solving, and persistence (Bransford & Vye, 1989; Shore, 2000; Sternberg, 2003); and have early capacity for problem finding and problem solving (Rogers, 2004; Runco, 1986). A majority of studies both from K-12 education and the field of medicine show that students who employ PBL learn at least as much, if not more, than traditionally instructed students (Gallagher, 2001; Hmelo-Silver, 2004; Sungur, Tekkaya, & Geban, 2006).

The review of the literature above highlights the significance of the new term, *learner-centred*, used in this thesis. As co-learners, when teachers engage with students as collaborators and students feel ownership of their learning by having a voice and choice, the students become intrinsically motivated to learn and get involved in their own learning (McCombs, 2000). In a learner-centred paradigm, both teachers and students interact as learning partners with students becoming self-regulated learners; and teachers, role models and scaffolders of learning.

Summary. In this section, the construct, *differentiated learning* for the gifted, was conceptualised; and the literature related to constructs such as *differentiated instruction* and *curriculum differentiation* for the gifted was reviewed. An argument was made for the use of the term, *differentiated learning* for the gifted, which denotes a relationship with the *learner-centred paradigm*. The concept builds on the previous constructs of differentiation yet makes the learner-centred nature of this differentiation more explicit. Throughout the remainder of this thesis, the term “differentiated learning” has been used to depict differentiation for gifted learners.

Conceptions of Giftedness and Implications for Differentiated Learning

Over time, popular conceptions of giftedness in the field of gifted education have shifted from singular IQ-based conceptions to multidimensional conceptions incorporating many other dimensions of human capability. Despite this, as shown below, IQ testing is still used in schools to identify gifted learners. In this section, the conceptions of giftedness and their implications for differentiated learning of the gifted are reviewed first. Then teachers’ conceptions of giftedness and their implications for differentiated learning are examined.

IQ-based conceptions of giftedness. Since Terman’s classic longitudinal study, giftedness has long been associated with intelligence (Terman & Oden, 1947, 1959). By

adopting Binet and Simon's early approach to measuring intelligence and classroom ability, for example, Terman (1925) developed standardised intelligence tests to predict which students would perform best in school. According to Terman, high general intelligence indicated by an Intelligence Quotient (IQ) score above 140 was the key indicator of giftedness (Sternberg, Jarvin, & Grigorenko, 2011). To this day, the notion in schools that high domain-general intelligence constitutes giftedness has continued to lead to the identification of those students as gifted who score well on standardised intelligence tests (Brown et al., 2005; Kaufman & Sternberg, 2008; Sternberg, Jarvin, & Grigorenko, 2011; Subotnik, Olszewski-Kubilius, & Worrell, 2011). The IQ-based conception of giftedness, despite being widespread, has received considerable criticism from theorists in the field (Reis & Renzulli, 2011). According to these criticisms, general intelligence is not sufficient to demonstrate talent in most domains (Sternberg et al., 2011; Subotnik et al., 2011). Rather, other dimensions of human capability should also be taken into account. Terman's study is a case in point. Although scholastic and occupational path developments among the student participants in Terman's study were assessed as positive, very few students with high IQs were truly able to produce outstanding achievements later in life (Howe, 1982; Samson, Grane, Weinstein, & Walberg, 1984). Similarly, two of Terman's participants who later won the Nobel Prize had not been identified as having high IQs in the earlier study (Stoeger, 2009).

Multidimensional conceptions of giftedness. Most contemporary theorists have now broadened their conceptions of giftedness to include multidimensional sets of abilities that are not measured by traditional intelligence tests. These abilities include both creativity and domain-specific talents such as arts, business, and sports and athletics (Gagné 2009; Sternberg et al., 2011; Subotnik et al., 2011). According to these theorists, intelligence may be crucial for giftedness but it is not adequate to demonstrate talent in

most domains. Thus, in Gagné's Differentiated Model of Giftedness and Talent (DMGT), the concept of giftedness is broadened, beyond the narrow focus on intellectual giftedness, to include other mental domains (e.g., creative, social, perceptual), and physical domains (e.g., muscular and motor control). Other scholars focus on giftedness as expertise development which involves developing mastery in a given domain through extensive deliberate practice (Ericsson, 2002; Ferrari, 2002; Schneider, 2000). Sternberg (2001), instead, refers to giftedness as a form of *developing expertise* which is developed through the interaction of five primary elements: metacognitive skills, learning skills, thinking skills, knowledge, and motivation.

Furthermore, more recent approaches to understanding giftedness include reciprocal exchanges of influence between individual actions and the environment (Ziegler & Phillipson, 2012). According to Ziegler (2005), giftedness is not a personal attribute. Rather than focusing on the *identification* of gifted learners, individuals develop talents by *dynamically interacting with their environment* and constructing their learning pathways. For example, talent development occurs when individual learners perform increasingly excellent actions within a domain in a stimulating learning environment. There are other scholars who broaden the conception of giftedness to include motivation, creativity, and wisdom (Heller, Mönks, Sternberg, & Subotnik, 2000; Sternberg & Davidson, 2005). Thus, when gifted learners employ their talents and expertise to make a meaningful contribution to society, they exercise their wisdom. The application of intelligence, creativity, and knowledge *for the common good* can lead to wisdom development among gifted learners (Sternberg, 2009).

For the purpose of this study, a wide spectrum of multidimensional conceptions of giftedness underpins the core purposes of *differentiated learning* for the gifted, the central focus of this study. These multidimensional conceptions of giftedness range from *talent*

development (e.g., Gagné, 2009, 2011) and *expertise* development (e.g., Ericsson, 2002) to *wisdom* development (e.g., Sternberg, 1998, 2009), and are summarised in Table 2.1.

Teachers' conceptions of giftedness and implications for differentiated learning. Despite the recent shift towards multidimensional conceptions of giftedness, outlined briefly above, these conceptions do not always become part of the classroom practice, and many teachers continue to focus solely on traditional conceptions of giftedness which rely on intelligence (Miller, 2009; Moon & Brighton, 2008; Schroth & Helfer, 2009; Urhahne, 2011). For example, a survey of primary teachers ($n = 434$) from US public schools demonstrated that the majority of teachers conceptualised giftedness in terms of school performance (Moon & Brighton, 2008). Respondents were comfortable with the depiction or idea of gifted students as possessing strong work habits, effective verbal skills, and the ability to read. However, 75% of the respondents found it difficult to conceptualise gifted students as those without strong reading skills (including a limited vocabulary).

Table 2.1

A Spectrum of Multidimensional Conceptions of Giftedness

Talent Development (Gagné, 2009, 2011; McCluskey, Treffinger & Baker, 1995, 1998)	Expertise Development (Ericsson, 2002; Ferrari, 2002; Schneider, 2000; Sternberg, 2001; Zimmerman, 2002)	Wisdom Development (Baltes & Staudinger, 2000; Sternberg, 1998, 2009)
<p>Gagné defined talent development as “the progressive transformation of outstanding abilities (gifts) into outstanding knowledge and skills (talents) in a specific occupational field” (2011, p. 11). Talent development process involves transformation of gifts in mental and physical domains into talents through catalysts. Gagné refers to differentiated learning provisions as part of catalysts for the talent development process. These provisions include, among others, enrichment, curriculum, acceleration, and grouping (Gagné, 2009).</p>	<p>Gifted learners do not necessarily develop expertise and become eminent adults. Research has shown that expertise development and exceptional performance are usually based on an extremely rich knowledge base, acquired through a long lasting process of <i>deliberate practice</i> and motivated learning (Ericsson, 2002; Schneider, 2000).</p>	<p>A gifted individual can have all the skills and attitudes for achievement, and yet lack an important quality: wisdom (Baltes & Staudinger, 2000).</p>
<p>Teachers can facilitate talent development among gifted learners, according to Gagné’s Academic Talent Development model (ATD), through (a) an enriched curriculum; (b) a challenging excellence goal; (c) rigorous identification; (d) systematic and regular practice; (e) regular and objective assessment of progress; and (f) personalised learning (Gagné, 2011).</p>	<p>In addition to high intellectual ability, non-cognitive factors such as endurance, dedication, concentration, and motivation play a critical role in reaching exceptional performance (Schneider, 2002).</p>	<p>According to Sternberg’s balance theory of wisdom (1998), a gifted individual is wise to extent she or he uses intelligence, creativity, and knowledge for the common good. Wisdom is about achieving a skilful balance in making short and long term decisions.</p>
<p>McCluskey et al.’s Amphitheater Model for Talent Development (1995, 1998) takes an inclusive approach to talent recognition and development. It embodies the principles of differentiation, in that it emphasises complexity, diversity, and strengths of students and educators; and focuses specifically on learning, teaching, and talent development. Teachers promote talent development through authentic assessments, and developing productive thinking and metacognitive skills. The key indicators of excellence include acceleration, enrichment, and personal and social development (McCluskey et al., 1998).</p>	<p>Self-regulatory processes (e.g., self-monitoring, self-instruction, goal-directed instruction, systematic use of feedback, time management, and seeking assistance from experts) play a significant role in developing expertise (Ferrari, 2002; Zimmerman, 2002).</p>	<p>It is the synthesis of wisdom, intelligence, and creativity—WICS model (Sternberg, 1998)—that builds the pathway for gifted individuals to become effective leaders and make meaningful contribution to society. A gifted learner needs creative skills to come up with ideas; academic skills to make the ideas work, and convince others of the value of the ideas; and wisdom-based skills and attitudes to ensure that the ideas are applied in the service of the common good (Sternberg, 2009).</p>
	<p>The notion of <i>developing expertise</i> among gifted learners within a given domain can be fostered by the interaction of five key elements: metacognitive skills, learning skills, thinking skills, knowledge, and motivation (Sternberg, 2001).</p>	<p>Teachers can teach for wisdom by using activities that foster (a) <i>dialogical thinking</i>, that is, an ability to consider a situation from the point of view of different people; (b) <i>dialectical thinking</i>, that is, thinking that resolves and integrates competing points of view; (c) <i>critical discussion</i> of actions, as to whether they are wise or foolish; and (d) <i>role modelling</i> of wise judgement and action on the part of students and teachers (Sternberg, 2009).</p>
	<p>Students need to be trained in ways that let them truly emulate exceptional individuals, and not merely admire them (Ferrari, 2002). Teachers play a critical role in helping gifted individuals achieve superior performance and growing expertise in a given domain (Ericsson, 2002).</p>	

Teachers' beliefs in the traditional conceptions of giftedness may disadvantage students from poverty and those students whose first language is not English, or any student who may underperform in the classroom despite great potential. Indeed, it is not only teachers' conceptions of giftedness that influence the achievement of gifted students, but attitudes towards curriculum differentiation also play an important role. Van Tassel-Baska and Stambaugh (2005) outline several related barriers to differentiation, including the difficulty of some teachers to respond to diverse populations (e.g., minority groups, and students from low socioeconomic backgrounds), the failure of some teachers to realise that students each possess a variety of different abilities and interests, and the lack of positive attitudes many teachers have towards gifted learners and their needs. These problems are exacerbated when teachers have limited classroom management skills or planning time (Van Tassel-Baska & Stambaugh, 2005). Even when teachers do recognise a student's potential, they may lack the necessary subject knowledge for advanced content differentiation, may lack relevant pedagogical skills to work with gifted students, may not recognise the degree of differentiation needed to help each student reach her or his potential, or may have difficulty locating and utilising resources to provide accelerated and enriched content experiences for gifted learners (Van Tassel-Baska & Stambaugh, 2005; Westberg & Daoust, 2004). Therefore, multiple barriers can impede teachers' effective differentiation of learning for gifted students.

Evidence suggests that the conceptions of giftedness can be broadened, and barriers to differentiation for the gifted can be avoided or overcome through targeted staff professional learning and support, a committed school leadership, and a positive change in school culture (Riley, 2015; Tomlinson & Allan, 2000; Tomlinson et al., 2008; Tomlinson, 2014b). For example, when teachers revisit their attitudes and think about implementing differentiated practices for gifted learners, high student achievement outcomes result

(Tomlinson, 2014b). However, teachers must also receive sustained and supportive leadership for making these critical changes to their practices (Fullan, 2001, 2007, 2013; Leithwood & Seashore Louis, 2012; Robinson, Lloyd, & Rowe, 2008; Tomlinson, 2014b). Additional research is necessary to illuminate aspects of school and systems leadership that can serve as catalysts for sustained change in teachers' conceptions of giftedness, attitudes, knowledge, and practices for differentiated learning in schools (Callahan et al., 2003; Tomlinson et al., 2008).

Summary. In this section, conceptions of giftedness and implications for differentiated learning were examined. While there is a recent shift towards multidimensional conceptions of giftedness, these do not permeate classroom practice readily due to a range of barriers to differentiated practice in classroom. The review demonstrated that further research is necessary to examine how teachers' conceptions of giftedness, knowledge, and practices for differentiated learning of the gifted in schools can be fostered and enhanced.

Gifted Students' Characteristics and Engagement

Effective differentiated learning in classrooms requires teachers who understand gifted students' abilities and attributes, and how to engage them in the classroom. For the purpose of this study, the definition of giftedness and talent in this study is adopted from Gagné (2003), which is also incorporated in the revised NSW *Policy and implementation strategies for gifted and talented students*:

Gifted students are those whose potential is distinctly above average in one or more of the following domains: intellectual, creative, social and physical.

Talented students are those whose skills are distinctly above average in one or more areas of human performance. (NSW Department of Education and Training, 2004b, p. 6)

In this section, a review of the characteristics of gifted students and aspects related to their engagement is presented.

Characteristics of gifted students. Gifted students exhibit stronger cognitive and language skills than do non-gifted students (Davis et al., 2011; Grigorenko & Sternberg, 1997). They are generally more inquisitive and curious (Renzulli et al., 2002; Rotigel, 2003), and typically think more abstractly than do their same age-peers (Feldhusen, 1986; Kitano, 1995; Renzulli et al., 2002; VanTassel-Baska, 1998a; Walker, Hafenstein, & Crow-Enslow, 1999). They also tend to have a stronger ability to find problems (Rogers, 2002) and solve problems in diverse ways (Kanevsky, Maker, Nielson, & Rogers, 1994), a greater ability to generate original ideas (Feldhusen, VanTassel-Baska, & Seeley, 1989; Renzulli et al., 2002; Rogers, 2002), a stronger capacity to integrate and synthesise information or skills (Kanevsky et al., 1994), a greater preference for complexity (Shore, Rejskind, & Kanevsky, 2003), and a more enhanced metacognitive ability to monitor their thinking and explain their strategies (Barfurth, Ritchie, Irving, & Shore, 2009; Benito, 2000; Berkowitz & Cicchelli, 2004; Kanevsky, 1992). Not surprisingly, the advanced cognitive skills exhibited by many gifted learners means that they may also exhibit higher levels of discrepancy (i.e., asynchrony) between physical and intellectual development than do their age-peers (Clark, 2013).

In interacting with other people and societal issues, gifted students may respond differently compared with their same age peers. They may be more receptive to new ideas, other viewpoints, and new experiences (Davis, 1992; Davis et al., 2011; Selby, Shaw, & Houtz, 2005) than are their age-peers, and they also typically have advanced leadership ability for their age. They are, for example, able to take initiative, give directions to others, encourage others, and engage in peacemaking negotiations (Karnes & Bean, 2010; Karnes & Chauvin, 1986, 2000); are responsible (Renzulli et al., 2002); have advanced cognitive

and affective capacity for conceptualising societal problems (Clark, 2013); enjoy involvement with the meta-needs of society (e.g., justice, beauty, truth, fairness); and apply this knowledge to today's problems (Roeper, 1988; Silverman & Ellsworth, 1980).

Finally, gifted students may differ from non-gifted students in their emotional experiences. Gifted students tend to demonstrate heightened emotional intensity (Feldhusen, et al., 1989; Webb, Meckstroth, & Tolan, 1982; Whitmore, 1980); are more prone to perfectionism (Betts & Neihart, 2004; Feldhusen, et al., 1989; Siegle & Schuler, 2000); and have higher expectations of self and others, often leading to high levels of frustration with themselves, with others, and with the situations they find themselves in (Clark, 2013). Nonetheless, they also tend to exhibit strong self-regulation and control (Kanevsky, 1992).

Notwithstanding these general characteristics of giftedness, gifted students are a heterogeneous group and exhibit particular abilities more strongly than others. This is particularly the case for gifted students with disabilities. In a study of 315 gifted students with learning disabilities, Nielson (2002) found that the characteristics exhibited by these learners included talents outside of school domains, strong vocabulary, big-picture thinking, superior problem solving skills, creativity, and a preference for complexity. The characteristics associated with learning disabilities included frustration with school, inconsistent academic performance, low self-esteem, and slow pace of work.

Moreover, as I allude to above, not all gifted learners are high achievers. Many gifted learners exhibit characteristics of underachievement such as low self-efficacy (Siegle & McCoach, 2005), low self-motivation (Matthews & McBee, 2007), attribution of success or failure to outside forces (Siegle & McCoach, 2005), low goal valuation (Baslanti & McCoach, 2006), negative attitudes towards school and teachers (McCoach &

Siegle, 2003a), and low self-regulatory or metacognitive skills (Carr, Borkowski, & Maxwell, 1991).

Thus, gifted learners exhibit a great diversity in talent development and emergence of gifts. Too few educators tend to understand the diverse needs and characteristics of gifted students, especially gifted students with disabilities. Reis, Sullivan, and Renzulli (2015) recommend that the characteristics of gifted learners “should be identified in as many educational contexts and populations as possible to ensure a well-rounded and more accurate picture of how people with gifts and talents develop” (p. 94). Teachers and principals, therefore, require adequate knowledge about gifted students’ diverse abilities and attributes so that they can understand their voices and perceptions; and honour their individual needs, readiness, and interests. Indeed, educators need to broaden their conceptions of giftedness to provide more flexibility in both identification and programming (Reis et al., 2015), and engage with students as learning partners in the school (Mockler & Groundwater-Smith, 2015).

Gifted students’ engagement. Gifted students’ engagement in learning must be addressed when planning and implementing differentiated learning approaches (e.g., Clark, 2013; Maker & Schiever, 2010; Renzulli et al., 2002; Silverman, 2013). In this study, engagement is viewed as multidimensional, involving cognitive, affective, and behavioural aspects of students’ learning (Fredricks, Blumenfeld, & Paris, 2004). Further, in addressing the factors that best support student engagement, I operationalise optimal engagement as *flow*. Csikszentmihalyi (1990) first described *flow* as an experience in which a student is immersed fully in the task at hand, with no self-consciousness or anxiety. Indeed, the experience of *flow* is so engrossing that time often passes without notice. Hillman (1996) similarly describes the presence of the *daimon* (a personal calling) in creative lives; and Reynolds and Piirto (2007) use the image of the *thorn* as “a metaphor

for the motivation to develop one's inborn talent" (p. 49). The *thorn* pierces or torments the individual until she or he gets engaged, and devotes time and energy to the task.

Whether optimal engagement is described in terms of *flow*, *daimon*, or *thorn*, gifted students nonetheless reach this state most easily when they are intrinsically motivated (Csikszentmihalyi, 1991), when they are challenged (Kanevsky, 2011), when they are offered choice (Gentry, Hu, Peters, & Rizza, 2008), when the teacher exhibits particular characteristics that are perceived as supportive (Kanevsky, 2011), and when the environment is supportive (Phillips & Lindsay, 2006).

This is important for two reasons. First, engagement drives learning. Simply altering the content material to match their advanced abilities will not help gifted students to reach their full potential if they are disengaged (McCormick & Plucker, 2013). Second, there are aspects of engagement—including intrinsic motivation, a desire for challenging tasks, a desire for student choice, and a preference for particular teacher characteristics—that are particularly relevant to gifted students. These aspects of engagement offer insights regarding the nature of effective differentiation. While these aspects are *not unique* to gifted students, nonetheless, they manifest themselves in particular ways. To better understand the circumstances in which differentiation for gifted learners is most likely to be effective, I briefly review these aspects of engagement below.

Intrinsic motivation to achieve learning goals. Contemporary frameworks and theories of motivation tend to be dominated by the cognitive perspective. Schunk, Pintrich, and Meece (2008, p. 4), for example, define motivation as a cognitive process “whereby goal-directed activity is instigated and sustained”. Researchers have found that gifted students appear to be more intrinsically motivated in pursuing learning goals than other students (Csikszentmihalyi et al., 1993; Gottfried & Gottfried, 1996; Olszewski-Kubilius, Kulieke, & Krasney, 1988; Feldhusen, Dai, & Clinkenbeard, 2000). This focus on intrinsic

motivation has particular implications for learner-centred approaches to differentiated learning of the gifted. Rather than relying on rewards, prizes, competitions and other extrinsic strategies, learner-centred educators engage gifted students' *intrinsic* desire to learn by determining their interests and making meaningful connections with the curriculum (Clinkenbeard, 2014).

Challenge. Seeking challenge has also been identified as a characteristic of gifted students, spurring greater engagement in tasks (Clinkenbeard, 1994; Freeman, 2000; Gentry & Owen, 2004; Wallace, 2000). When providing challenge, however, gifted students require “*different*, but not *more*, work [italics in original]” (Patrick, Gentry, Moss, & McIntosh, 2015, p. 197). Alternative activities need to be interesting and meaningful, and promote new learning but not burden the gifted learner with a higher workload than other students. Gifted students especially value learning about “complex extra-curricular topics and authentic, sophisticated knowledge, and interconnection among ideas” (Kanevsky, 2011, p. 279). In classrooms with inadequate or inappropriate challenge, repetition and slow pace, gifted learners get easily bored and disengaged (Feldhusen, 1998; Lens & Rand, 2000). In some cases, due to a lack of rigour in classrooms, weariness and low levels of motivation can lead to underachievement among gifted students (Butler-Por, 1993; Montgomery, 2000).

Student choice. Promoting student choice in learning has a positive motivational impact (Hay, 1993; Peters, Grager-Loidl, & Supplee, 2000; Montgomery, 2001). Kanevsky (2011, p. 279) calls the student-centred focus as “deferential differentiation”, that is, deferring to students' preferences in how they would like to learn, which embodies the idea of student choice and autonomy. Interestingly, however, research has shown that while teachers might report that they provide choices in the classroom, their students often do not perceive these as choices, indicating differences in perceptions of choice between

students and teachers (Gentry, Rizza, & Owen, 2002). Tomlinson (2003) asserts if gifted students have to be given appropriate choices, then teachers should ensure that the variety of tasks are perceived by students as significant, interesting, and worth doing.

Teacher characteristics. Teacher enthusiasm, feedback, and content knowledge are associated with student engagement as well as motivation and learning (Gentry, Steenbergen-Hu, & Choi, 2011; Patrick & Ryan, 2008; Siegle, Rubenstein, & Mitchell, 2014). In their research with 28 gifted high school graduates who participated in an invitation-only, university's honours program, Siegle et al. (2014) found that the gifted students "overwhelmingly attributed their interest and motivation to their experiences with their teachers" (p. 40). Gifted students perceived those teachers as effective who foster meaningful student-teacher relationships, hold expertise in their subject area, present complex ideas and meaningful content, and promote students' self-efficacy beliefs (Siegle et al., 2014).

Environmental perceptions. Students' perceptions of their environment play an important role in their achievement motivation and engagement (Siegle, 2013). Schools with highly motivated students tend to possess environments where the students feel connected to their teachers and feel valued for making individual efforts in enhancing their learning (Patrick, Gentry, & Owen, 2006). Gifted students perceive an environment to be supportive and nurturing when they build positive relationships with their teachers (Siegle et al., 2014). When school connectedness is strengthened, student outcomes improve (Blum, 2005; McNeely, Nonnemaker, & Blum, 2002). These findings resonate with gifted students' disengagement and underachievement due to the students' feelings of disconnection from their school (Renzulli & Park, 2000; Sadowski, 1987). In a study about factors contributing to the boredom of gifted high school students, for example, Kanevsky and Keighley (2003) highlighted five interdependent features that distinguish the boring

from engaging learning experiences: control, choice, challenge, complexity, and caring teachers. The extent to which these five “C’s” are present determine the extent of students’ engagement and productivity.

Summary. Gifted students are a heterogeneous group with diverse needs. Too few educators, however, understand the diverse needs and characteristics of gifted learners. Gifted students’ engagement and achievement are supported when gifted students are provided challenge, choice, and complexity; are engaged with enthusiastic teachers who have high expectations; and are exposed to supportive environment in schools.

Qualities and Practices of Effective Teachers of Gifted Students

Although there are varied understandings of the conceptions of giftedness, there is little doubt that effective teachers play a pivotal role in the delivery of effective program services, including differentiation, for gifted students (Missett & McCormick, 2014). However, when teachers’ conceptions of giftedness do not resonate with available research, problems related to identification (Chart, Grigorenko, & Sternberg, 2008) and teacher practice (Missett & McCormick, 2014) might prevail. Research shows that teachers of the gifted need to have a range of qualities and practices that make them effective. These include specific *personal and professional dispositions* (e.g., enthusiasm, empathy), *professional knowledge* about the learner and the content, *professional practice* (e.g., the use of differentiation in educating gifted learners), and broader *professional engagement* (e.g., in further learning). Evidence-based qualities and practices of effective teachers for gifted students are summarised below (Table 2.2). This is followed by an analysis of teachers’ use of curriculum models in educating the gifted.

Table 2.2

Qualities and Practices of Effective Teachers of Gifted Students

Personal-Professional Disposition		
Elements	Description	Example References
Enthusiasm	Have passion for subject matter	Heath, 1997; Mills, 2003; Whitlock & DuCette, 1989
Intelligence	Be above average intellectually	Hansen & Feldhusen, 1994
Empathy	See things from the students' view and understand how students feel	Bishop, 1968; Stephens, 2009
Relationship with gifted students	Foster caring relationships with students	Chan, 2011; Graffam, 2006; Hansen & Feldhusen, 1994
Humour	Possess a sense of humour	Maddux, Samples-Lachmann, & Cummings, 1985
Self-efficacy	Possess belief in their abilities	Heath, 1997; Chan, 2011; Starko & Schack, 1989
Broad interests	Pursue a broad range of interests, often literary and cultural	Bishop, 1968
Motivation	Motivate students	Hansen & Feldhusen, 1994; Phillips & Lindsay, 2006; Whitlock & DuCette, 1989
Organisation	Be systematic and orderly	Bishop, 1968; Chan, 2011
Responsiveness	Be culturally responsive	Chan, 2001a; Ford & Trotman, 2001
Achievement orientation	Be committed to excellence – attempting to do their best	Heath, 1997
Learner-centredness	Have a learner-centred orientation	Whitlock & DuCette, 1989

Professional Knowledge		
Elements	Description	Example References
Expertise in the subject matter	Possess in-depth knowledge of subject matter	Bishop, 1968; Nelson & Prindle, 1992; Renzulli, 1992; Sisk, 1989
Understand student needs	Understand the cognitive, social, and emotional needs of the gifted	Bishop, 1968; Goodnough, 2001; Landvogt, 2001; Mills, 2003
Understand how students learn	Make learning meaningful and relevant for the gifted	Gentry, Steenbergen-Hu, & Choi, 2011
Professional Practice		
Elements	Description	Example References
Outcomes* differentiation	Extend and/or modify syllabus outcomes to meet the learning needs of gifted students	Heacox, 2009*; MacLeod, 2004*; VanTassel-Baska, 2003*; VanTassel-Baska & Stambaugh, 2006*
Content differentiation	Educate by using examples and illustrations of concepts	VanTassel-Baska, Avery, Little, & Hughes, 2000
	Engage in whole-to-part learning	Ayers, Sawyer, & Dinham, 2004; Rogers, 2007
	Eliminate curriculum content for students who have mastered it	Archambault et al., 1993a; Reis & Purcell, 1993; Reis, Westberg, Kulikowich, & Purcell, 1998
	Adjust the amount of practice that each student needs to master content	Archambault et al., 1993a; Reis & Purcell, 1993; Reis & Westberg, 1994
	Set tasks that challenge each learner	Diezmann & Watters, 2002
	Plan curriculum to provide a variety of learning experiences	Tomlinson, 1995
	Make use of model answers for analysis in whole-class discussion	Ayers et al., 2004
	Link new and prior knowledge	Coleman & Shore, 1991
	Bring specialists to the classroom	Whitton, 1997

Process differentiation	Vary the pace of my lesson to cater for individual learning needs	Hansen & Feldhusen, 1994
	Use flexible within-class ability grouping	Kulik & Kulik, 1992; Nelson & Prindle, 1992; Tieso, 2005
	Use questions to stimulate class discussion and individual reflection	Ayers et al., 2004; Starko & Schack, 1989
	Incorporate higher-order thinking into learning tasks	Chan, 2001a; Nelson & Prindle, 1992; Starko & Schack 1989; Yuen & Westwood, 2004
	Provide opportunities for students to select, implement and evaluate solutions to problems or issues	Ayers et al., 2004; Tomlinson, 1995
	Urge students to explore diverse points of view	Cropley, 1994; Mumford, 1998; Starko, 2010; VanTassel-Baska, 1998b
	Inspire students to offer imaginative solutions to problems	Grigorenko, Jarvin, & Sternberg, 2002; Nelson & Prindle, 1992; Kanevsky, 2013
	Foster creative and divergent thinking skills	Amabile, 1989; Hansen & Feldhusen, 1994; Grigorenko, et al., 2002; Runco & Nemiro, 1994; Sternberg, 2006
	Offer students freedom of choice to select topics	Kanevsky & Keighley, 2003
	Motivate and enthuse students by building their self-confidence and publicly recognising their achievements	Chan, 1996; Csikszentmihalyi, Rathunde, & Whalen, 1993; Ziegler & Heller, 2000
Product differentiation	Ask students to evaluate their own work and that of their peers	VanTassel-Baska, 2004
	Engage students in problem finding	Heinze, 2005; Matsko & Thomas, 2014
	Stimulate students to find solutions to real problems	Newman, Dantzler, & Coleman, 2015; VanTassel-Baska et al., 2000

	Make students reflect on what they have learnt and how they think	Chan, 1996; Shore, 2000
	Provide meaningful, positive feedback	Ayers et al., 2004; Csikszentmihalyi et al., 1993
	Encourage students to study methods of inquiry and research in different disciplines	Nelson & Prindle, 1992; Rogers, 2007; VanTassel-Baska, Bass, Reis, Poland, & Avery, 1998
	Use differentiated formative and summative assessments	Missett, Brunner, Callahan, Moon, & Azano, 2014; Moon, Brighton, Callahan, & Robinson, 2005
Learning environment differentiation	Foster a challenging thinking climate	Rayneri, Gerber, & Wiley, 2006
	Offer flexible learning opportunities	Rayneri et al., 2006
Professional Engagement		
Elements	Description	Example References
Engage in professional learning	Undertake ongoing specific professional learning in the education of the gifted	Hansen & Feldhusen, 1994; Mills, 2003; Nelson & Prindle, 1992; Tomlinson et al., 1994
Engage professionally with others	Work closely with other staff members educating gifted learners, parents, and the community	Chan, 2011; VanTassel-Baska et al., 2008

Note. *Outcomes-based differentiation is theorised to enrich and augment differentiated content, process, product, and learning environment for gifted learners. However, it has not been empirically studied previously.

Thus, empirical research indicates that effective teachers of gifted students have certain personal-professional dispositions such as expertise in their subject matter, motivation, ability to relate well with gifted students, and understanding of how gifted students learn. These teachers differentiate outcomes, content, process, product, and learning environment to meet the unique needs of gifted students.

Teachers' use of curriculum models for educating gifted learners. Effective teachers make purposeful use of curriculum models to differentiate learning and meet the needs of gifted students. They understand that the success of a program for the education of gifted learners is dependent upon the degree to which a coordinated set of principles inform the program (Renzulli, Gubbins, McMillen, Eckert, & Little, 2009). Without such organisational coherence, programs might be "random collections of scattered principles that lack theoretical integrity and internal consistency" (Renzulli et al., 2009, p. iii). VanTassel-Baska and Brown (2009) investigated the effectiveness of 11 curriculum models based on 15 criteria for effective curriculum that were cited from multiple sources. The researchers' criteria included considerations such as research evidence to support use; K-12 applicability in all content areas; quality of curriculum products based on the model; ease of implementation and flexibility for teachers and students to work together; evidence of application of the model in practice; comprehensiveness; and a systems approach to school-wide and cross-school differentiation. Based on VanTassel-Baska and Brown's (2009) review of curriculum models and other researchers (referenced below), I examine teachers' use of six models for educating gifted learners.

Although there are many models for curriculum development of gifted learners, not all of them are considered comprehensive for all areas of curriculum or types of learners. For example, The Purdue Three-Stage Enrichment Model for Elementary Gifted Learners and The Purdue Secondary Model for Gifted and Talented Youth (Feldhusen & Kolloff, 1986; Moon, 1995, 1996; Moon, Kolloff, Robinson, Dixon, & Feldhusen, 2009) have both program and curriculum development components for teachers. According to VanTassel-Baska and Brown (2009), however, neither of the two models comprehensively apply to all areas of the curriculum, all types of gifted learners, or to all stages of development. Similarly, while there are documented gains of teachers' use of the Schlichter Models for

Talented Unlimited Inc. (K-6) and Talents Unlimited to the Secondary Power (7-12) to develop students' creative and critical thinking (Schlichter & Palmer, 1993), the models may not be viewed as comprehensive in terms of their broad application to all areas of the curriculum and diverse population of gifted learners (VanTassel-Baska & Brown, 2009). Furthermore, while teachers' use of the Stanley Model of Talent Identification and Development (Stanley, 2005) has been well received by parents and students in grades 3-12 who reason exceptionally well mathematically and verbally, schools have been less receptive based on their conservative approaches towards acceleration and identification of highly gifted students in subject areas (VanTassel-Baska & Brown, 2009).

The Integrated Curriculum Model influenced the conceptual focus of the learner-centred, differentiated practices in the current study (ICM; VanTassel-Baska, 1986; VanTassel-Baska & Little, 2011). The ICM was specifically developed for high-ability learners. It has three dimensions: (a) advanced content, (b) high-level process and product work, and (c) intra- and interdisciplinary concept development and understanding. Research has demonstrated the effectiveness of the ICM with gifted learners in a range of educational settings (Feng, VanTassel-Baska, Quek, Bai, & O'Neil, 2005; VanTassel-Baska, Zuo, Avery, & Little, 2002). There is evidence of broad-based application by teachers, however, VanTassel-Baska and Brown (2009) identified low fidelity in teacher implementation possibly due to lack of ease of implementation of units of study that were developed by using this model. As noted earlier, the focus on multidimensional conceptions of giftedness in *learner-centred* differentiated learning in this study resonates with Renzulli's School-wide Enrichment Model (1988) with its focus on *creativity* as one of conceptions of giftedness (Renzulli, 1986).

Maker's model for curriculum differentiation (Maker, 1982; Maker & Schiever, 2010) contains 31 research-informed principles which are clustered to address four

dimensions of curriculum: content, process, product, and learning environment. For example, Maker and Schiever (2010) recommend that teachers can modify *content* by encouraging abstractness, complexity, variety, study of people across disciplines, and study of methods of the disciplines. They can modify learning *processes* by fostering higher levels of thinking (critical analysis, synthesis, and evaluation); by supporting the construction of personal and group meaning; by encouraging discovery and freedom of choice; and by using variable pacing. Teachers can modify the learning *product* by addressing real, substantive, complex issues or problems; and by engaging in formative and summative evaluation. Finally, teachers can modify the learning *environment* by making it open and welcoming to diverse people, ideas, questions, and fostering flexibility; by ensuring it is learner-centred; by encouraging both independent and group work; and by introducing complexity in materials and activities. Maker's model contains a collection of best practices with demonstrated impacts in studies of *individual* principles rather than in the entirety of the collection (Kanevsky, 2011). Further research is currently underway on the Maker model's problem-solving component, the DISCOVER (Discovering Intellectual Strengths and Capabilities while Observing Varied Ethnic Responses) project, which is part of a new model called the REAPS (Real Engagement in Active Problem Solving) model (Maker, Zimmerman, Alhusaini, & Pease, 2015). The REAPS model was developed specifically for teachers' use in meeting the learning needs of gifted students in a variety of settings.

Teachers' use of models of educating the gifted reviewed above include, in varying degrees, the differentiation of content, process (teaching strategies), product, and learning environment to meet the needs of gifted learners. None of these models, however, *explicitly* addresses the differentiation of learning outcomes even though it might be argued that the models might promote differentiation of learning outcomes implicitly.

While the importance of these implicit outcomes might be clear to *some* teachers and particularly those who are adept in curriculum alignment, such outcomes might be overlooked by other teachers—without explicit prompting—in favour of *those elements* of the model (i.e., differentiation of content, process, product, and/or learning environment) that are explicit. In this study, therefore, I explicitly refer to extending the learning outcomes to raise the level of challenge and complexity for gifted students.

Differentiation of learning outcomes is important because teachers are able to design differentiated units containing provisions for *extended* content, process, product, and environment which are *aligned* to the extended learning outcomes. The learning outcomes provide a guidepost for making modifications to the content, process, product and learning environment in a unit of learning. However, when gifted students have already demonstrated competency or mastery of core learning outcomes, differentiation of these core outcomes enables a teacher to extend gifted students beyond the expectations of the standardised outcomes of the syllabus (Heacox, 2009; MacLeod, 2004; VanTassel-Baska, 2003). MacLeod (2004) suggests that the core outcomes in a unit of study can be differentiated by promoting higher-order thinking and complexity, or accelerating the core outcomes to the next stage or level of outcomes for gifted learners. VanTassel-Baska (2003) recommends that the extended outcomes for gifted students should consistently reflect the following features: greater focus on higher-level thinking tasks, provision of more complex tasks, expectation of more sophisticated “products”, expectation that lower-level outcomes will be achieved more quickly, promotion of creative responses to material, broadened scope of learner experiences, emphasis on multiple experiences, and thematic focus in differentiated units of learning. Thus, extended learning outcomes enrich and augment the differentiated content, process, product, and learning environment for the gifted.

This study is influenced by a range of models and frameworks, specifically Maker's model, VanTassel-Baska's ICM model, and Renzulli's three-ring conception of giftedness. The influence is evident in the questionnaires for teachers, principals, and gifted students that contain questions on differentiated teacher practice (e.g., content, process, and product differentiation). In this study, I investigate teachers' perceptions of their use of differentiated outcomes, content, process, product, and learning environment for gifted learners.

Summary. The reviewed models of differentiation for gifted students included, in various forms, differentiation of content, process, product, and environment. There was, however, little work examining the differentiation of learning outcomes, and how differentiated learning outcomes shape the content, process, products, and environment for gifted learners. Further empirical studies are needed to address this gap in the literature. In this study, I suggest that explicit extension of core learning outcomes is also an important aspect of differentiation for gifted learners. I draw on the five dimensions of curriculum so that differentiated content, process, product, and learning environment differentiation are aligned with the extended learning outcomes to meet the needs of gifted learners.

Learner-centred Leadership

Learner-centred differentiated learning and effective teaching of gifted students across the school requires leaders who are also aware of learner-centred principles, as discussed earlier in this chapter. DuFour (2002) advocates a “redefining of the role of the principal from instructional leader with a focus on teaching to *leader of a professional community with a focus on learning* [emphasis added]” (p. 15). This shift from being an “instructional leader to lead learner” (DuFour, 2002, p. 15) means that principals shift their emphasis “from helping individual teachers improve instruction to helping *teams of teachers*” (p. 13) enhance student learning outcomes. DuFour differentiates the

instructional leadership of the ‘past’ from the learning-focused leadership required in today’s schools, stating:

By concentrating on learning, today’s schools leaders shift both their own focus and that of the school community from inputs to outcomes and from intentions to results.

...only those who understand that the essence of their job is promoting student and teacher learning will be able to provide that leadership. (p. 15)

Dufour adds that teachers and students benefit from principals who act as “*learning leaders* rather than *instructional leaders* [italics in original]” (p. 13).

Lambert and colleagues (2002) identify the following foundational principles of learner-centred leadership: (a) learning is an active, not a passive process; (b) learning is naturally social and is most likely to occur when learners share ideas and practise inquiry; (c) learners actively construct their own meanings; (d) both reflection and metacognition contribute positively to the construction of meaning; and (e) new learning is dependent on prior experience, beliefs, and values. To establish a persistent focus on learning at school level, principals and teacher leaders regularly visit classrooms and participate in professional learning activities with staff members, keep up to date with the field, make student learning a focus for performance evaluation, examine data about student learning, and work with others to set goals for improvement in learning (Southworth, 2005).

Leadership is vital for initiating, building, and sustaining school change (e.g., leading differentiated learning of gifted students across the whole school). There are various models of school leadership in the literature for ushering change in schools. While it is beyond the scope of this thesis to consider different models in detail, the learner-centred research focus of this thesis resonates with the theoretical conceptions of learner-centred, strategic, and sustainable leadership models. *Learner-centred leadership* is focused on collaborative, inquiry-based learning between students and teachers, with

principals as lead learners (e.g., Fullan, 2014; Lambert et al., 2002; Southworth, 2005).

This model is conducive to promoting student voice in school improvement and innovation. A 2008 meta-analysis conducted by Robinson, Lloyd and Row (2008) identified an effective leadership “dimension”, finding that “promoting and participating in teacher learning and development” (where principals are *lead learners* in the schools) is associated with a large average effect size of 0.84 (p. 663). *Strategic leadership* involves developing both short-term and strategic perspectives in the school, developing and enhancing strategic processes, and implementing strategic measures of success in the school (e.g., Cheng, 2010; Davies, Davies, & Ellison, 2010; Fullan, 2004). *Sustainable leadership* requires a collective endeavour from all leaders and community members in the school to sustain school improvement (e.g., Hargreaves & Fink, 2006; Hargreaves & Goodson, 2004). Other leadership models such as the *instructional leadership* model (e.g., Hallinger & Murphy, 1985; Leithwood, Begley, & Cousins, 1990; Marks & Printy, 2003) instead focus on the principal as the primary source of educational expertise who promotes teaching and learning in the school. Similarly, the *transformational leadership* model affirms the prime role of a school principal in leading change, particularly in introducing innovation and shaping school culture (Leithwood, 1994), and in developing staff commitment which then leads to the development of goals and objectives of the school (e.g., Avolio, Bass, & Jung, 1999; Bass & Riggio, 2006). While a principal does play a significant role in leading change in the learning fabric of a school, she or he cannot achieve change alone. The instructional and transformational leadership models, therefore, do not resonate with the philosophical approach adopted in this study which emphasises learner-centred, collaborative approaches to leading, learning, and teaching gifted students in schools.

Summary. As learner-centred leaders, school principals become *lead learners* who not only model learning, create conditions for powerful learning in schools, and influence teacher practice in indirect ways, but they also learn in the process. The insights that they gain further enhance their knowledge and understanding about leading, learning and teaching. While no single conception of leadership can possibly address all the complexities and challenges of a school system holistically, the theoretical conceptions of learner-centred, strategic, and sustainable leadership models resonate philosophically with the learner-centred, school-wide approaches to differentiated learning that underpin this study.

Conclusion

An argument was made in this chapter for the use of the construct, *differentiated learning*, for gifted students which builds on the previous constructs, *differentiated instruction* and *curriculum differentiation*, yet makes the learner-centred nature of differentiation more explicit. This learner-centred focus is conceptualised for *teaching*, *learning*, and *leading* school-wide differentiation. Throughout the remainder of this thesis, the term, *differentiated learning*, has been used to refer to differentiation for gifted students. Similarly, for the remainder of this thesis, *learner-centredness* for teachers refers to teachers' engagement with students as learning partners; and for school principals, the learner-centred focus implies that the principals are, first and foremost, *lead learners*. In the next three chapters, I review teachers', students', and principals' perceptions of differentiated learning for gifted students. I note how these perceptions align with the research presented in this chapter, how they are congruent or incongruent with each other, and where these perceptions are currently not known.

CHAPTER 3

TEACHERS' ATTITUDES AND PERCEPTIONS

In this chapter, the literature about teachers' attitudes and perceptions of gifted students and perceptions of differentiated learning is examined first. It is followed by a review of barriers and challenges to teachers' differentiated pedagogical practices.

Teachers' Attitudes to and Perceptions of Gifted Students and Differentiated Learning

While an extended discussion of the interplay between teacher beliefs, attitudes, and behaviour is beyond the scope of this thesis, it is sufficient to note that *beliefs* form the basis of attitudes and perceptions, and ultimately control behaviour (see Ajzen, 2005, 2012; Ajzen & Fishbein, 2005; Eagly & Chaiken, 2005 for further discussion). Thus, teachers' *attitudes* towards giftedness; their *perceptions* of differentiated practices; and their *behaviour*, that is, their use of differentiation in practice, are all ultimately shaped by their *beliefs* about gifted learners and their education. Research shows that teachers who employ high levels of differentiation *believe* high and low achievers should be treated differently (Weinstein, 2002). Teachers are more likely to act on their beliefs when they believe that they have the capability to do so (Tang, Lee, & Chun, 2012). Similarly, attitudes become predictors of behaviour when there is higher correspondence between the measures of attitude and behaviour such as action, context, target, and time (Ajzen & Fishbein, 1977). Thus, it can be inferred that positive teacher attitudes are reflected in their behaviours and actions (e.g., in educating gifted learners).

In this section, teachers' attitudes towards gifted students and their attitudes towards differentiation for gifted learners are reviewed. Barriers and challenges to teachers' differentiated pedagogical practices are reviewed next, and the importance of professional learning for shaping teacher attitudes is examined.

Teachers' attitudes towards gifted students. Findings about teacher attitudes towards gifted learners and their education have been mixed. In some studies, researchers found that teachers tend to have positive attitudes towards gifted learners (e.g., Adams & Pierce, 2004; Gagné, 1983; Hansen & Feldhusen, 1994). In some studies, however, the researchers found that teachers tend to have more negative attitudes towards gifted learners than other students (e.g., Carrington & Bailey, 2000; Cramond & Martin, 1987), and yet in other studies, ambivalent or contradictory attitudes were reported (e.g., Bartley, 2014; Cross, Cross, & Frazier, 2013; Jung, 2014; Megay-Nespoli, 2001; Morris, 1987; Troxclair, 2013; Watts, 2006).

To better understand these mixed findings, predictors of teachers' attitudes towards the gifted have been examined in many studies (e.g., Bégin & Gagné, 1994a, 1994b; McCoach & Siegle, 2007). Most of these studies have examined how teachers' own self-perceptions and perceived knowledge of giftedness are shaped by their contact with gifted children, the presence of a program for the gifted in the school, or their participation in professional learning for educating the gifted. Using Gagné and Nadeau's (1985) instrument, "Opinions About the Gifted and Their Education Questionnaire", for example, Bégin & Gagné (1994b) found two statistically significant predictors of attitudes towards gifted learners—socioeconomic status and contact with giftedness. These two factors explained 12% and 10% of the variance in attitude scores respectively. The higher the teachers' socioeconomic status and the more contact they had with gifted learners, the more positive their attitudes were towards the gifted. Jung (2014) similarly found that contact with gifted persons and teacher age predict support for special programs/provisions for the gifted, with older teachers more supportive. It is not conclusive, however, what drove these age differences: whether the older teachers were more supportive because they had more experience with gifted learners, whether they had greater opportunities to

participate in professional learning across their career, or whether another explanation could account for the findings. Finally, Lassig (2009) also found that teachers ($N = 126$) who had substantial contact with gifted students had more positive attitudes towards the gifted than teachers in schools where the focus on educating the gifted was more a needs-based arrangement. Moreover, teachers who had received in-service training in gifted education held significantly more positive attitudes with regard to gifted students than teachers without such training.

Negative attitudes towards gifted learners may be associated with cultural beliefs. In an investigation of 132 Korean preservice and in-service teachers' attitudes towards gifted students, Lee, Cramond, and Lee (2004) asked the teachers to rate eight hypothetical students on a list of 23 "desirable" and 23 "undesirable" traits adapted from Tannenbaum's (1962) original attitude questionnaire. The eight hypothesised students were described in varied combinations of athleticism, effort, and academic ability. Both Korean pre-service and in-service teachers rated the average, athletic, and non-studious students as being most desirable; and gave the lowest ratings to brilliant, nonathletic, and studious students. While US teachers in Morris's (1987) early research, instead, reported valuing students for their academic excellence, mixed findings have later been found in western culture in Australia (Bartley, 2014; Jung, 2014), New Zealand (Watts, 2006), and US (Cross, Cross, & Frazier, 2013; Megay-Nespoli, 2001; Troxclair, 2013).

Ambivalent or contradictory attitudes towards the gifted are difficult to explain, and may relate in part to the specific questions asked of the teacher. For example, Troxclair (2013) surveyed 45 US undergraduate preservice teachers about their attitudes towards gifted learners, and found that while the participants held positive attitudes towards the need for support of gifted learners, they were generally resistant to objectives, ability grouping, and acceleration. Similarly, McCoach and Siegle (2007) found that

although training in the education of the gifted was related to more positive attitudes towards the gifted, it was not related to differences in perceptions of appropriate educational provisions (such as differentiation) for gifted learners.

Summary. The research findings about teachers' attitudes towards gifted learners and their education have been mixed, and have ranged from positive attitudes to negative attitudes to contradictory or ambivalent attitudes. Many studies have, however, shown that the attitudes towards gifted students and their education are positively influenced by targeted professional learning, knowledge of giftedness, and regular contact with gifted children. Further investigation into teachers' attitudes towards gifted learners and their education, and the influences that shape teachers' attitudes, is needed.

Teachers' attitudes towards differentiation for gifted learners. While positive attitudes towards gifted learners are important, positive attitudes towards curriculum differentiation for gifted learners are also relevant. Here, the findings are less positive. Although differentiated learning for gifted students has a positive impact on student achievement (e.g., Callahan et al., 2003; Gavin, Casa, Firmender, & Carroll, 2013; Tieso, 2005), Tomlinson (1995) suggests that teachers' approach to differentiation is more likely to be reactive than proactive or pre-planned. Teachers seem hesitant to change learning material, lesson plans of individuals, or evaluation procedures (Callahan et al., 2003; Tomlinson et al., 2003), and, therefore, the use of differentiation for gifted learners is limited in classrooms (Archambault et al., 1993a; VanTassel-Baska & Stambaugh, 2005). In this section, based on gifted learners' readiness and interest (Tomlinson, 2014a), I focus on teachers' attitudes towards acceleration, ability grouping, and pacing as illustrative examples of differentiated practices for the gifted.

Attitudes towards acceleration for gifted learners. Empirical support for acceleration as an academic intervention for gifted learners is extensive (Colangelo et al.,

2004; Colangelo, Assouline, & Marron, 2013; Assouline, Marron, & Colangelo, 2014; VanTassel-Baska, 2010; Wood, Portman, Cigrand, & Colangelo, 2010). However, the strong empirical support for acceleration has not always translated into practice, and acceleration continues to be underused (Assouline, Colangelo, Heo, & Dockery, 2013; Borland, 2009; Colangelo et al., 2004; Missett et al., 2014). Several researchers have found that teachers' negative attitudes may result in non-implementation of acceleration (Hoogeveen, van Hell & Verhoeven, 2005; Townsend & Patrick, 1993; Vialle, Ashton, Carlon & Rankin, 2011).

In an Australian study involving principals, gifted and talented co-ordinators, teachers, parents and gifted students aged 16 years and older ($N = 104$), and using both survey and interview methodology, Gross, Urquhart, Doyle, Juratowitch, and Matheson (2011) highlighted respondents' concern for gifted students' social-emotional development as a key barrier to acceleration. The researchers found that educators in schools and education systems were reluctant to accelerate gifted learners based on the assumption that they will experience difficulties in socialising with older students. The researchers also found that information regarding learning and socio-affective characteristics of gifted students is rarely part of teachers' undergraduate training. They noted that while teachers continue to have concerns about social-emotional outcomes of acceleration, the understanding about social and emotional maturity tends to be applied subjectively based on teacher perceptions of student characteristics such as physical size, uniform performance across all subject areas, and emotional strength.

In a survey of 152 teachers, Siegle, Wilson, and Little (2013) similarly found that acceleration remains an underutilised strategy for meeting the academic needs of gifted students. Although the teachers were generally positive about acceleration, particularly with regards to academic benefits, they were more concerned about social-emotional

development. The teachers also showed reluctance to accelerate based on their perceptions that *others* (i.e., parents and administrators) would not permit it. The researchers also found that the least popular acceleration strategies (grade-skipping and early entrance to kindergarten) were also the easiest to implement; and the most popular acceleration strategies (curriculum compacting, dual enrolment, and subject matter acceleration) required additional teacher time or school resources.

Moreover, teacher self-efficacy (Bandura, 1977) and supportive school systems were found to be important in predicting teacher attitudes and their enactment of acceleration (Rambo & McCoach, 2012). For example, teachers ($n = 337$; Confirmatory Study 2) who were confident in their ability to teach gifted students were the ones who were likely to recommend students for acceleration. On the other hand, teachers who were most influenced by the potential negative outcomes of using acceleration rather than its potential benefits were not supportive of recommending a student for acceleration (Rambo & McCoach, 2012).

Attitudes towards ability grouping for gifted learners. The academic benefits of ability grouping for gifted students are also well documented (Adams-Byers, Whitsell, & Moon, 2004; Chessor & Whitton, 2008; Gross, 1997a, 2006; Kulik & Kulik, 1992; Shields, 2002). Cluster grouping (i.e., 3 to 8 students with similar gifts and talents intentionally placed in the same mixed-ability classroom), when combined with high teacher expectations and differentiated curriculum, has been shown to have positive outcomes for gifted learners (Brulles, Peters, & Sanders, 2012; Gentry, 2014; Gentry & Keilty, 2004; Miller, Latz, Jenkins, & Adams, 2011; Pierce et al., 2011). Ability-grouped classes with flexible membership have also been found to nurture more high achievers and lead to fewer underachievers (Clark, 2013). Despite the evidence, researchers have shown that teachers may have negative perceptions and are reluctant to use ability grouping for

gifted learners (Bain, Bliss, Choate & Brown, 2007; Lewis & Milton, 2005; Plunkett, 2000b). For example, Gross (1997b) asserted that teachers *perceive* that ability grouping leads to elitism, and they believe that gifted students should remain in mainstream classes to act as role models, and gifted students should learn to interact with a broader student population. According to Rogers (1993), ability grouping will also not have positive effects unless it is complemented by differentiated curricula. Thus, despite documented benefits of ability grouping for gifted learners, research suggests that teachers have reservations about implementing this strategy in the classroom. Successful ability grouping programs for gifted learners (e.g., cluster grouping programs) require support, staff professional learning, and fidelity of implementation (Gentry, 2014).

Attitudes towards pacing for gifted learners. Pacing refers to adjustments in the pace of progress through a curriculum, based on the students' readiness or skill level. This strategy is considered one of the most important process modifications for gifted students (Maker & Nielson, 1996; Piirto, 1994), resulting in strong gains in student achievement (Colangelo et al., 2010; Gentry & Fugate, 2013). Like acceleration and ability grouping, however, teachers often do not hold positive attitudes towards the use of this strategy. In a US study, for example, Missett and colleagues (2014) found that teachers did not use pacing consistently in their instruction. This was particularly the case when teachers with a 'group orientation' believed that a group of students in the classroom were less able to master advanced work, and, therefore, they tended to use personalised pacing less frequently. On the other hand, teachers with an 'individual student orientation' tended to use personalised pacing more frequently. This finding is consistent with other studies that teacher beliefs and expectations about student capability, and not students' *actual readiness levels*, influence the instructional choices made in the classroom (Azano et al., 2011; Moon & Brighton, 2008). In addition, often the whole class level of instruction is set

to address mid- or high-achieving students, and the pace is set to address the needs of low-achieving learners (Oakes, 1985; Tomlinson et al., 2003). As such, students of varying readiness levels may be frustrated (Ben Ari & Shafir, 1988). Thus, there is a continuing need to encourage the use of pacing for educating the gifted so that the progress of the curriculum can be varied to meet the needs of gifted learners.

Summary. In addition to positive teacher attitudes towards gifted learners, supportive teacher attitudes towards differentiated learning are also relevant. Studies have shown that teachers are generally hesitant to implement differentiated practices in the classroom. They also tend to have less supportive attitudes towards differentiated provisions such as acceleration, ability grouping, and pacing for gifted learners.

Barriers and Challenges to Teachers' Differentiated Pedagogical Practices

Teachers' attitudes and perceptions about educating the gifted are not only influenced by their beliefs, contact with gifted learners, and their professional learning, but they are also shaped by external barriers and challenges. In Chapter 1, I discussed potential barriers to differentiating learning for gifted learners in the classroom. These barriers may occur for several reasons. First, preservice teachers may not have an awareness of giftedness or an understanding of the various models of differentiation for gifted learners (Watters, Hudson & Hudson, 2013). Watters and colleagues contend that preservice teacher education programs tend to focus on pedagogical practices and present preservice teachers with content, teaching strategies, and assessment procedures related to mainstream education. Despite two Senate inquiries into the state of provisions in gifted and talented education (GATE) in Australia which made recommendations for an increase in pre-service teacher training in GATE, "research continues to suggest that a lack of response and commitment to this area of training persists at pre-service teacher level" (Fraser-Seeto, 2013, p. 35). Watters and colleagues (2013) argue that even where the

programs for educating the gifted are part of the core programs at universities, they are generally lecture-based, and the preservice teachers rarely have opportunities to transfer knowledge into practice. More sustained partnerships between universities and schools, and active engagement with pre-service teachers' voices are needed to provide preservice teachers authentic experiences in differentiation for gifted learners.

Second, lack of supportive leadership and school structures also tend to hamper teachers' enactment of differentiated pedagogical strategies for gifted learners (Hawkins, 2009; VanTassel-Baska & Stambaugh, 2005). For example, many teachers hesitate to weave differentiated practices into their classroom practice because they believe that they lack flexible blocks of time, adequate resources for differentiated learning, and leadership support (VanTassel-Baska & Stambaugh, 2005); and they lack efficacy and consistent ongoing professional learning opportunities (Hawkins, 2009). To this end, a three-year longitudinal study by Brighton, Moon, and Huang (2015) demonstrated that rigid adherence and fidelity to implementation of a commercial reading program also hindered teachers' ability to provide differentiated curricular and instructional provisions. The results indicated that although all readers demonstrated growth in their reading abilities, advanced readers exhibited the least growth. According to Tomlinson (1995), initiatives that require major pedagogical and attitudinal shifts are more likely to be embraced if they arise from teacher reflection over time rather than from the principals. Researchers (Holloway, 2000; Tomlinson, 1995) have argued that judicious principals understand that unless they adopt a more collaborative approach with teachers, provide opportunities for effective professional development and mentoring, and collaboratively develop action plans for school-wide differentiation, positive and long-term change is unlikely.

Given a range of barriers and challenges to teachers' differentiated pedagogical strategies, professional learning for teachers in educating gifted learners is particularly

important. Indeed, numerous studies have revealed a positive relationship between professional learning in educating the gifted and positive teachers' attitudes (e.g., Cashion & Sullenger, 2000; Gross, 1994; Hansen & Feldhusen, 1994; Kronborg & Plunkett, 2012; Lassig, 2009). Significant improvements to teachers' attitudes towards gifted students are reported, particularly with regular follow-ups after the professional learning events, ongoing job-embedded professional learning through 'critical friends' groups, collaborative action learning projects, and peer coaching in schools (Copenhaver & McIntyre, 1992; Feldhusen, Haeger & Pellegrino, 1989; Gross, 1994). Furthermore, significant change in teachers' attitudes occurs primarily after they gain evidence of improvements in student learning (Guskey, 2014). These improvements typically result from changes that teachers make in their classroom practices. Teachers involved in special or in-service training in educating the gifted are likely to be exposed to research findings about the cognitive and affective characteristics of academically gifted students that may challenge or contradict their previous beliefs (Gross, 1997a). Evidence from a number of empirical studies shows that postgraduate training in the education of gifted learners results in greater understanding of the nature of giftedness, characteristics of gifted students, ways to differentiate curriculum for gifted learners, evaluation of their own beliefs and attitudes, and the dispelling of misconceptions about giftedness (e.g., Goodnough, 2001; Lassig, 2009; Kronborg & Plunkett, 2012). Thus, targeted professional learning in the education of gifted learners engenders positive teacher attitudes, gives teachers a deeper understanding of giftedness, and builds teachers' confidence to implement pedagogical strategies that match the needs of gifted learners.

Summary. Studies have shown that lack of supportive leadership and social structures, and inadequate professional learning of teachers in educating gifted learners adversely impact teacher attitudes and hamper successful implementation of differentiated

practices in schools. This highlights a possible role for school principals to encourage, support, and nurture all teachers through supportive leadership and effective professional learning of teachers in educating the gifted.

Conclusion

In this chapter, teachers' attitudes and perceptions of gifted students and differentiated learning were examined, including the barriers and challenges to teachers' differentiated pedagogical practices, and the relationship between professional learning and teacher attitudes. The review of the literature about teachers' pedagogical practices for gifted learners indicated that teachers seem hesitant and less supportive to differentiate learning in classrooms, including the use of provisions such as acceleration, ability grouping, and pacing. Further, there is a paucity of research about teachers' attitudes and perceptions of giftedness and differentiated practices through the perspectives of principals and gifted students. Given that the findings about teachers' attitudes towards gifted learners and differentiation are mixed, and there is no comparative study about teacher, student, and principal perceptions of differentiated learning for gifted learners to date, it is important that future research investigates perceptions of giftedness and differentiated practices from the perspectives of teachers, students, and principals together. This thesis specifically examines teachers', students', and principals' perceptions of differentiated pedagogical strategies.

In the next chapter, the review of literature concerning students' voices and perceptions of differentiated learning, classroom engagement, and effective teachers is presented.

CHAPTER 4

GIFTED STUDENTS' VOICES, PERCEPTIONS AND PERSPECTIVES

In this chapter, I examine the literature about engaging with gifted students' voices, and their perceptions of differentiated learning, classroom engagement, and effective teachers. First, I review the literature about engaging with student voice. I build on the learner-centred philosophy I have outlined in previous chapters by discussing theoretical frameworks of partnerships between teachers and students. I also highlight the role of school leadership in enabling student voice. Second, I review the very limited literature in which gifted students are asked about their own educational experiences. I consider gifted students' perceptions of differentiated pedagogical strategies, and their perspectives of classroom engagement and effective teachers.

Student Voice: Perceptions and Perspectives

The concept of "student voice" has increasingly been discussed in the school reform literature. Definitions vary, from seeking input of students for improving student outcomes, enhancing teaching and learning, and fostering whole school improvement (Fielding, 2001, 2012; Mitra, 2003, 2004); to conducting participatory research in which students contribute to the research question being addressed (Mockler & Groundwater-Smith, 2015); to encouraging students to collaborate with adults in making key educational decisions that affect their learning (Flutter & Rudduck, 2004). Central to all these definitions, however, is the notion that student voice should be used to transform learning and teaching.

Proponents of student voice argue that the opportunity to be heard is the essential right of any child, as enshrined in the United Nations Convention on the Rights of the Child (United Nations, 1989). To realise this right, Lundy (2007) suggests that children must be provided the opportunity to express their views on matters that influence them; an

audience who will listen to their views; and some means by which their views will be acted upon, as appropriate. In turn, Mockler and Groundwater-Smith assert “the necessity of engaging with young people in ongoing and authentic dialogue if we are to realise the democratic, pedagogical and social aims of education in the twenty first century” (2015, p. 5).

In the first part of this section below, the notions of student voice and of student-teacher partnerships are discussed. In the second part, the role of school leadership in enabling student voice is examined. In the third, fourth, and fifth parts of this section, the literature about gifted students’ perceptions of differentiated pedagogical strategies, classroom engagement, and qualities of effective teachers is reviewed. There is a paucity of empirical studies about the impact of gifted students’ participation in school decision-making.

Student voice and student-teacher partnerships. A central characteristic of student voice, as articulated above, is the notion that it should lead change at a whole school level. West (2004) argues that student voice is not simply about communicating ideas or seeking opinions; it is about having the power to effect change. Mitra (2006, p. 459) in turn suggests that student voice provides students “the opportunity to actively participate in school decisions that will shape their lives, the lives of their families, and the lives of their peers”. Empirical research with mainstream students demonstrates how such change is possible. In a series of six studies conducted with students and teachers from 48 primary and secondary schools, for example, Rudduck and McIntyre (2007) sought to share with teachers their students’ perspectives about teaching and conditions of learning in the classroom. The study revealed that teachers subsequently demonstrated enhanced pedagogical practices. Students also experienced stronger self-esteem, enhanced attitudes to school and learning, stronger sense of membership, stronger student-teacher

relationships, and new skills for learning (Rudduck & McIntyre, 2007). Improvements in teaching, curriculum and teacher-student relationships (Rudduck, 2007), teacher preparation (Cook-Sather, 2002), and school strategic planning (Eccles & Gootman, 2002; Zeldin, 2004) have also been reported as a result of teachers' engagement with students' voices.

If student voice is viewed as an agent of change in schools, then collaborative partnerships between students and teachers are a natural progression. In these partnerships, students are invited to work with teachers as "researchers and co-enquirers" in the classroom (Jackson, 2005, p. 5), that is, to investigate educational problems and research questions, and participate in pedagogical decision making. Various models and typologies have been presented to suggest how such collaborative partnerships might be fostered. While Hart (1992) uses the metaphor of a ladder, for example (with higher rungs signifying greater participation), Mockler and Groundwater-Smith (2015, p. 46) suggest that this metaphor "undermines the notion that different approaches to participation by young people...are not inherently preferable to others". Authentic partnerships can be formed in a variety of ways as long as the ideas emerge from both young people and adults. Similarly, Shier's (2001) suggestion that students answer a series of questions to determine their own readiness for participation, with readiness determined according to five levels, is also strongly hierarchical as student participation is framed "in relatively narrow terms of procedures and obligations" (Mockler & Groundwater-Smith, 2015, p. 48).

Perhaps the most comprehensive framework identified in the literature is Fielding's typology, "*Patterns of Partnership*" (Fielding, 2011, p.67), in which six forms of interaction between adults and young people are articulated (see Table 4.1).

Table 4.1

Fielding's "Patterns of Partnership" Typology

Patterns of Partnership	Description
6. Intergenerational learning as lived democracy	Shared commitment to/responsibility for the common good
5. Students as joint authors	Students and staff decide on a joint course of action together
4. Students as knowledge creators	Students take lead roles with active staff support
3. Students as co-enquirers	Staff take a lead role with high-profile, active student support
2. Students as active respondents	Staff invite student dialogue and discussion to deepen learning/professional decisions
1. Students as data source	Staff utilise information about student progress and well-being

This typology is significant in a number of ways. First, it distinguishes the different ways in which students, teachers and school leaders can work together in the complex school environment. Second, it is “rooted in a desire to foster authentic, intergenerational democracy” (Mockler & Groundwater-Smith, 2015, p. 48). Third, it moves well beyond Shier’s vision of students sharing power to the development of a “shared responsibility for the common good” (p. 48) which might involve students and educators in a generative partnership and participation on all the six levels at different times. Using this framework, student voice can be more readily *heard* and *enacted* in schools for improvement in teachers’ practices, transformation of student-teacher relationships, and stronger student engagement in higher-order thinking and problem solving experiences. Fielding’s framework is more resonant with learner-centred approaches to learning in which students

and teachers work as co-enquirers, knowledge creators, and joint authors; and share responsibility for the common good—one of the key outcomes of *differentiated learning*, conceptualised as “wisdom development” in Chapter 2.

Summary. Collaborative student-teacher partnerships are key to enhanced student outcomes, productive relationships, and whole school improvement. Although a full investigation of student-teacher partnerships is beyond the scope of this thesis, interested readers are directed to Fielding’s framework, “Patterns of Partnership” (2011), which is arguably the most comprehensive framework identified in the literature. It provides explicit ways in which students, teachers, and school leaders can work together in fostering and engaging with student voice. The framework resonates with learner-centred approaches to learning so that students and teachers can engage in, what Fielding (2011, p. 67) calls, “intergenerational learning as lived democracy”.

Student voice and the role of school leadership. The role of school leadership is critical in enabling student voice in schools. Effective school principals promote student voice in schools so that it transforms into a “liberating force for student engagement” (Beaudoin, 2005, p. 1). They promote learning partnerships between teachers and students. As Beaudoin points out, “By elevating student voice to its rightful status, we can change the way students view their learning, themselves, and school... which can lead to greater achievement” (p. 5). When school principals encourage active student participation in the school reform process, students become “producers of school outcomes” rather than remain “consumers of knowledge” (Perkul & Levin, 2007, p. 712).

According to Mitra, Serriere, and Stoicovy (2012), the relationship between teachers and the school principal is a crucial context for enabling student voice. Such relationships enable a clear vision of the school that is anchored and permeated into practice, support teachers’ ability to choose to participate in reform activities when

possible, and encourage the recognition that implementation will vary across contexts. Consistent with these benefits, Smyth (2006, p. 282) recommends the following leadership actions to promote student voice: (a) giving students significant ownership of their learning in meaningful ways, (b) supporting teachers and schools in sharing control with students, (c) fostering an environment in which people are accorded respect and trust, (d) delivering a curriculum that is relevant to students' lives, (e) promoting flexible pedagogy that addresses the complexity of students' lives, and (f) celebrating school cultures that embrace students' lives regardless of their backgrounds. Future research is needed to broaden understanding of how leadership practices can influence teacher attitudes and shape school culture in promoting gifted student voices in schools.

Summary. There are limited studies examining the role of school leadership in enabling gifted students' voices. These limited studies have, however, shown that effective school leadership is a great enabler of student voice in schools. Effective principals foster a supportive learning environment for promoting student voice, influence teacher attitudes, and support teachers in working with students as learning partners.

Gifted Students' Perceptions and Perspectives

The research about gifted students' perceptions of differentiated strategies is also extremely limited. According to Gallagher, Harradine, and Coleman (1997), for example, "Few researchers have asked students directly whether their intellectual or academic needs are being met or whether they are receiving challenging work commensurate with their ability level" (p. 132). Gifted students may also mask their talents due to their vulnerability to criticism from others (Gross, 1994), and may be less likely to initiate conversations about their learning needs themselves. In this section, I review the limited research that *does* investigate gifted students' perceptions of pedagogical practices, and their perspectives of classroom engagement and the qualities of an effective teacher.

Gifted students' perceptions of differentiated pedagogical strategies. In studies that have been conducted to date, gifted students often report a discrepancy between the pedagogical approaches they prefer and those used by their teachers (Gross et al., 2011; Hertzog, 2003; Vialle et al., 2001). In a series of three studies on acceleration synthesised by Vialle and colleagues (2001), for example, 91% of Australian students (Years 8, 9 and 10) surveyed ($N = 33$) in a selective high school (Bateman et al., 1997, in Vialle et al., 2001) preferred to set their own problem to solve, and 97% of the students wanted to skip content they had already mastered. However, only 25% of the students indicated that such opportunities were provided by their teachers. Instead, according to the students, teacher-centred pedagogies were more often used than problem-based, student-centred approaches to learning.

Gifted students' perceptions of acceleration are mixed. While gifted students report greater engagement, challenge and academic achievement when accelerated, and also report productive social connections and positive perceptions about themselves and their school experiences (Gross et al., 2011; Vialle et al., 2001), they highlight some challenges arising out of acceleration. Central among these challenges are the stigma of being in a special program for the gifted, a feeling of being different, a sense of antipathy from peers, and the likelihood of bullying and intimidation (Gross et al., 2011; Hertzog, 2003). In a similar vein, Gross and colleagues (2011) report a general reluctance by schools and education systems to accelerate gifted learners: not because of any apprehension about students' inability to cope with work, but rather based on teachers' assumptions that they will experience difficulties in socialising with older students. Both students' and teachers' fears may be unfounded, however. The researchers recommended that teachers should be given ready access to the findings of international research which demonstrate that gifted

students in general, “differ from their age-peers not only intellectually but also in their social and emotional development” (Gross et al., 2011, p. 48).

Similar to the provision of acceleration, gifted students’ perceptions of grouping strategies are also mixed. Adams-Byers and colleagues (2004), for example, investigated gifted students’ perceptions about the academic and social/emotional effects of homogeneous and heterogeneous grouping in Years 5-11. The participants reported positive perceptions about homogeneous grouping, believing they learnt more in the challenging environment. However, to maintain contact with the non-gifted friends during the school day, gifted students also valued the social diversity of heterogeneous classes. Similarly, in a longitudinal study of 99 “statistical twins” in Years 5-6 (i.e., students in regular and special classes for the gifted, with similar backgrounds), Vogl and Preckel (2014) found that students in classes for the gifted exhibited more positive interest in school, and reported better student-teacher relationships than their counterparts in regular classes. This may be because homogeneous classes offer more opportunities for demanding tasks that are based on individual interests (e.g., Rogers, 2007). As noted in Chapter 2, challenge and choice were outlined as key factors for optimal student engagement.

Finally, gifted students report a strong desire for complexity in their learning (Gentry & Owen, 2004; Kanevsky, 2011; Matthews & Kitchen, 2007). In Gentry and Owen’s (2004) large study of 7411 American secondary students (grades 7-12), for example, students in advanced placement and honours courses indicated more support for the CFA-derived constructs, *challenge* (i.e., rigour, depth, and complexity) and *meaningfulness* (i.e., relevance of content and methods to students’ lives), than did general course students. Similarly, in Kanevsky’s (2011) study of students in Years 3-8 (416 gifted, 230 mainstream), students identified as gifted were more willing to learn complex

topics, sophisticated knowledge, and interconnections among ideas than were mainstream students. Interestingly, the academic programs offered to gifted students do not appear to affect their desire for complexity. Matthews and Kitchen (2007) compared the experiences of students enrolled in a gifted program ($n = 450$), an international baccalaureate program ($n = 250$), and a high-ability program with science enrichment ($n = 240$). The researchers found that gifted students in all three groups expressed strong satisfaction with their rigorous academic programs.

Summary. Notwithstanding the relative paucity of research about gifted students' perceptions about differentiated provisions, the few studies that have been conducted to date indicate that gifted students prefer challenge, choice and complexity in their learning. Moreover, they favour an invigorating learning environment that promotes their autonomy. The studies also indicated that despite some challenges, particularly in regards to prevalent assumptions about socialising with older students, gifted learners are generally supportive of acceleration and ability grouping because of increased stimulation and academic achievement they might experience.

Gifted students' perspectives of classroom engagement. The research about gifted students' perspectives of engagement in classrooms is also limited. As inferred in the previous section, researchers have found that gifted students' classroom engagement is related to rigour and challenge in their learning, and caring teachers with sound pedagogical approaches (Delisle, 2012; Kanevsky & Keighley, 2003). In a study involving more than 4,000 students who provided more than 10,000 unique responses in 2004, Delisle (2012) re-examined primary and secondary students' responses to questions about the learning process and life in school. Responses were clustered into five themes: control, complexity, common bonds, choice, and caring teachers, and were labelled the "5 Cs of Student Engagement". Whereas some of these "5 Cs" relate directly to curriculum and

instruction, others align more with the attitudes of the teacher and the atmosphere created in the classroom. Gifted students' perspectives of the "5 Cs" of student engagement were instructive. Delisle found that for gifted learners, "control" refers to a desire to get their intelligence respected and their needs served in school. One student stated that, for example, "School isn't flexible enough to allow me to grow as an individual" (p. 64). Gifted learners also sought complexity and challenge, with one student musing, "Why do teachers assume at the beginning of the year that we have lost all knowledge from previous years?" (p. 65). Their desire to foster "common bonds" with their teachers and peers was strong, and they preferred to be given choices in their learning that were relevant to their needs. Finally, the gifted students were adept in identifying teachers who truly love their craft and are caring. As one student noted, "I think of these teachers as the ones that you remember when you get older" (p. 67).

The "5 Cs" identified in Delisle's research resonate with Kanevsky and Keighley's (2003) "5 Cs" of learning discussed earlier in this chapter (i.e., control, choice, challenge, complexity, and caring) for engaging gifted learners. Engaging with students' voices was found to be foundational in providing high-quality learning experiences. More than this, however, students articulate how teachers are instrumental in inhibiting or supporting these critical engagement factors. Students also display the ability to recognise when teachers are and are not supportive. By seeking students' own perceptions of their learning in this way, new avenues to high-quality learning experiences are, therefore, highlighted.

Summary. Gifted students tend to be more strongly engaged when they are challenged, given more control over their learning, and interact with understanding and caring teachers. More research is, however, needed about gifted students' perspectives of classroom engagement.

Gifted students' perspectives of the qualities of an effective teacher. While gifted students identify intellect and content knowledge as important teacher characteristics, they also value personal attributes like passion for subject, enthusiasm, sense of humour, and respect for students (Eilam & Vidergor, 2011; Maddux et al., 1985; Mills, 2003). A number of early studies concerned themselves with determining whether intellect or personal characteristics of teachers are valued *more* highly, and the findings were mixed. Among 459 gifted Israeli students in primary school, for example, Milgram (1979) found stronger preferences for teacher intelligence than for creativity or personal-social characteristics. Amongst 98 gifted American students in high school, Maddux and colleagues (1985), instead, found stronger preferences for personal-social characteristics rather than cognitive characteristics.

While both personal and cognitive characteristics of teachers are typically rated more important by gifted students than are pedagogical dimensions (Eilam & Vidergor, 2011; Mills, 2003), research methodologies can also lead to variation in findings. In a large cross-cultural study, for example, Vialle and Tischler (2009) examined the perceptions of high school students in Australia, Austria, and America with quantitative rating scales and qualitative questions. When students were asked to rate on a scale ideal teacher characteristics, gifted students in all the three cohorts demonstrated a preference for the personal-social characteristics rather than the intellectual characteristics. However, when asked to respond to a specific question, '*What makes an effective teacher?*', these same students shifted the focus from personal-social characteristics to pedagogical approaches.

Whereas Vialle and Tischler (2009) employed scales about ideal characteristics of teachers of the gifted to determine student preferences, Gentry et al. (2011) asked gifted students to identify and describe exemplary teachers in their schools. Eighteen teachers were then interviewed. Four common characteristics emerged: (a) personal knowledge of,

and interest in, their students; (b) high expectations for themselves and their students; (c) the ability to make content and learning meaningful and relevant, and respect students' choices; and (d) a passion for their students, teaching, and content area. Interestingly, the researchers noted that the teachers who were identified as exemplary by their students were not necessarily perceived this way by their school leaders. Thus, multiple sources (including *students' perceptions*) need to be considered when evaluating teacher effectiveness.

Summary. When asked to rate qualities of an effective teacher, gifted students report both cognitive and personal characteristics. These characteristics include not just intelligence but also attributes like caring and compassion, sense of humour, enthusiasm and passion, and respect for students. When asked specifically about *what makes an effective teacher*, however, gifted students instead shift their focus to the pedagogical strategies of their teachers. While further empirical studies about gifted students' perceptions of the qualities of effective teachers are needed, it is clear that cognitive characteristics, personal characteristics, and pedagogical strategies are all important.

Conclusion

There is a paucity of research about gifted students' perceptions of teachers' differentiated pedagogical strategies, classroom engagement, and the qualities of effective teachers of the gifted. The significance of engaging with gifted students' voices, using Fielding's typology, was highlighted as a valuable resource for improving student outcomes, enhancing teaching, and contributing to whole school improvement. Notwithstanding this, the very limited number of studies engaging gifted students as "co-researchers" and co-learners was also noted. Many scholars have provided insights into gifted students' perceptions about their academic needs and motivation, however, the researchers have relied heavily on foregrounding gifted students' perceptions as *subjects* of

their studies. By omitting student voice from the research design and methodology, it is possible that the questions asked about differentiation are not those that are of primary importance to the gifted students themselves. In this study, I attempt to address this methodological gap by engaging gifted students as learning partners and “co-researchers”. I discuss this process in Chapter 6 (Method).

In the next chapter, I review what is known already about principals’ understanding of school-wide differentiated learning for gifted learners.

CHAPTER 5

PRINCIPALS' PERCEPTIONS, UNDERSTANDING, AND LEADERSHIP ACTIONS FOR DIFFERENTIATED LEARNING OF THE GIFTED

I report in Chapter 2 that principals' learner-centred leadership is important for school-wide differentiated learning of gifted learners. To date, however, there is little empirical research which considers the principals' perceptions that underpin these leadership actions. These perceptions of giftedness and educating the gifted are critical, as beliefs and perceptions ultimately drive actions and facilitate behaviour change. Thus, I consider each of these issues in turn. First, I discuss the importance of leadership for school-wide differentiated learning of the gifted. Second, I discuss what is known to date about principals' understanding of school-wide differentiation for gifted learners, and third, I outline their understanding of specific leadership actions in implementing school-wide differentiation for gifted learners.

In the final section of this chapter, I synthesise findings related to teachers' perceptions (Chapter 3), students' perceptions (Chapter 4), and principals' perceptions (Chapter 5) of differentiated practices for gifted learners. I conclude by identifying research questions for the current study, which aims to compare teacher, student, and principal perceptions for the first time.

Leadership for School-wide Differentiated Learning of the Gifted

In previous chapters, I highlighted the importance of teachers' and students' perceptions and perspectives of differentiated pedagogical strategies for gifted learners (see p. 54, p. 66). Differentiated learning at the whole-school level is more difficult to achieve, however. It is not always implemented in schools successfully without effective leadership. Research scholars contend that principals play a pivotal role in enacting and

sustaining school-wide differentiation. Tomlinson and colleagues (2003), for example, assert:

Research has suggested clearly that, while an argument [for differentiation] may be promising, there is considerable distance to span before the argument translates into pervasive practice. It is the case that, currently, few teachers make significant changes to teaching and learning outcomes in response to learner variance. Research and theory on change in schools indicates that such a scope of change is profoundly difficult, calling for persistent, sustained leadership and support for the change. (p. 135)

Effective school principals ensure that teachers align and differentiate content, process, product, and environment to meet the needs of gifted students (Maker, 1982, 1986; Heacox, 2002); while also offering professional learning opportunities to teachers (Dettmer & Landrum, 1998; Hansen & Feldhusen, 1994; Gubbins et al., 2002; Reis & Westberg, 1994). The attitude of leaders themselves is also important. According to Tomlinson et al. (2003), principals must commit to reshaping the school culture by continually building their understanding of particular student groups and individuals, by helping teachers to build their own understanding of how particular students learn, and by facilitating teachers' important role in meeting differentiated needs of gifted learners. In a qualitative study, for example, Hertberg-Davis and Brighton (2006) interviewed and observed principals at three middle schools. The researchers found that principal support played a key role in teachers' willingness and ability to differentiate learning. Principals who were successful in encouraging teachers to differentiate exhibited a desire for change and the belief that change is possible. These principals provide critical support and long-term vision of implementation that teachers require to effectively differentiate learning in their classrooms. Thus, the limited research that does exist shows that principals play a significant role in leading school-wide differentiation for gifted learners.

Principals' Understanding of School-wide Differentiated Learning

School principals' understanding of differentiated learning for gifted learners is essential for implementing effective school-wide differentiation (i.e., across the whole school). Principals with a deep understanding of differentiation actively promote teachers' differentiation in classrooms (e.g., Affolder, 2003; Hertberg-Davis & Brighton, 2006). They understand the need for school improvement and innovation, and actively engage in initiating, implementing, and sustaining the change process. They demonstrate a deep understanding of the complexity of change that is needed in schools. Effective principals understand that learners differ in their abilities and strengths, and differentiation simply takes into account those differences (Tomlinson, 2014a). In this section, I review research examining principals' understanding of differentiation for the gifted. I focus first on differentiation in the classroom, and next on processes of whole school change that enable differentiation for gifted learners.

Understanding of differentiation for gifted learners. The review of the literature shows a growing body of research related to leadership in special education (e.g., Bays & Crockett, 2007; Billingsley, 2005; Christensen, Siegel Robertson, Williamson, & Hunter, 2013; Wakeman, Browder, Flowers, & Ahlgrim-Dezell, 2006). There is also substantive work on leading differentiation for all learners in schools (e.g., Tomlinson & Allan, 2000; Tomlinson & Imbeau, 2010; Tomlinson & Murphy, 2015). However, there is limited research addressing principals' knowledge and skills in the education of gifted learners.

As shown in Chapter 1, the limited research that does examine the role of leadership in school-wide differentiation shows that principals with deep understanding of differentiation for gifted learners are more effective in bringing substantive changes in teachers' practices (Affolder, 2003; Brighton, Hertberg, Callahan, Tomlinson, & Moon, 2005). In a mixed-method study in nine US middle schools, Brighton and colleagues

(2005) found that a principal can have a profound effect upon the willingness of the school as a whole to participate in implementing differentiation. In those schools where principals actively participated in staff professional learning sessions, were strong advocates of differentiation, provided incentives for teachers to undertake professional learning, and gave teachers extra planning time to work on differentiation, those teachers were more likely to participate in professional learning themselves. The teachers also showed more growth in their understanding and implementation of differentiated instruction or assessment. While principals' advocacy was important for teachers to confront their existing attitudes and change their practices, however, the researchers noted that few principals possessed a deep understanding of differentiation to recognise any misinterpretation of differentiation themselves. As a result, most principals were unable to provide specific feedback on teachers' use of differentiation, or guide them to the next level of differentiated practice. Those few principals who did possess a deep understanding of differentiation were found to be more effective than other principals in engaging teachers in a dialogue about their teaching, and providing meaningful feedback; thus highlighting the importance of principals' leadership in implementing school-wide differentiation (Brighton et al., 2005).

In a case study of 12 primary school principals, 26 teachers and a school board member in Kansas, USA, Affolder (2003) similarly found that a principal's knowledge and understanding of differentiated learning plays a crucial role in implementing differentiation across the school. The researcher interviewed the participants and found that the leadership at school and district levels had a common understanding of differentiation, used the same vocabulary in describing the innovation, and were aware of recent literature and research on effective instruction. In addition, school principals and teachers each recognised the importance of time for reflection, collaboration, and planning;

resources; and personnel to support the implementation of differentiation. The study also revealed that most of the instructional strategies and management tools recommended for high ability students were being utilised to meet these students' needs in inclusive classrooms. The study demonstrated that a principal's role in leading school-wide understanding and implementation of differentiated learning is vital.

While principals' own knowledge of educating gifted learners and differentiation is important (Hertberg-Davis & Brighton, 2006; Tomlinson et al., 2008), the limited research conducted to date shows that leadership programs designed for principals often do not include any training in the education of gifted learners. For example, McHatton, Boyer, Shaunessy, Terry, and Farmer (2010) asked 61 school principals whether their leadership preparation programs built the skills and knowledge they needed to effectively work with children in gifted programs. The majority (63.9%) of the participants indicated that their preparation programs did not contain any courses related to educating gifted learners. At the same time, more than three quarters of the participants did not want additional professional development in educating the gifted. While the principals did not explain why this was the case, the researchers noted that the principals may have felt they could already meet the needs of gifted learners without formal training. Consistent with this suggestion, more than half of respondents without formal training agreed or strongly agreed that they were already well prepared to deal with issues specific to education of the gifted. According to McHatton and colleagues (2010), some principals might also be reluctant to engage in further training due to their already overwhelming workload. Given that no studies to date have compared school principals' perceptions before and after training in educating the gifted, it is not possible to know whether or not these perceptions would change as a consequence of training. Notwithstanding some reluctance on the part of some

principals, the limited studies that do exist highlight the importance of professional learning for principals to gain a deeper understanding of giftedness.

Understanding processes of whole school change to enable differentiation for gifted learners. A lasting organisational transformation requires change in its stakeholders' beliefs and attitudes as well as practices (Fullan, 2001). If practices are changed without changing beliefs and attitudes, then the organisation will quickly revert to old practices (Fullan, 2001; Schlechty, 1997). While successful school principals must understand procedures for implementing differentiation programs in schools, they must also demonstrate understanding of whole-school change (Tomlinson & Allan, 2000). Effective principals understand that they need to develop a school climate and culture that fosters strong, integrated services for students across the school, including those who are gifted (Lewis, Cruzeiro, & Hall, 2007). While change can be difficult, slow, and uncertain, Tomlinson and Allan (2000) suggest that effective principals make differentiation the focus of school change, ensure that differentiation is implemented at a systemic level to make it meaningful across the whole school, and make certain that differentiated instruction by teachers is responsive to student readiness, interest, and learning profile. At the same time, school-wide transformation cannot be shaped by any standard template or blueprint for change. The notion of complexity and ambiguity of change is also highlighted by Fullan (1991):

Change is difficult because it is riddled with dilemmas, ambivalences and paradoxes. It combines steps that seemingly do not go together: to have a clear vision and be open-minded; to take initiative and empower others; to provide support and pressure; to start small and think big; to expect results and be patient and persistent; to have a plan and be flexible; to use top-down and bottom-up strategies; to experience uncertainty and satisfaction. (p. 350)

Given this complexity, principals must understand that the pathway to whole-school change for gifted learners may be marked by ambiguity, tension, and challenges (Duke, 2004; Evans, 1996; Fullan, 2001; Saphier, King, & D'Auria, 2006).

Finally, principals must understand *how* to successfully navigate and implement the change process. Although there is a paucity of research about how principals implement differentiate school-wide differentiation for gifted learners, I can glean insights from leadership literature more generally. Thus, to become effective change leaders (e.g., leading the change initiative of *school-wide differentiation for gifted learners*), principals must be resolute in bringing change, motivate their teachers, and build collective capacity of teachers to collaborate with one another (Fullan, 2011). Principals must actively participate as learners in helping the organisation improve (Fullan, 2011). The principals “who do not take the learner *stance* [italics in original] themselves do not learn from day to day, no matter how many years of ‘experience’ they may accumulate” (Fullan, 2016, p. 134). In their meta-analysis based on principal leadership, Marzano, Waters, and McNulty (2005) identified “principal as a change agent” as one of the key responsibilities, and found that it had a moderate correlation with student academic achievement ($r = .25$). Successful principals also monitor and evaluate change towards differentiation in schools; use multiple data sources and formats; conduct comprehensive qualitative and quantitative data analysis; and both privately and publicly use evaluation data for affirmation, reorientation, and celebration of differentiated learning for gifted students in schools (Tomlinson et al., 2008).

Summary. There is limited research about the school principals’ understanding of differentiated learning for gifted students. This understanding is crucial for enacting school-wide differentiation. However, existing research shows that principals often lack the necessary training and preparation for enacting differentiated learning to support

teachers and gifted learners in schools. The studies also show that, to a large extent, principals do not possess a thorough understanding of leading differentiation for gifted learners across the school. Further empirical research is needed to investigate the impact on principals of professional learning for enhancing their understanding of educating the gifted.

Principals' Understanding of Leadership Actions for School-wide Differentiated Learning

Above I note the relative lack of research examining principals' understanding of school-wide differentiation for gifted learners. There is also limited research examining principals' understanding of leadership actions for differentiated learning of gifted students in the school setting. However, research literature about leadership for differentiation more generally demonstrates the key role that principals play in implementing school-wide approaches to bringing change in pedagogy, curriculum, staff development and student learning. Effective principals make clear to the school community that change is vitally important in today's classrooms. According to Tomlinson and Allan (2000), change is imperative in today's classrooms if educators are to remain relevant in the ever-changing knowledge society, and to effectively develop productive and engaged learners. Effective principals form a powerful guiding coalition of teacher leaders based on trust (Bryk & Schneider, 2002; Hiebert & Klatt, 2001), develop a shared vision in concert with the school community (Tomlinson & Allan, 2000; Zepeda, 2013), and communicate the change vision to all stakeholders (Marzano et al., 2005; Tomlinson et al., 2008). Effective principals also enable student voice (Mitra, 2007; Gentile, 2014), foster collective capacity and effectiveness of teachers (Danielson, 2006; Fullan, 2006; Robinson, 2011; Sykes, 1999; Tomlinson et al., 2008), empower teachers to act on the vision for change, and eliminate obstacles to change (Kotter, 1996; Tomlinson & Allan, 2000). Successful

principals plan for, and generate, short-term wins (Kotter, 1996, 1998); consolidate improvements and produce more change (Tomlinson & Allan, 2000); and embed new practices into the school culture (Fullan, 2006; Kotter, 1995). Notwithstanding the paucity of research about leadership for differentiated learning of the gifted, the importance of principals having an understanding of leadership actions more generally for school-wide differentiation in the classroom is presented below:

Establish change as an imperative. Effective school principals have the knowledge and awareness of current practices in the school and use this situational awareness to establish that change is imperative in today's classrooms (Tomlinson & Allan, 2000). Effective school principals identify viable reason for change, generate dissatisfaction with the status quo, eliminate complacency, and make explicit connections with high student achievement outcomes (e.g., Fullan, 2014). Thus, it can be inferred that for leading the change initiative, that is, differentiated high performance learning for the gifted in schools, effective principals ensure they establish the shared need for school-wide differentiation for the education of gifted learners. They understand that innovation or change is not the goal, but a means to a broader end (Tomlinson & Allan, 2000), that is, maximising individual capacities of gifted learners and achieving high performance outcomes.

Form a powerful guiding coalition. Effective principals understand that a strong guiding group of teacher leaders is needed—one with the right composition, level of trust, and shared goals—to propel change in schools. Kotter (1996) notes that four key characteristics are essential for building effective guiding coalitions: having enough key players on board; ensuring the members have the required expertise so that informed, intelligent decisions are made; building credibility by having enough people with good reputations; and including enough proven leaders in the group to be able to drive the

change process. Both management and leadership skills are needed in the development of a guiding coalition (Kotter, 1996). These skills must work in harmony, teamwork style. For example, a school principal might keep the whole process of differentiation for the gifted operational by using management skills, while she or he might lead the change process by deploying leadership skills. Effective principals understand that building a powerful guiding coalition requires a team based on trust and a common goal (Bryk & Schneider, 2002).

Develop a shared vision. Successful principals recognise that transformational change rests on the meaningfulness and communication of the school's vision—a compelling picture of the future that is relatively easy to communicate. Effective principals understand the importance of clarity of vision which they share with their colleagues (Fullan, Cuttress, & Kilcher, 2005). Principals need to develop a clear, justifiable, and compelling vision for school-wide differentiation (Tomlinson & Allan, 2000) that, for example, explicitly connects this vision with high performance outcomes of gifted learners. Further, more than one leader needs to embrace the vision, and a principal at the pinnacle of influence in the school has a great opportunity “to inspire and focus others with a carefully conceived and thoughtfully articulated vision” (Tomlinson & Allan, 2000, p. 52). Thus, an effective principal ensures that teachers understand, for example, the effects and benefits of school-wide differentiation for gifted learners.

Communicate the change vision. Effective principals also recognise that the time and energy required for effective vision communication are directly related to the clarity and simplicity of the message. Focused, jargon-free information can be communicated to large groups of people easily and effectively. Effective communication about differentiation needs to be directed to the entire school community, not just teachers and students (Tomlinson & Allan, 2000). When communicating with parents and the wider

community, the principals and other school leaders could help them understand how using the differentiated approach to learning could serve their children's individual needs better. Thus, successful principals ensure, for example, that they communicate with the whole school community regularly through formal and informal channels about the advantages of school-wide approaches to differentiation for gifted learners. These communiqués could take many different forms such as differentiated assignments, parent conferences, and use of annual reports containing information in plain English about how differentiated learning has led to student growth (Tomlinson & Allan, 2000).

Enable student voice. There is a paucity of research about the principal's role in enabling student voice, particularly gifted students' voices. According to Mitra (2007), student voice initiatives in schools thrive when the school leader believes in the efficacy of student voice and encourages embedding student voice in school-wide learning. However, many barriers remain at school and system level in providing opportunities for student voice. Gentile (2014) examined eight high school principals' perceptions of the concept of student voice and its role in transforming pedagogy. The principals reported that often their "best" teachers did not regularly engage with student voice in their practices. Barriers to student voice included accountability requirements (e.g., focus on content coverage so that students are successful in standardised tests), fear of vulnerability, and difficulty shifting traditional role of students and teachers. The principals identified the need for additional training for engaging with student voice. Further investigation is needed into the impact of principals' leadership actions for enabling *gifted* students' voices in schools so that teachers and students can work together as learning partners.

Foster collective capacity of staff. Successful school principals recognise the importance of organising, and participating in, effective professional learning for teachers that is focused on the learning needs of students (Danielson, 2006; Leithwood & Seashore

Louis, 2012; Robinson et al., 2008). Professional learning that is centred on student learning impels teachers to own responsibility for the success of each student (Robinson, 2011; Schmoker, 2006; Taylor, Baskerville, Bruder, Bennett, & Schulte, 2006), and engages them to support and motivate student learning (Fullan, 2006). Successful principals understand that effective teacher professional learning is embedded in practice, is aligned to clear and specific goals for gifted students' learning, and is focused on high-quality curriculum and instruction as the starting point for meaningful differentiation. The principals ensure that teachers understand the characteristics of high-quality curriculum and instruction such as developing essential understandings and skills of the disciplines, providing choices, connecting with students' lives and the real world, and involving students in setting goals for their learning and assessing progress towards their goals (Tomlinson & Allan, 2000). Effective principals participate as *lead learners* with teachers and encourage teachers to engage in professional learning which is research-based and data-informed, is organised around collaborative problem solving, and is ongoing and supported (Fullan, 2016; Hargreaves & Fullan, 2013; Robinson, 2011; Tomlinson et al., 2008; Tomlinson & Allan, 2000; Wood & Peterson, 2015). Thus, it can be inferred from these studies more generally that effective principals recognise the importance of providing regular opportunities for quality professional learning to their teachers for educating gifted learners.

Empower staff to act on the vision and eliminate obstacles to change. Effective principals also understand that building grassroots support for differentiated learning in schools is important for success (Tomlinson & Allan, 2000). Clear articulation of the concept of differentiation and the provision of teacher support bring “enormous relief to reduce the isolation of teaching by having located soulmates” and build most vocal early supporters (Tomlinson & Allan, 2000, p. 52). Honest interaction with opponents about

planning for differentiation is critical. As shown in Chapter 2, negative perceptions and attitudes of teachers towards the education of gifted learners need to be addressed by effective principals. Listening deeply to the apprehensions of individuals and groups can help principals plan for success; and in the process, the principals develop “a sense of trust among teachers, parents, and community members” that their voices are being valued, and their opinions are being heard and considered when there is disagreement (Tomlinson & Allan, 2000, p. 53).

Plan for, and generate, short-term wins. Moreover, successful principals recognise that progress with major change efforts generally takes substantial time. This can lead to disappointment, possible loss of momentum, and a drop in urgency levels (Lick, Clauset, & Murphy, 2013). Successful principals provide support to teachers in a range of tangible ways, for example, providing remuneration for beyond-school hours spent in professional learning, release time for development of differentiated units of learning, and tuition reimbursement for related coursework (Tomlinson & Allan, 2000). Effective leaders thank, appreciate, recognise and celebrate accomplishments. They realise that short-term performance improvements help build momentum (Kotter, 1996; Tomlinson et al., 2008). Effective principals appreciate that this momentum is crucial, the energy needed to complete the process of change vision (e.g., school-wide differentiation for gifted learners).

Consolidate improvements and produce more change. Effective principals also understand that even with the best of efforts, major school-wide change may take several years to be fully accomplished. An effective leader ensures that the team continues to consolidate achievements of the organisation while moving on to new pathways. According to Tomlinson and Allan (2000), to maximise the shared efforts of teachers for effective differentiation, principals ensure large blocks of time for direct collaboration

among teachers; encourage teachers to develop in-depth partnerships in a given year rather than engage in isolated, short interactions; and change the notion of “ownership” of certain students to a sense of shared responsibility for *all* students. Thus, it can be inferred from Tomlinson and Allan’s research that successful principals help teachers understand that developing a mindset for collaborative learning can foster collective efficacy and effective differentiated classrooms for gifted learners.

Embed new practices into the culture. Finally, effective principals recognise that developing cultures of learning is a powerful driver for change in schools and establishing conditions for success (Fullan, 2006). Building such cultures involves a whole set of strategies designed so that people can learn from one another (knowledge dimension), and become collectively committed to the change process (affective dimension). Fullan (2006) identifies two strategies for learning from one another: developing learning communities at local, school, and community levels; and learning from other schools in the region and beyond for lateral capacity building. Successful change involves learning *during* implementation (Fullan, 2013). For example, teachers and principals can collaboratively gain further insights about effective provisions for gifted learners when they are further along in implementing school-wide differentiation. Successful principals understand that to anchor differentiated learning in the school culture, they must ensure “continuation of systemic growth toward differentiation” (Tomlinson & Allan, 2000, p. 87). Tomlinson and Allan (2000) identify four areas of continued systemic growth towards differentiation. These areas are: (a) employing teachers who are open to differentiation as a teaching philosophy, (b) providing teachers with a curriculum that supports differentiation, (c) providing teachers with support for their growth in differentiation, and (d) encouraging changes in classroom instruction by examining student learning outcomes.

Summary. Investigation of relevant literature revealed a paucity of research into school leaders' understanding of leadership actions *for differentiated learning of gifted students* in schools. Nonetheless, the literature about leadership for implementing change in schools highlights *significant implications* for principals who can play a critical role in developing school-wide approaches to differentiated learning for the gifted, having a deep understanding of pedagogy, curriculum, and assessment for the gifted as “lead learners”; developing collective capacity of teachers and students in schools; fostering learner-centred approaches to teaching and learning for the gifted; and embedding new practices of differentiated learning into the school culture.

Conclusion

For principals to successfully implement and sustain differentiated learning programs in schools, they must have a deep understanding of the principles and processes of differentiation for gifted learners. They must also possess leadership skills to lead the change process. As noted in Chapter 3, teachers' attitudes towards gifted students and their education can be positively influenced by effective leadership of principals who can create conditions for targeted professional learning, knowledge of giftedness, and regular contact with gifted learners. However, there is an acute paucity of research that examines leadership for differentiated learning of the gifted. While leadership research identifies several key actions that principals can take to promote differentiation more generally, it is unclear whether these actions are undertaken with regards to differentiation for the gifted specifically. As the studies have shown, the principals' lack of professional learning in educating the gifted and a lack of understanding of giftedness may hamper the implementation of school-wide differentiation, or the principals may not see these actions as relevant and significant. In this study, principals' perceptions of differentiated learning are investigated, and compared with those of teachers and gifted learners.

Synthesis: Comparing Teachers', Students', and Principals' Perceptions

In reviewing teachers' (Chapter 3), gifted students' (Chapter 4), and principals' (Chapter 5) perceptions of giftedness and of gifted education, it becomes clear that there are several gaps in our current knowledge. Specifically, while we know more about how teachers perceive gifted learners and the education of the gifted, there is a paucity of research about the principals' and gifted students' perceptions. This means that we do not currently know how the perceptions of teachers align with those of their students. Do students perceive the same pedagogical strategies as their teachers? Do they detect when their teachers do not hold positive views towards gifted learners? We also do not know how the perceptions of teachers and their principals about differentiated practices in schools align. Existing research shows that principals sometimes lack the necessary training and preparation for leading school-wide differentiated learning for the gifted, but not how the principals' perceptions might influence those of teachers. Where principals are motivated to implement change for gifted learners at a whole-school level, their leadership actions may be undertaken on the basis that teachers share the same basic understandings of giftedness and the same pedagogical goals as themselves. This may not be the case, however. Moreover, there is limited research about principals' leadership actions for implementing school-wide differentiation for gifted learners.

While more research has been conducted into teachers' attitudes towards gifted learners and differentiation, we also note that findings are mixed. Some studies find positive attitudes towards gifted learners and a desire to implement differentiation for the gifted, some find negative attitudes, and some find ambiguous attitudes. This is particularly the case for teachers who have misgivings about the social consequences of specific differentiation strategies, and may therefore have positive attitudes towards gifted

learners themselves but also a reluctance to differentiate for those learners. It is currently unclear what drives these differences in perspective.

Finally, we note that research to date has been conducted from the perspectives of researchers and teachers. There is a paucity of research about gifted students' perceptions of teachers' differentiated pedagogical strategies, classroom engagement, and the qualities of effective teachers of the gifted. Furthermore, no studies in this area have previously offered gifted students themselves the opportunity to contribute to the research as "co-researchers". When determining the optimal ways to lead differentiated learning for the gifted, a learner-centered approach that considers the perspectives of students themselves is important.

The Current Study and Research Questions

The overarching aim of this study was to investigate teachers', students', and principals' attitudes towards giftedness and their perceptions of differentiated learning pedagogies for gifted learners (see Chapter 1). By administering the same survey to teachers and principals, and similar items to students, it was possible to directly compare and contrast the perceptions of each group of participants simultaneously. In conducting the study, a learner-centred philosophy was also adopted. Gifted students were invited to participate as "co-researchers" and collaborate with me in developing a student survey and interview questions to probe the qualities of an effective teacher. Finally, principals' perceived understanding of, and leadership actions for, school-wide differentiation were investigated. Across a series of four case-study interviews, exemplary principals were asked to share their insights about how to initiate, lead, and sustain school-wide differentiated learning: thus highlighting pathways to effective differentiation for gifted learners. Four research questions were posed:

1. (a) Were teachers' attitudes towards giftedness and gifted learners influenced by their background and experience (i.e., school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience)?

 (b) Were teachers' perceptions of their own differentiated pedagogical strategies for gifted learners influenced by their background and experience (i.e., school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience)?
2. What were students' perceptions of teachers' differentiated pedagogical strategies, and their perspectives of classroom engagement and the qualities of an effective teacher? How did students' perceptions compare with those of teachers?
3. What were the similarities and differences in the perceptions of principals and teachers about the use of differentiated pedagogical strategies in schools?
4. What were the principals' perceptions about school-wide differentiation for gifted students? Specifically, (a) What was the principals' perceived understanding of differentiated learning for gifted students? and (b) What was the principals' understanding of their self-reported leadership actions in implementing and sustaining school-wide differentiated learning for gifted students?

CHAPTER 6

METHOD

To successfully answer the research questions posed in the current study, a mixed-method explanatory sequential design (Creswell, 2009) was used. This design, also called a two-phase model (Creswell & Plano Clark, 2011), is characterised by the collection and analysis of quantitative data in the first phase of research, and is followed by the collection and analysis of the qualitative results in the second phase.

In Phase 1, the quantitative phase, three online surveys were administered to teachers, principals, and students respectively to assess their attitudes and perceptions towards gifted learners and the education of the gifted. The survey data were then reduced into manageable concepts using principal axis factoring and confirmatory factor analyses. A series of one-way ANOVAs were used to determine whether teachers' attitudes differed according to their experience, qualifications, and training in gifted and talented education (GATE). Further, using the three quantitative surveys, teachers' ($n = 867$), students' ($n = 802$), and principals' ($n = 120$) perceptions of differentiated teaching and learning practices were compared.

To enable and promote student voice, gifted students were invited to participate as "co-researchers" by developing and disseminating the student surveys amongst their peers. The gifted students also developed and conducted supplementary interviews with teachers about their perceptions of differentiated practices, and their perspectives of classroom engagement and the qualities of an effective teacher. By participating in the development of the survey and interview protocols, gifted students were offered the opportunity to shape research design and to discuss issues of most relevance to students themselves (e.g., the provision of choice, challenge, and opportunities for flexible grouping).

In the second phase of the study, four exemplary principals were interviewed to investigate their understanding of differentiated learning together with their own leadership actions for implementing school-wide differentiation. A thematic analysis of principals' interview data was conducted to further examine and explain the quantitative results (e.g., a lack of congruence in perceptions between principals and teachers), and investigate the principals' understanding and self-reported leadership actions for school-wide differentiation. This phase was guided by the interpretivist paradigm (Rossman & Rallis, 2011), and the goal was to generate a "thick description" of the participants' worldviews (i.e., an interpretive rather than a descriptive focus). The goal was to identify specific leadership actions for school-wide differentiation for gifted learners (e.g., developing a shared vision, building collective capacity of teachers, and modelling as "lead learners"), as well as to gain additional insights into why any differences in the perceptions of teachers, students, and principals might occur.

In the first section of this chapter, I present an overview of the broader educational context in which the study occurs. While the literature surveyed across Chapters 2-5 is international, with findings largely consistent across different jurisdictions and school systems (unless otherwise stated), individual context may, nonetheless, shape leading differentiated learning of gifted students. In particular, targeted focus on teacher education in GATE, regulatory expectations of teachers and principals in leading high performance, and the degree of flexibility offered for leadership actions in an individual context (such as the educational context in this study) can shape and enhance the opportunities for differentiation that are offered to gifted learners, either within mainstream classes or in selective settings. In the second section, I present the Phase 1 participants, materials and procedure. This section includes a description of factor analysis which was used to reduce the quantitative Phase 1 data into a manageable number of concepts for analysis. Special

attention is given to the inclusion of gifted students as “co-researchers”. In the third section, I present the Phase 2 participants, materials and procedure. The use of content analysis to identify themes emerging in the qualitative interview data is also outlined in this section.

The Broader Educational Context

In Australia, schooling is largely the responsibility of state governments rather than the federal government. This may partly explain why there is still no national policy of educating gifted learners (Vialle & Rogers, 2009). The approaches to educating the gifted, therefore, vary across school systems and among individual schools. This thesis was based in the State of New South Wales (NSW), and examined provisions for gifted learners in that state. In NSW and across other states in Australia, the provisions for gifted learners range from entry into selective high schools and primary schools (with Opportunity Classes), to special classes for the gifted or differentiation within regular classroom setting. The curricular provisions include differing combinations of acceleration, enrichment, and extension (Vialle & Rogers, 2009).

Research has shown that a coordinated, system-wide, sustainable approach based on a shared vision is needed for high achievement outcomes of gifted learners (Jarvis & Henderson, 2014; NSW Department of Education and Communities, 2012). Mehan, Datnow, and Hubbard (2003) have, however, found that the school reforms often do not succeed due to the initial absence of staff buy-in, lack of ownership among teachers, lack of flexibility in the face of changing regional and state policies, and a failure to ensure that the interests of those responsible for implementing the reform—teachers—are kept at the forefront in measuring success. Further investigation is needed about how school leaders align the practices and procedures for educating the gifted at both individual teachers and broader systems level.

An exploration of the extent to which policy and practice in the education of gifted learners are congruent with each other offers some insight into the disengagement and underachievement of many gifted learners. In New South Wales, the revised Gifted and Talented Policy (2006) states that the school principals have the prime responsibility for implementing the gifted and talented education policy. In particular, as part of the NSW Government policy, it is a requirement for the principals to ensure that teachers identify gifted and talented students, including gifted underachievers and those with disabilities, and select and implement a variety of teaching strategies for inclusion of gifted students in their classes. According to the policy, the schools have a responsibility to coordinate school provisions for gifted students through the establishment of a GATE committee along with a GATE coordinator to devise school policy, develop and evaluate programs (that include acceleration, enrichment, grouping and counselling options), and contribute to the professional learning of principals, teachers, and other appropriate personnel.

Notwithstanding this revised policy, Australian research has identified many factors that mitigate against the comprehensive implementation of education for gifted learners in Australian schools (Forster, 2005). These factors include lack of knowledge of the policy and what is required by it, lack of professional capability of teachers, lack of motivation or incentives, and problems in the policy statement itself. In a previous study by Forster (1991), which investigated the relationship between policy and practice for educating the gifted in the New South Wales government school system, the majority of teachers in the study had not read the policy statement, policy support documents, resource materials; or undertaken any professional learning in education of the gifted. In addition, the schools had not developed a whole-school policy to better enable individual teachers to engage with gifted learners. In a further study in eight primary and secondary government schools in the Sydney metropolitan area, Forster (1991) reported that individual,

unsystematic and *ad hoc* efforts without the involvement of the whole-school implementation led to inconsistent interpretation and enactment of the policy and programs for gifted learners.

Teachers' attitudes and perceptions about educating gifted learners also influence teachers' commitment to differentiated learning of students. Carrington and Bailey (2000) examined the attitudes of 953 primary preservice teachers and 528 secondary preservice teachers from five New South Wales universities in Australia. The researchers asked the pre-service teachers to rank a range of hypothetical gifted children based on their desirability as potential students by taking into account the interaction of ability, gender, and effort. Both elementary and secondary pre-service teachers rated studious gifted students lowest on a scale of whom they wanted to teach. The children rated highest by elementary pre-service teachers were children of average ability who were not studious, and similarly those rated highest by secondary pre-service teachers were students who did not apply themselves too diligently. Carrington and Bailey (2000) pointed out that "gifted education should permeate the whole pre-service program as well as being the focus of specific courses" (p. 21). They noted that the lack of adequate preparation of teachers in meeting the needs of gifted learners could be instrumental in the prevalent attitudes among pre-service teachers towards gifted and talented students. There is, however, a paucity of research about the principals' and gifted students' perspectives of teachers' perceptions and differentiated pedagogical practices. There is also a paucity of research about comparing the attitudes and perceptions of teachers, school principals, and gifted students.

While educational provisions for gifted students exist in Australia (e.g., Grade 5 and 6 Opportunity Classes and Selective High Schools in the State of New South Wales; and Select Entry Accelerated Learning [SEAL] Program in the State of Victoria), the majority of Australian schools do not provide special classes for them (Braggett &

Moltzen, 2000; Taylor & Milton, 2006). Therefore, it is vital that all teachers have the required knowledge, skills, and experience in meeting gifted learners' needs, readiness, and learning preferences. However, researchers have shown that teachers lack adequate training for identifying and meeting the needs of gifted students; and educational courses in the education of gifted students at the university level continue to be insufficient (Fraser-Seeto, Howard, & Woodcock, 2015; Hudson, Hudson, Lewis, & Watters, 2010; Taylor & Milton, 2006; Troxclair, 2013). The continued lack of teachers' adequate training prevails despite the formal recognition of the importance of teachers in educating the gifted (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008), the recommendations by previous senate inquiries (Parliament of the Commonwealth of Australia, 2001), and the implementation of measures to support teachers in the education of gifted learners (NSW Department of Education and Training, 2004a, 2004b, 2004c, 2004d, 2004e, 2006). In addition, the Australian Federal Government, in consultation with the NSW Department of Education and Training, developed and distributed a comprehensive professional development package for teachers (Australian Government Department of Education and Training, n.d.). Yet, despite teachers having continued access to this flexible professional learning provision, researchers have found little evidence of the use of the support package in schools due to a lack of knowledge and lack of ongoing support for implementing this learning resource (Fraser-Seeto et al., 2015).

This study was conducted in government schools in Sydney, New South Wales (NSW), Australia. The three main education providers in NSW are the State Government (67%), Catholic Education (18%) and the Independent schools sector (15%). Government schools are often called state schools or public schools. Non-government schools are usually called private schools. The NSW Government Schools system is the largest education network in Australia. There are over 2,000 primary and secondary high schools

in State of New South Wales (NSW) with about 750,000 students enrolled in the schools (K. Rickard, NSW Department of Education and Communities Centre for Education Statistics and Evaluation, personal communication, 5 March 2015). Children in NSW have 13 years of schooling—seven years in primary school, beginning in kindergarten at age 4 or 5 and progressing from Years 1 to 6, and six years in secondary school from Years 7 to 12.

Selective high schools and Opportunity Classes for Year 5 and 6 in NSW cater for highly achieving academically gifted students who may otherwise be without classmates at their own academic and social level (<http://www.schools.nsw.edu.au/>). These schools help gifted and talented students to learn by grouping them with other gifted and talented students, teaching them in specialised ways, and providing educational materials at the appropriate level. For Year 7 selective high school entry, students are considered on academic merit. Academic merit is decided mainly by combining the results of the primary school assessments in English and mathematics, and the Selective High School Placement Test. The Selective High School Placement Test consists of reading, writing, mathematics and general ability components (<http://www.schools.nsw.edu.au/>). For Years 8 to 12 selective high school entry, students are considered on academic merit using criteria determined by the selection committee for each school. These criteria can include internal or external testing, careful evaluation of academic competition results and interviews. The procedure for Year 5 opportunity class entry closely resembles that applicable to Year 7 selective high school entry. The relevant test is called the Opportunity Class Placement Test and contains test items in reading, mathematics and general ability.

The participants in this study were recruited from government schools in the Northern Sydney Region of New South Wales. Prior to reorganisation of regions in 2013, the Northern Sydney Region was one of the ten administrative regions in NSW. In 2012,

the Northern Sydney Region included approximately 5,000 teachers in 163 schools. The range of public schools included primary schools with Opportunity Classes (OC), primary schools without Opportunity Classes, non-selective high schools, selective high schools, and schools for specific purposes (e.g., two environmental education centres, two intensive language schools, and a hospital school). In 2012, more than 90,000 students were enrolled in NSW public schools. The students attended 117 primary schools (10 with Opportunity Classes), 37 secondary schools (seven selective), and 9 schools for specific purposes. In the Northern Sydney Region schools, the student enrolments included 12.8% of NSW primary students and 10.9% of NSW secondary students.

The participants in this study were drawn from 83 non-OC primary schools, 7 OC primary schools, 21 non-selective secondary schools, and 6 selective secondary schools in the Northern Sydney Region. The Region had a relatively high socio-economic profile compared to the State of NSW as measured in the Index of Community Socio-educational Advantage (ICSEA). The ICSEA values for individual schools in the Northern Sydney Region ranged between 1000 and 1201, compared to the ICSEA values for schools in NSW that ranged between 601 and 1218. The Northern Sydney Region also had the highest levels of academic achievement in NSW in the national assessment program known as NAPLAN (National Assessment Program—Literacy and Numeracy) for Years 3, 5, 7, and 9 (NSW Department of Education and Communities, 2012); and the NSW Board of Studies' Year 12 examination, Higher School Certificate (HSC) results.

Phase 1: Quantitative Surveys and Supplementary Student-Teacher Interviews

Participants. The participants in Phase 1 of this study comprised three groups: teachers, principals, and students. Teachers and principals in 163 government schools in the Northern Sydney Region of NSW were invited to participate anonymously in online surveys. The respondents included 867 teachers (460 primary and 407 secondary teachers)

and 120 principals (92 primary and 28 secondary principals), as shown in Table 6.1. The participants represented 72% of teachers and 74% of principals in the Northern Sydney Region. The high participation rates for the Phase 1 surveys may be attributed to three reasons. First, there was a culture of supporting research in the Region, and the strong leadership support of the Regional Director and School Education Directors might have encouraged principals and teachers in all 163 schools in the Region to participate in the surveys. Second, the high performance culture in Northern Sydney schools, as reported above, might also have led to higher participation results. Third, the school principals' general support for gifted education might have further ensured high participation rates for the surveys. All participants were invited to participate in the study, and their consent was sought to use the data for research purposes. The participants signed the consent forms. The participants were assured that all information will be kept confidential and anonymous.

Students from four schools were also invited to participate in the online student survey. These schools were purposively selected to represent both comprehensive and selective school settings in primary and secondary schools. They, therefore, included one primary school without Opportunity Classes (Years 5 and 6), one primary school with Opportunity Classes (Years 5 and 6), one non-selective girls' high school (Years 11-12), and one selective boys' high school (Years 7-10), as shown in Table 6.1. Respondents included 802 students from four schools, representing a 73% response rate.

Table 6.1

Number of Participants in Northern Sydney Region (NSR) Government Schools

School Type	Total Number of Schools in NSR	Number of Participants		
		Teachers*	Principals*	Students
Primary without Opportunity Classes	107	387	84	42
Primary with Opportunity Classes	10	73	8	182
Non-selective Secondary	30	276	22	222
Selective Secondary	7	131	6	356
Schools for Specific Purposes	9	-	-	-
Total	163	867	120	802

Note. *All principals and teachers in 163 NSR government schools were invited to participate in the identical principal and teacher online survey, including schools for specific purposes.

Finally, the principals of four schools were asked to nominate gifted students to participate in this study as “co-researchers”. The principals nominated 38 gifted students (18 students from two primary schools, and 20 students from two secondary schools) on the basis of their excellent leadership, academic, and interpersonal skills. Across the four schools, the group sizes ranged from 8 to 11 students. Working in these groups, the gifted student “co-researchers” and I collaborated to modify and disseminate the student survey, and develop interview questions. The gifted student “co-researchers” each then independently interviewed their own teachers, hand-recorded their teachers’ responses, and gave the teachers’ responses to their principals. Finally, the hand-written transcripts were scanned and emailed to me by the principals for further analysis. Engaging gifted students

as “co-researchers” at a methodological level is a contribution to the field of gifted education.

Materials and Procedure. Phase 1 included a teacher survey, a principal survey, and a student survey, with each survey asking participants to provide their perceptions of giftedness and of differentiation for the gifted. It also included a supplementary student-teacher interview, developed in partnership with student co-researchers.

Teacher survey. The teacher survey contained a total of 59 questions in four sections (see Appendix B for full survey). The participants were asked about their own background in GATE (Section A), their perceptions and attitudes towards gifted students (Section B), their differentiated learning practices (Section C), and school-wide approaches to differentiation (Section D). Teachers in all 163 schools in the Northern Sydney Region were sent an email inviting them to participate in the survey, with a link to the online survey itself. Teachers from 117 schools responded to the electronic survey.

Teachers’ background in GATE. Seven questions were asked to capture background and demographic information including the type of school the participants currently teach in, their position of responsibility in GATE, their participation in professional learning activities related to GATE, qualifications in GATE, and their years of teaching experience. The questions were of yes/no and short-answer format, and contained both quantitative and qualitative questions. Participants were also asked about the number of years they had taught in the current school.

Teachers’ perceptions and attitudes. Teachers’ perceptions and attitudes towards gifted students were assessed with a newly developed scale, *Perceptions and Attitudes towards Gifted and Talented Students* (PAT_GATS) which was modified from Gagné and Nadeau’s Attitude Scale (Gagné & Nadeau, 1985; Gagné, 1991). The teachers were asked to respond to 12 questions about their attitudes towards giftedness and gifted learners in

the questionnaire by using a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree).

The original scale by Gagné and Nadeau (1991) contained 34 items and comprised six subscales (derived from factor analysis). In this study, 11 items from five subscales in the original scale were used. These included: needs and support, resistance towards differentiation, rejection, ability grouping, and school acceleration. Items from the “social value” subscale in the original scale were not included as this study was focused on educational programs and pedagogical approaches related to differentiated learning of the gifted. Items 28 (“resistance towards differentiation” subscale) and 29 (“school acceleration” subscale) from the Gagné-Nadeau Attitude Scale (1991) were modified to add greater clarity to the statements or to use more common Australian terminology. In addition to 11 items modified from the scale, a twelfth item (19) was added to provide a “counter” view to the original item 20 (“ability grouping” subscale). All modifications are detailed in Table 6.2.

Table 6.2

Modifications made to the Gagné-Nadeau Attitude Scale

Item in the Gagné-Nadeau Attitude Scale	New or modified item in study survey*	Reason for addition or modification
28. Gifted children might become vain or egotistical if they are given special attention.	15. Gifted children might become elitist if they are given special attention.	More common Australian terminology.
29. When skipping a grade, gifted students miss important ideas (they have “holes” in their knowledge).	16. When skipping a grade, gifted students miss key concepts and ideas leading to gaps in their knowledge.	Changed the phrase, “important ideas” to “key concepts and ideas”, and the word “holes” to “gaps”, for greater clarity.
20. Gifted children should be left in regular classes since they serve as intellectual stimulant to the other children.	19. Ability grouping provides an effective method to provide instruction to students of different ability or skills levels.	Added a generalised statement to provide a “counter” view to item 20 in the Gagné-Nadeau Attitude Scale.

Note. *See Appendix B.

Once the twelve items were determined, a *principal axis factoring* analysis with a Promax rotation (Norman & Streiner, 2008) was performed using the PAT_GATS scale. This exploratory factor analysis confirmed the existence of three underlying factors with eigenvalues exceeding 1 (Kaiser, 1960) (see Appendix C for scree plot). The two items, “often bored in school” (.073) and “waste time in regular classes” (.091), had the lowest loadings and did not load strongly on any factor. The two items were removed from the scale and a new three-factor solution with 10 items was re-assessed. This three-factor solution explained 52.5% of the variance with Factor 1 contributing 26.4%, Factor 2 contributing 14.2%, and Factor 3 contributing 11.9%. As it accounted for at least 50% of the variance explained (see Tabachnick & Fidell, 2013), this new three factor solution was retained. Table 6.3 shows the pattern matrix and item loadings in each factor.

Table 6.3

Principal Axis Analysis with Promax Rotated Factor Loadings for Teacher Attitudes Questionnaire Items

Factor/Item	Factor loadings			h^2
	1	2	3	
Factor 1: General perceptions				
*5. Become elitist if given special attention	.695	-.001	.072	.531
*3. Special programs create elitism	.616	.034	.078	.445
*4. Leave in regular classes to stimulate others	.479	.170	-.024	.309
*8. Identified as gifted—difficulty making friends	.407	-.292	-.061	.150
Factor 2: Pedagogical provisions				
10. Need special attention to develop talents	-.105	.620	.157	.395
2. Allocate to special classes	-.080	.441	-.012	.218
1. Offer special provisions	.245	.351	-.161	.237
9. Ability grouping	.258	.345	-.049	.173
Factor 3: Acceleration				
*6. Skipping a grade leads to knowledge gaps	.117	-.106	.727	.589
7. Allow skipping a grade	-.060	.117	.519	.278

Note. Boldface indicates highest factor loadings. h^2 = Communality. * Items that were reverse scored prior to analysis. $n = 867$.

Once the principal axis factor analysis had been completed, the construct validity of the PAT_GATS measure was further assessed using a confirmatory factor analysis (CFA) of the 10 items of the survey. A three-factor model of *general perceptions*, *pedagogical provisions*, and *acceleration* was hypothesised (see Appendix D for CFA model). Items were specified to load on each latent factor, as reflected in Table 6.3. The initial model did not fit the data well (Chi-square = 217.959 (32, $N = 867$), $p < .001$; CFI = .848; TLI = .787; IFI = .850; RMSEA = .082; SRMR = .059.) The model was, therefore, respecified by the correlation of three error variances of the proposed factors. The correlation was made on the grounds that these educational provisions and their perceived impact were related to each other in teachers' perceptions about educating the gifted. The respecified model had an acceptable fit (Chi-square = 81.189 (29, $n = 867$), $p < .000$; CFI

= .957; TLI = .934; IFI = .958; RMSEA = .046; SRMR = .039), and the three latent constructs were retained. To determine whether the scores on the three constructs—*general perceptions*, *pedagogical provisions*, and *acceleration*—differed according to teachers' background and experience (i.e., their school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience), five one-way ANOVAs were performed.

Teachers' differentiated learning practices. Teachers' perceptions of differentiated practices were assessed with a newly developed scale, *Differentiated Learning for Gifted and Talented Education* (DiL_GATE). The scale, developed for this study, was based on the review of the literature about differentiated learning (see Chapter 2). The participants were provided 36 items (Likert-scale type) about teachers' practices related to five dimensions of differentiated learning in the school, that is, (a) outcomes differentiation, (b) content differentiation, (c) process differentiation, (d) product differentiation, and (e) learning environment differentiation. For example, "*I extend and/or modify syllabus outcomes to meet the learning needs of gifted students*" (outcomes differentiation), "*I eliminate curriculum content of students who have already mastered it*" (content differentiation), "*I vary the pace of my lesson to cater for individual learning needs*" (process differentiation), "*I encourage students to undertake independent extended research projects*" (product differentiation), and "*I foster a challenging thinking climate*" (learning environment differentiation). A 5-point Likert-type scale was used for each question in which 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = almost always (see Appendix B for teacher survey).

A principal axis factoring analysis with a Promax rotation (Norman & Streiner, 2008) was performed. This exploratory factor analysis confirmed the existence of three underlying factors with eigenvalues exceeding 1 (Kaiser, 1960) (see Appendix E for scree

plot). The three-factor solution explained 49.15% of the variance with Factor 1 contributing 37.89%, Factor 2 contributing 7.29%, and Factor 3 contributing 3.97%. The construct validity of the *Differentiated Learning for Gifted and Talented Education Scale* (DiL_GATE) was further assessed using a confirmatory factor analysis. The 11 items that loaded strongly on two factors simultaneously (up to 0.40), or attained smaller loadings (< 0.39), were removed. Thus, a total of 25 items, as shown in Table 6.4 (highlighted with asterisks), were retained for performing the confirmatory factor analysis (CFA).

A three-factor model of *product differentiation*, *process differentiation*, and *content differentiation* for gifted learners was hypothesised (see Appendix F for CFA model). Factor 1 contained 12 variables, which served as indicators of *product differentiation*. Factor 2 contained seven variables which were indicators of *process differentiation*. Factor 3 contained six variables which related to *content differentiation*. The initial model did not fit well: Chi-square=1685.955 (272, $n=867$); $p < .001$; CFI=.858; TLI=.831; IFI=.858; RMSEA=.077. The model was, therefore, respecified by the correlation of nine error variances of the proposed factors. The correlation was made on the grounds that these pedagogical strategies were related to each other in teachers' perceptions about educating the gifted. Results of the respecified model had an acceptable fit: (Chi-square=839.660 (263, $n=867$); $p < .001$; CFI=.942; TLI=.929; IFI=.943; RMSEA=.050), and these three latent constructs were retained.

Table 6.4

Principal Axis Analysis with Promax Rotated Factor Loadings for Teachers' Differentiated Practice Questionnaire Items

Factor/Item	Factor Loadings			<i>h</i> ²
	1	2	3	
Factor 1: Product Differentiation				
31. Project based learning	.849*	-.146	-.084	.541
32. Independent projects	.823*	-.221	.009	.543
16. Topic and product choices	.755*	.185	-.215	.533
21. Peer-evaluation of work	.718*	.184	-.221	.476
30. Evidence of research	.711*	-.281	.254	.591
20. Self-evaluation of work	.668*	.233	-.178	.486
29. Inquiry and research	.657*	-.053	.169	.562
27. Problem finding	.591*	.108	.068	.493
23. Real-life and authentic problems	.537*	.076	.158	.488
10. Experts/specialists sharing knowledge	.468	.338	-.167	.354
25. Student metacognitive reflection on their work	.465*	.103	.214	.481
15. Evaluation of solutions to problems	.444	.001	.403	.597
19. Creativity in products	.433*	.024	.295	.464
28. Student collaboration and discussion	.420*	.139	.098	.338
33. Students' study skills	.399	-.223	.381	.359
17. Diverse points of views about ideas	.390	.070	.389	.571
18. Imaginative solutions to problems	.390	.206	.234	.513
22. Technologies-embedded learning and tasks	.316	.203	.124	.306
Factor 2: Process Differentiation				
12. Provide flexible within-class ability group interaction	.124	.687*	-.137	.457
36. Liaise with parents for home-school partnerships	-.025	.673*	-.086	.376
6. Adjust the amount of individual practice	-.023	.508*	.187	.393
11. Vary pace of the lesson	.033	.505*	.164	.410
8. Plan a variety of experiences	-.098	.499	.333	.480
5. Incorporate background knowledge	.046	.470*	.146	.360
7. Set challenging tasks	-.100	.463	.397	.507
1. Modify outcomes to meet learning needs	-.062	.445	.342	.449
35. Motivate and recognise achievements	-.055	.415*	.231	.306
4. Eliminate already mastered content	.057	.397*	.025	.199
Factor 3: Content Differentiation				
3. Whole to part learning	-.118	.087	.653*	.405
14. Higher order thinking in learning tasks	.184	.086	.559*	.565
34. Content learning in a challenging climate	.205	.038	.554*	.536
2. Concepts-based learning	-.094	.118	.543*	.317
9. New content linked to existing knowledge	-.210	.351	.499	.416
13. Questioning for discussion and reflection	.220	.055	.460*	.440
26. Meaningful feedback linked to criteria	.195	.082	.442*	.415
24. Exemplars for analysis in class discussion	.259	.078	.312	.329

Note. Boldface indicates highest factor loadings. h^2 = Communality. $n = 867$. * = retained items for CFA.

To determine whether the scores on the three constructs—*product differentiation*, *process differentiation*, and *content differentiation*—differed according to teachers' background and experience (i.e., their school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience), five one-way ANOVAs were performed.

School-wide approaches to differentiation. Teachers were asked four open-ended questions (short-answer format) about their approaches to differentiated learning. All four questions required teachers to type a short qualitative response in a textbox provided. Questions focused on teachers' understanding of (a) effective differentiated learning (e.g., "*How do you know when you are effectively differentiating for gifted and talented students? What indications are there?*"), (b) implementation of other differentiating instructional strategies (e.g., "*Is there any other strategy that you like to use to differentiate for gifted and talented students in your classroom?*"), (c) existing support for implementing provisions (e.g., "*What support do you have in implementing provisions for gifted and talented students in your classroom?*"), and (d) further support needed (e.g., "*What other support would you like to help implement provisions for the gifted students in classrooms and/or school?*").

Principal survey. The principal survey, *Differentiated Learning for Gifted and Talented Education: Principals* (DiL_GATE_P), closely replicated the teacher survey. As in the teacher survey, there were four sections: (a) background in GATE, (b) perceptions and attitudes towards gifted students, (c) teachers' differentiated learning practices, and (d) school-wide approaches to differentiation (see Appendix G for principal survey). Principals in all 163 schools in the Northern Sydney Region were sent an email inviting them to participate in the survey, with a link to the online survey itself. Principals from 120 schools responded to the electronic survey.

Sections A, B, and C were identical to those in the teacher survey, with two exceptions. First, in Section A (*Background in GATE*), principals were asked two additional questions: one asking the principals to report methods they use to identify students' exceptional abilities (e.g., formal and informal school assessment tools, external assessments/testing, teacher/parent/peer nominations, and database for tracking gifted students' performance), and the extent to which the educational provisions for the gifted were a matter of daily routine. Second, in Section C (*Teachers' differentiated learning practices*), principals were asked about their teachers' practices and not their own. For example, whereas the teachers were asked, "*As a classroom practitioner, I: eliminate curriculum content for students who have already mastered it*", the principals were instead asked to respond to the item: "*In my school, my teachers: eliminate curriculum content for students who have already mastered it*". By asking principals about their teachers' practices and not their own, it was possible to compare principals' and teachers' perceptions of differentiated practices.

Section D, *School-wide approaches to differentiation*, was the only section to differ substantially between the teacher and principal survey. Principals were asked 9 questions about teachers' school-wide approaches to differentiation. These included seven qualitative questions in a short-answer format and two questions in a multiple-response format. The principals were asked about their understanding of (a) effective teachers' differentiated practices, (b) strategies for differentiation, (c) provisions for social and emotional needs of gifted students, (d) provisions for developing gifted students' leadership skills, (e) whole school provisions for gifted students, (f) distinction between quality teaching for gifted students and other students, and (g) the need for regional support in implementing appropriate provisions for gifted students. For example, principals were asked, "*How do you know when a teacher is effectively differentiating for*

students in a classroom?”, and *“Are there other strategies for differentiation that you would like to see used in your school?”* The principals were asked two questions in a multiple-response format about (a) effective school-wide differentiated instructional strategies, and (b) whole school initiatives for gifted students. For example, principals were asked, *“Which other whole school initiatives does the school use to ensure appropriate provisions for all gifted students?”*

Student survey. The student survey, containing a total of 17 questions, consisted of two sections (see Appendix H for student survey). In the first section, a 15-item questionnaire, *Differentiated Learning for Students*, was presented. This questionnaire was adapted from the *William and Mary Classroom Observation Scales, Revised (Part 3) Student Observation Scale* (COS-R; VanTassel-Baska, Bracken, & Drummond, 2003), a scale developed to assess teachers’ instructional practice against expectations derived from best practise in non-selective and gifted education classrooms. This scale was modified by the student “co-researchers” to make the statements simpler and clearer for students themselves.

The gifted “co-researchers”, including 18 primary (Years 5-6) and 20 secondary (Years 7-12) students, were identified by the principals on the basis of their excellent leadership, academic, and interpersonal skills. The student “co-researchers” selected 12 items out of the original 25 items for inclusion in the study, including questions about (a) curriculum planning and delivery, (b) problem solving, (c) critical thinking strategies, (d) creative thinking strategies, and (e) research strategies. Due to the study’s focus on differentiated learning, the student “co-researchers” selected questions from the section, “Student Responses to Differentiated Teaching Behaviors” in the COS-R (Part 3) Scale, and not from the section, “Student Responses to General Classroom Teacher Behaviors”. Further, the student “co-researchers” also did not include some items (e.g., #17. “*Students*

demonstrated ideational fluency.”) which might pose potential difficulty in comprehension for primary students. The student “co-researchers” also added three items to the new scale (see Table 6.5) that focused on *challenging tasks* (#4), *self-evaluation* (#5), and *effort* (#6). Each of the 15 items in the newly developed scale, *Differentiated Learning for Students* (STUDiL), was presented as a statement (e.g., “*I work on challenging tasks*”), and participants were asked to respond on a 5-point Likert-type scale (1 = never to 5 = almost always). The second section of the survey contained three questions with short-answer formats. The first question asked students how they knew that they were engaged in the classroom, the second question asked students about three most important qualities of an effective teacher, and the third question asked for any additional comments, if needed. The students were not instructed to respond to the survey questions based on one specific classroom.

Student perceptions of teachers’ pedagogical strategies (using the scale, STUDiL) were then compared with teachers’ perceptions of their own differentiated strategies (using the scale, *Differentiated Learning for Gifted and Talented Education*, DiL_GATE). For example, while teachers were asked, “*In my classes, I use flexible within-class ability grouping to maximise student learning*”, students were asked, “*I work on tasks/projects in pairs or groups.*” This enabled comparisons to be made on 12 matched items (see Chapter 8).

Table 6.5

Modifications made to The William and Mary Classroom Observation Scales, Revised (Part 3): Student Observation

	Item in William and Mary Classroom Observation Scale, Revised (Part 3): COS-R	Item in the Current Survey, <i>Differentiated Learning for Students</i>
Curriculum planning and delivery	7. Students worked on tiered assignments or tasks of choice.	1. I work on tasks of my choice.*
	6. Students worked on projects individually or in pairs/groups.	2. I work on tasks/projects in pairs or groups.*
	9. Students discovered central ideas through structured activities and/or questions asked.	3. I learn key ideas through structured activities or teacher/student developed questions.*
		4. I work on challenging tasks.**
		5. I am encouraged to evaluate my own work.**
		6. I am expected to demonstrate my best effort in all learning areas.**
Problem solving	10. Students brainstormed ideas or alternative possibilities.	7. I brainstorm ideas and define problems.*
	12. Students identified and implemented solutions to problems.	8. I find solutions to problems.*
Critical thinking	13. Students made judgments about or evaluated situations, problems, or issues.	9. I evaluate situations, problems, or issues in my work.*
	16. Students synthesised or summarised information within or across disciplines.	10. I gain a deep understanding of ideas and concepts from the study of texts.*
Creative thinking	18. Students explored diverse ways to think about a situation/object/event.	11. I explore different ways to think about a situation/object/event.*
	19. Students offered imaginative, sometimes playful, suggestions as solutions to problems.	12. I offer imaginative and creative solutions to problems.*
Research	21. Students gathered evidence through research techniques (e.g., surveys, interviews, analysis of primary and secondary source documents).	13. I gather information from multiple research sources (e.g., print, surveys, interviews, and research).*
	23. Students made inferences from data and drew conclusions.	14. I draw conclusions from a range of data.*
	25. Students communicated findings (e.g., report, oral presentation).	15. I communicate research study findings (e.g., written report, oral presentation).*

Note. *Statements were modified by the student “co-researchers” in collaboration with me to make them simpler and clearer for primary and secondary students.

**New survey items were added by the student “co-researchers” in collaboration with me to include measures about challenge (item 4), self-evaluation (item 5), and the importance of effort (item 6).

Supplementary student-teacher interviews. To supplement the teacher, principal, and student survey data, the same gifted student “co-researchers” ($n = 38$) who had assisted in developing the student survey also conducted 32 supplementary interviews with their own teachers. The student “co-researchers” collaborated with me to develop teachers’ interview questions, and then used the final interview schedule to conduct interviews with their own teachers (see Appendix I for supplementary student-teacher interview questions). All collaborative sessions with the student “co-researchers” were conducted face to face in each school. I made sure to listen to their concerns, and to understand their perspectives of the contextual climate and culture of the school. To ensure consistency of the process, I also discussed strategies with student “co-researchers” for conducting interviews with their teachers such as reading the questions aloud, speaking clearly and not too fast, taking notes while the teacher was speaking, and writing without any personal judgment.

During my face-to-face meetings with the student “co-researchers”, I explained the rationale of including the gifted learners’ voices in the study. I shared a set of draft questions about pedagogical practices and the qualities of an effective teacher. I invited the students to nominate their own questions or modify the initial set of draft questions. For example, the “co-researchers” modified the initial question on student engagement, “*How do you engage students in your classroom?*” to “*How do know that you have engaged students in your classroom?*” The students also added their own question, “*How do you make learning fun in your classroom?*” The interviews consisted of 11 questions (see Appendix I). The finalised interview questions were sent to the school principals. The principals forwarded the interview questions to the student “co-researchers”, who used the set of 11 questions to interview their teachers in the schools. The gifted students asked the

participating teachers questions about differentiated pedagogical practices, student engagement, and the qualities of an effective teacher (research question 2).

Phase 2: Case Study Interviews

While in quantitative research, credibility based on reliability and validity depends on instrument construction, in qualitative research, “the researcher is the instrument” (Patton, 2002, p. 14). In this approach, the researcher carries out data collection and studies the phenomena (Gall, Gall, & Borg, 2003). As a qualitative researcher in the mixed-method study, I conducted all case-study interviews with four exemplary principals.

The interviews in Phase 2 of the study served two purposes. First, they enabled possible explanations for the Phase 1 quantitative results to be sought. For example, a key quantitative finding of the study was a lack of congruence between the principals’ and teachers’ perceptions about the use of differentiated pedagogical strategies (research question 3). During the interviews, therefore, I focused on the insights and perspectives of the principals about the causes of such dissonance in the principals’ and teachers’ perceptions, and strategies for fostering more congruent perceptions (e.g., “*The survey responses have shown that the principals’ and teachers’ perceptions about differentiated practices are significantly different. Why do you think is this the case? What strategies do you suggest for developing greater alignment between the principals’ and teachers’ perceptions?*”) Second, these interviews enabled me to gain insights into principals’ understanding of differentiation, together with their self-reported leadership actions for school-wide differentiation (research question 4).

Participants. The four participating school principals were chosen using intensity sampling. In intensity sampling, the focus is on rich examples of the phenomena of interest, but not on highly unusual cases (Patton, 2002). Consistent with this sampling method, the principals were recommended by the Regional Director and the School

Education Directors of Northern Sydney schools because these principals had experienced success in implementing learner-centred differentiated learning, achieving strong academic results, and building a cohesive culture in schools. Given their successful record in enacting differentiated practices in schools, these principals were also asked to nominate gifted student leaders as “co-researchers” for the study. However, one principal (p3-ps), who had initially nominated student “co-researchers” for the study, could not be interviewed due to a long-service leave from the school. Therefore, a principal from another school was interviewed. Thus, out of four principals who were interviewed, three principals and the student “co-researchers” in this study belonged to the same school. The demographic details of the four principals and their schools (two primary and two high schools) are outlined in Table 6.6.

Materials and procedures. The four principals were provided with a set of 15 questions one week in advance of the scheduled interview. The questionnaire consisted of two parts (see Appendix J for full schedule). Part A, containing 5 questions, was focused on the principals’ understanding of the characteristics and elements of learner-centred differentiated learning for gifted and talented students. For example, the principals were asked, *“When planning for gifted learners, what do you expect teachers to know, understand, and do?”* and *“Please describe your understanding of how teachers differentiate learning for gifted and talented students in your school.”* Part B, containing 10 questions, was focused on the way the principals led, supported, implemented, and sustained differentiated learning for gifted learners. For example, *“What does professional learning look like for your teachers?”*, and *“How often do teachers collaboratively discuss differentiated learning provisions with each other?”*

Table 6.6

Participating School Principals' Characteristics

Principal's name and code	Age range	Qualifications	Qualifications in educating the gifted	Experience teaching the gifted (years)	Teaching experience (years)	Experience as principal (years)	School type	School population (2012)
Stephanie	40+	Master's degree, PhD student	Postgraduate degree	1	18	3	Primary, comprehensive, coeducational	276
Sharon	50+	Master's degree	Postgraduate degree	35	35	10	Secondary, comprehensive, girls only	1200
Jessica*	40+	Bachelor's degree (2)	Personal reading only	Nil	7	3	Primary, comprehensive, coeducational	709
James	50+	Bachelor's degree, Postgraduate diploma	Certificate in Gifted Ed.	30	37	5	Secondary, selective, boys only	725

Note. The principals' names have been changed to maintain confidentiality.

*One principal, who had initially nominated student "co-researchers" for the study, could not be interviewed due to an extended leave from the school. Therefore, a principal from a different school (Jessica) was interviewed. Thus, three principals (Stephanie, Sharon and James) and the student "co-researchers" in the study belonged to the same school.

The interviews were semi-structured, and sufficient flexibility was exercised for the conversation to flow with related follow-up questions to clarify their responses.

Approximately two weeks later, the participants were subsequently provided with copies of the interview transcriptions and were asked to review the transcriptions for accuracy.

All the participants checked and confirmed the accuracy of transcriptions

Content analysis for the identification of themes. To evaluate the interviews, content analysis was conducted. This form of analysis was designed to facilitate the “discovery of new relationships, concepts and understanding” (Merriam, 1988, p. 3). Themes were identified using the synthesis of literature review on leading differentiated learning. As the identification of themes progressed, new themes were added to ensure that the entire interview data were analysed. Throughout the process of the identification of themes, sense of the text was made by checking for redundancy, and by collapsing statements into concepts and categories (Creswell, 2012). Visual displays of representative examples were used to ensure easy reading of the summary data. The findings were presented by drawing heavily on direct quotations. Using the participants’ own words substantiated the findings and conveyed vividly their lived experiences.

An overview of the methodological approaches for collecting and analysing quantitative and qualitative data in the study are presented in a table of specifications (see Table 6.7).

Table 6.7

An Overview of the Methodological Approaches for Collecting and Analysing Quantitative and Qualitative Data in the Study

Phase	Participants	Instrument Administered	Data Collection Approach	Analysis
Phase 1	Teachers ($n = 867$)	<i>Perceptions and Attitudes towards Gifted and Talented Students</i> (PAT_GATS)	Online teacher survey	Principal axis factoring analyses of PAT_GATS and DiL_GATE
		<i>Differentiated Learning for Gifted and Talented Education</i> (DiL_GATE)*		Confirmatory factor analyses of PAT_GATS and DiL_GATE
		Structured teacher interview schedule, co-designed by gifted student “co-researchers”	Face-to-face interviews conducted by gifted student “co-researchers”	ANOVAs to compare teachers’, students’, and principals’ perceptions Content analysis for the identification of themes
	Students ($n = 802$)	<i>Differentiated Learning for Students</i> (STUDiL)*	Online student survey (adapted for students in collaboration with gifted student “co-researchers”)	ANOVAs to compare teachers’, students’, and principals’ perceptions (as above)
	Principals ($n = 120$)	<i>Differentiated Learning for Gifted and Talented Education: Principals</i> (DiL_GATE_P)*	Online principal survey	ANOVAs to compare teachers’, students’, and principals’ perceptions (as above)
Phase 2	Principals ($n = 4$)	Semi-structured interview schedule	Face-to-face case-study interviews with four exemplary principals	Content analysis for the identification of themes

Note. * The teacher, student, and principal surveys contain common items.

Summary

A mixed-method approach was adopted in the study and an exploratory sequential design was employed. In phase one, quantitative data were collected. Teachers, principals, and students were each administered a survey about their perceptions of *teachers'* differentiated practices for gifted students. The principal survey was identical to the teacher survey. Therefore, the factor analysis was performed using the teachers' survey, and not the principal or student survey. Principal axis factor analyses were performed to reduce the survey data to a manageable number of concepts related to teachers' attitudes towards giftedness (PAT_GATS scale), and their perceptions of differentiated pedagogical practices (DiL_GATE scale). Confirmatory factor analyses were then performed to confirm three constructs related to teachers' attitudes (*general perceptions, pedagogical provisions, and acceleration*), and three constructs related to teachers' differentiated pedagogical practices (*product differentiation, process differentiation, and content differentiation*). Gifted students collaborated with me as "co-researchers" who co-developed and disseminated the student survey, and independently interviewed their teachers. In phase two, qualitative data were collected. Interviews with four principals were conducted to further interpret the initial quantitative results from phase one, and understand the principals' leadership actions in implementing learner-centred differentiation for gifted students across the school.

In Chapter 7, the findings from the first phase of the study about teachers' attitudes towards giftedness and their perceptions of differentiated practices are reported. In Chapter 8, the findings from the first phase of the study about the students' perceptions about teachers' differentiated practices, including interviews by gifted student "co-researchers" with their own teachers, are presented. In Chapter 9, the findings from the second phase of the study about the participating principals' understanding of, and their self-reported

leadership actions about, school-wide differentiated learning are reported. In Chapter 10, the analysis of the findings from the synthesis of two phases of the study, implications of the results for practice, and the study's limitations and implications for future research, are discussed. In Chapter 11, the study's findings are summarised and concluded.

CHAPTER 7

RESULTS: TEACHERS' ATTITUDES AND PERCEPTIONS

In this chapter, the findings of the study related to teachers' attitudes towards giftedness and their perceived understanding of pedagogical practices for differentiated learning in schools are reported. The results are derived from the online survey, *Perceptions and Attitudes towards Gifted and Talented Students* (PAT_GATS), which was completed by teachers in Phase 1 of the study (see Appendix B for teacher survey).

The first section of the chapter describes participating teachers' backgrounds and experiences, including the type of school they teach in, whether or not they have a position of responsibility in gifted and talented education (GATE), whether or not they engage in professional learning in GATE, whether or not they hold qualifications in GATE, and their years of teaching experience. In the second section, teachers' attitudes towards giftedness and gifted learners (research question 1a) are reported, and in the third section, teachers' perceptions of their own differentiated pedagogical strategies (research question 1b) are presented. In both the second and third sections, the factors derived from factor analyses (see Chapter 6) were used to determine whether teachers' attitudes towards gifted learners and differentiated learning differed according to their backgrounds and teaching experiences.

Teachers' Backgrounds and Experiences

In this section, participating teachers' demographic data are presented for five key background variables: school type, position of responsibility in gifted and talented education (GATE), professional learning in GATE, qualifications in GATE, and years of teaching experience. Given mixed findings about teachers' attitudes towards gifted learners and differentiation (e.g., Bartley, 2014; Troxclair, 2013; Watts, 2006), the selected background variables in this study might indicate differences in teacher attitudes and

perceptions according to their experience with gifted students, or their engagement in GATE. Each background variable is explained below.

School type. The teachers from non-selective schools (i.e., non-OC primary and non-selective secondary schools) accounted for 85.3% of all participating teachers ($n = 867$), while the teachers from schools with selective settings (i.e., OC primary and selective secondary schools) accounted for 14.7% of the participating teachers (Table 7.1). No significant differences were found in the proportion of participating teachers from schools with selective settings at primary school or secondary school, $\chi^2(126, 127) = 127.00, p = .458$.

Table 7.1

Numbers and Percentages of Teachers According to School Type

Non-OC Primary	OC* Primary	Non-Selective Secondary	Selective Secondary	Total
422	64	318	63	867
48.7%	7.4%	36.7%	7.3%	100.0%

Note: *Opportunity Classes.

Position of responsibility in GATE. Approximately two in five teachers (40.3%) reported holding a position of responsibility in GATE (e.g., GATE coordinator roles) (Table 7.2). No significant differences were found in the proportion of participating teachers with a position of responsibility in GATE from schools with selective or non-selective settings, $\chi^2(3, 867) = 6.71, p = .082$.

Table 7.2

Position of Responsibility in GATE

Current Position	School Type				Total
	Non-OC Primary	OC Primary	Non-Selective Secondary	Selective Secondary	
Responsibility in GATE	184 (43.6)	28 (43.8)	110 (34.6)	27 (42.9)	349 (40.3)
No responsibility in GATE	238 (56.4)	36 (56.3)	208 (65.4)	36 (57.1)	518 (59.7)
Total	422 (100.0)	64 (100.0)	318 (100.0)	63 (100.0)	867 (100.0)

Note. The parentheses contain % within group.

Professional learning in GATE. More than one third of teachers (34.3%) reported that they attended conferences for their professional learning, and another 23.0% of teachers reported undertaking professional training in GATE. The teachers also reported other forms of professional learning such as pre-service training and action learning in school. Overall, 66.1% of teachers reported that they engaged in some form of professional development to meet the needs of gifted learners (Table 7.3). No significant differences were found in the proportion of participating teachers with professional learning in GATE from schools with selective or non-selective settings, $\chi^2(12, 867) = 17.82, p = .121$

Table 7.3

Professional Learning in GATE

	School Type				Total
	Non-OC Primary	OC Primary	Non-Selective Secondary	Selective Secondary	
Pre-service training	27 (6.4)	4 (6.3)	13 (4.1)	4 (6.3)	48 (5.5)
Professional training	106 (25.1)	15 (23.4)	67 (21.1)	11 (17.5)	199 (23.0)
Action learning	18 (4.3)	2 (3.1)	9 (2.8)	0 (0.0)	29 (3.3)
Conferences	122 (28.9)	23 (35.9)	121 (38.1)	31 (49.2)	297 (34.3)
No professional learning in GATE	149 (35.3)	20 (31.3)	108 (34.0)	17 (27.0)	294 (33.9)
Total	422 (100.0)	64 (100.0)	318 (100.0)	63 (100.0)	867 (100.0)

Note. The parentheses contain % within group.

Qualifications in GATE. One in ten participants (9.9%) reported that they held formal qualifications in GATE, as shown in Table 7.4. Within this group, a large proportion of teachers held a postgraduate degree in GATE (7.2%). No significant differences were found in the proportion of participating teachers with qualifications in GATE from schools with selective or non-selective settings, $\chi^2(9, 867) = 11.76, p = .227$.

Table 7.4

Qualifications in GATE

Variable	School Type				Total
	Non-OC Primary	OC Primary	Non-Selective Secondary	Selective Secondary	
Graduate certificate	11 (2.6)	2 (3.1)	4 (1.3)	3 (4.8)	20 (2.3)
Graduate diploma	2 (0.5)	1 (1.6)	1 (0.3)	0 (0.0)	4 (0.5)
Master's degree	34 (8.1)	4 (6.3)	16 (5.0)	8 (12.7)	62 (7.2)
No qualifications in GATE	375 (88.9)	57 (89.1)	297 (93.4)	52 (82.5)	781 (90.1)
Total	422 (100.0)	64 (100.0)	318 (100.0)	63 (100.0)	867 (100.0)

Note. The parentheses contain % within group.

Years of teaching experience. Teachers reported classroom teaching experience ranging from 0-52 years with a mean of 17.96 years ($SD = 11.09$). More than half of the participants (54.4%) reported teaching experience of more than 15 years (Table 7.5). Ten teachers in the sample (1.2%) reported teaching experience of more than 40 years.

No significant differences were found in years of teaching experience between teachers from selective schools and those from non-selective schools, $\chi^2(12, 867) = 17.22$, $p = .142$. However, teachers with 6 or more years of teaching experience were more likely to hold a *position of responsibility in GATE*, $\chi^2(4, 867) = 32.01$, $p < .001$; and attend *professional learning in GATE*, $\chi^2(16, 867) = 49.39$, $p < .001$, than were teachers with less than 5 years of teaching experience. Teachers with 16 or more years of teaching

experience were also more likely to hold *qualifications in GATE*, $\chi^2(12, 867) = 23.35, p = .025$, than were teachers with less than 15 years of experience.

Table 7.5

Years of Teaching Experience

Variable	School Type				Total
	Non-OC Primary	OC Primary	Non-Selective Secondary	Selective Secondary	
0-5 years	69 (16.4)	14 (21.9)	60 (18.9)	10 (15.9)	153 (17.6)
6-15 years	127 (30.1)	18 (28.1)	81 (25.5)	17 (27.0)	243 (28.0)
16-25 years	113 (26.8)	24 (37.5)	88 (27.7)	12 (19.0)	237 (27.3)
26-35 years	89 (21.1)	6 (9.4)	76 (23.9)	21 (33.3)	192 (22.1)
36-52 years	24 (5.7)	2 (3.1)	13 (4.1)	3 (4.8)	42 (4.8)
Total	422 (100.0)	64 (100.0)	318 (100.0)	63 (100.0)	867 (100.0)

Note. The parentheses contain % within group.

In summary, teachers with a greater number of years of teaching experience were more likely to have qualifications and expertise in GATE than were teachers with fewer years of teaching experience. In the following section, the impact of qualifications and expertise in GATE, and of overall general teaching experience, on teacher attitudes towards giftedness and gifted learners is analysed.

Teachers' Attitudes towards Giftedness and Gifted Learners

As outlined in Chapter 6, the *Perceptions and Attitudes towards Gifted and Talented Students* (PAT_GATS) scale was used to assess teachers' attitudes towards giftedness and gifted learners (research question 1a). The means and standard deviations for the scale are reported in Appendix K. A factor analysis was used to determine whether teachers' attitudes towards giftedness and gifted learners differed according to their backgrounds and teaching experiences. Three constructs were identified and labelled *general perceptions*, *pedagogical provisions*, and *acceleration*. To determine whether the scores on the three constructs differed according to teachers' background and experience (i.e., their school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience), a series of five one-way ANOVAs were performed. Each ANOVA is explained in further detail below.

School type. To test the influence of school type on teachers' attitudes towards gifted learners, *school type* (non-OC primary school, OC primary school, non-selective secondary school, and selective secondary school) was entered into a one-way ANOVA as an independent variable and the three attitude constructs (*general perceptions*, *pedagogical provisions*, and *acceleration*) were entered as dependent variables. The significance levels used in the tests in this study were $p < .05$. Consistent with Cohen (1988, pp. 284-287), effect size levels of .01 (small), .06 (medium), and .14 (large) were used in the tests. For the construct, *pedagogical provisions*, Levene's test for homogeneity revealed violation of the assumption of homogeneity of variance, $Levene(3, 863) = 3.10, p = .026$, indicating significant difference in variances within each group. The Brown-Forsythe Robust Test of Equality of Means was, therefore, used to test differences between school types for this variable only.

There was a small, significant difference in teachers' *general perceptions* according to their school type, $F(3, 863) = 4.36, p = .005, \eta_p^2 = .02$. Post-hoc comparisons (Tukey's HSD) showed that teachers in selective secondary schools had a significantly higher score ($M = 3.60, SD = .82$) than did teachers in non-OC primary schools ($M = 3.24, SD = .80$), $p = .003$; OC primary schools ($M = 3.18, SD = .91$), $p = .015$; and non-selective secondary schools ($M = 3.36, SD = .79$), $p = .029$. There were no differences in scores among the remaining three groups (non-OC primary and OC primary schools, $p = .961$; non-OC primary and non-selective secondary schools, $p = .672$; and OC primary and non-selective secondary schools, $p = .694$). Given that *general perceptions* include beliefs that special programs for gifted students create elitism and that gifted students have difficulty making friends, both reverse scored, the higher scores on this construct indicate that the teachers in selective secondary schools held more positive perceptions about giftedness and gifted learners.

There was also a small, significant difference in teachers' *pedagogical provisions* according to their school type, $Brown-Forsythe(3, 280) = 4.37, p = .005, \eta_p^2 = .02$. The teachers in selective secondary schools had a significantly higher score ($M = 4.01, SD = .74$), $p = .011$ than those in non-selective secondary schools ($M = 3.77, SD = .68$). There were no significant differences in scores among the remaining three groups (non-OC primary and OC primary schools, $p = .252$; non-OC primary and non-selective secondary schools, $p = .685$; non-OC primary and selective secondary schools, $p = .055$; non-selective secondary and OC primary schools, $p = .076$; and selective secondary and OC primary schools, $p = .951$). Given that *pedagogical provisions* include ability grouping, allocation to special classes, and offering special provisions to gifted learners, the higher score indicated that teachers in selective secondary schools were more supportive of pedagogical provisions for gifted learners than teachers in other schools.

Finally, there was a small, significant difference in teachers' use of the provision, *acceleration*, according to their school type, $F(3, 863) = 2.75, p = .042, \eta_p^2 = .01$. Post-hoc comparisons (Tukey's HSD) showed that teachers in non-OC primary schools had significantly higher scores ($M = 2.88, SD = .95$), $p = .032$ than those in non-selective secondary school ($M = 2.76, SD = .86$), thus indicating greater support for providing *acceleration* to gifted learners. There were no significant differences in scores among the remaining groups (non-OC primary and OC primary schools, $p = .533$; non-OC primary and selective secondary schools, $p = .996$; OC primary and non-selective secondary schools, $p = .988$; OC primary and selective secondary schools, $p = .829$; and non-selective secondary and selective secondary schools, $p = .588$).

Position of responsibility in GATE. To examine the impact of position of responsibility in GATE on teachers' attitudes, *position in GATE* (yes, no) was entered into a one-way ANOVA as an independent variable, and the three attitude constructs (*general perceptions*, *pedagogical provisions* and *acceleration*) were entered as dependent variables.

Teachers with positions of responsibility in GATE ($M = 3.43, SD = .83$) scored significantly higher on *general perceptions* than did those with no responsibility ($M = 3.22, SD = .79$), $F(1, 865) = 24.55, p < .001, \eta_p^2 = .03$, indicating they were less supportive of negative perceptions about giftedness and gifted learners. Teachers with positions of responsibility in GATE ($M = 3.93, SD = .60$) also scored higher on *pedagogical provisions* than did those without this responsibility ($M = 3.70, SD = .62$), $F(1, 865) = 38.05, p < .001, \eta_p^2 = .04$, indicating they were supportive of pedagogical provisions for gifted learners. Finally, teachers with positions of responsibility in GATE ($M = 2.96, SD = .97$) scored higher on *acceleration* than did those without this responsibility ($M = 2.73, SD = .90$), $F(1, 865) = 21.15, p < .001, \eta_p^2 = .02$, indicating they were supportive of *acceleration*

for gifted learners. Across all three attitude constructs, therefore, teachers with current positions of responsibility in GATE were more positive towards giftedness and gifted learners than were teachers without positions of responsibility in GATE.

Professional learning in GATE. To investigate the impact of professional learning in GATE on teachers' attitudes, *professional learning in GATE* (no professional learning, pre-service training, professional training, action learning, and conferences) was entered into a one-way ANOVA as an independent variable, and the three attitude constructs (*general perceptions*, *pedagogical provisions* and *acceleration*) were entered as dependent variables.

A small, significant difference in scores was found between groups for the attitude construct, *general perceptions*, $F(4, 862) = 5.80, p < .001, \eta_p^2 = .03$. Teachers attending GATE conferences ($M = 3.45, SD = .83$), $p < .001$, scored significantly higher on *general perceptions* than did those without professional learning in GATE ($M = 3.17, SD = .76$), indicating they were less supportive of negative perceptions about giftedness and gifted learners. No significant differences were found between teachers with no professional learning and the remaining groups (pre-service training, $p = .959$; professional training, $p = .447$; action learning, $p = .656$).

A significant difference in scores was also found between groups for the attitude construct, *pedagogical provisions*, $F(4, 862) = 3.84, p = .004, \eta_p^2 = .02$. Teachers attending GATE conferences ($M = 3.87, SD = .62$), $p = .003$, scored significantly higher on *pedagogical provisions* than did those without professional learning in GATE ($M = 3.70, SD = .63$), indicating they were supportive of pedagogical provisions for gifted learners. No significant differences were found between teachers without professional learning in GATE and the remaining groups (pre-service training, $p = .973$; professional training, $p = .400$; action learning, $p = .183$).

Finally, a small, significant difference in scores was found between groups for the construct, *acceleration*, $F(4, 862) = 7.44, p < .001, \eta_p^2 = .03$. Teachers attending GATE conferences ($M = 3.02, SD = .98$), $p < .001$, scored significantly higher on *acceleration* than did those without professional learning in GATE ($M = 2.66, SD = .84$), thus indicating greater support for providing *acceleration* to gifted learners. No significant differences were found between teachers without professional learning in GATE and the remaining groups (pre-service training, $p = .999$; professional training, $p = .267$; action learning, $p = .902$).

Qualifications in GATE. To examine the influence of qualifications in GATE on teachers' attitudes, *qualifications in GATE* (no qualification, graduate certificate, graduate diploma, and Master's degree) were entered into a one-way ANOVA, and the three attitude constructs (*general perceptions*, *pedagogical provisions* and *acceleration*) were entered as dependent variables.

A significant difference in scores was found between groups for the attitude construct, *general perceptions*, $F(3, 863) = 10.81, p < .001, \eta_p^2 = .04$. Teachers who held graduate certificate ($M = 3.85, SD = .78$), $p < .001$, and Master's degree ($M = 3.65, SD = .82$), $p < .001$, scored significantly higher on *general perceptions* than did those without qualifications in GATE ($M = 3.26, SD = .80$), indicating they were less supportive of negative perceptions of gifted learners. No significant differences were found between teachers holding a graduate diploma and the remaining groups (no qualifications, $p = 1.000$; graduate certificate, $p = .341$; Master's degree, $p = .700$).

A significant difference in scores was also found between groups for the attitude construct, *pedagogical provisions*, $F(3, 863) = 12.41, p < .001, \eta_p^2 = .04$. Teachers with graduate certificate ($M = 4.26, SD = .63$), $p = .001$, and Master's degree ($M = 4.06, SD = .57$, $p < .001$) scored significantly higher on *pedagogical provisions* than did those without

qualifications in GATE ($M = 3.76$, $SD = .62$), indicating they were supportive of pedagogical provisions for gifted learners. No significant differences were found between teachers holding a graduate diploma and the remaining groups (no qualifications, $p = 1.997$; graduate certificate, $p = .489$; Master's degree, $p = .713$).

Finally, a significant difference in scores was found between groups for the attitude construct, *acceleration*, $F(3, 863) = 7.96$, $p < .001$, $\eta_p^2 = .03$. Teachers with graduate certificate ($M = 3.43$, $SD = 1.25$), $p = .014$, and Master's degree ($M = 3.20$, $SD = .96$), $p = .001$, scored significantly higher on *acceleration* than did those without qualifications in GATE ($M = 2.78$, $SD = .91$), thus indicating greater support for providing *acceleration* to gifted learners. No significant differences were found between teachers holding a graduate diploma and the remaining groups (no qualifications, $p = .939$; graduate certificate, $p = .889$; Master's degree, $p = .970$).

Years of teaching experience. To test the impact of years of teaching experience on teachers' attitudes, *teaching experience* (0-5 years, 6-15 years, 16-25 years, 26-35 years, and 36-52 years) was entered into a one-way ANOVA as an independent variable, and the three attitude constructs (*general perceptions*, *pedagogical provisions*, and *acceleration*) were entered as dependent variables.

No significant differences in scores were found between groups for *general perceptions*, $F(4, 862) = 1.57$, $p = .181$, $\eta_p^2 = .007$; and *pedagogical provisions*, $F(4, 862) = .90$, $p = .464$, $\eta_p^2 = .004$. However, significant differences in scores were found between groups for *acceleration*, $F(4, 862) = 4.16$, $p = .002$, $\eta_p^2 = .019$. Teachers with 16-25 years of teaching experience ($M = 2.91$, $SD = .97$), $p = .012$; 26-35 years of teaching experience ($M = 2.89$, $SD = .93$), $p = .027$; and 36-52 years of teaching experience ($M = 3.05$, $SD = .93$), $p = .014$, scored significantly higher than did those with 0-5 years of teaching experience ($M = 2.63$, $SD = .93$) and 6-15 years of experience ($M = 2.73$, $SD = .86$), indicating that

experienced teachers were more supportive of providing *acceleration* to gifted learners than were early career (0-5 years) and mid-career (6-15 years) teachers. No significant differences in scores were found between teachers with 6-15 years of teaching experience and the remaining groups (0-5 years, $p = .336$; 16-25 years, $p = .548$; 26-35 years, $p = .681$; 35-52 years, $p = .203$).

Summary. Significant differences were found in the scores for four independent variables—*school type*, *position of responsibility in GATE*, *professional learning in GATE* and *qualifications in GATE*—in all the three constructs about teachers' attitudes towards giftedness and gifted learners. In all cases, the differences were small. The results indicated positive attitudes for teachers who worked with gifted students in selective schools, held qualifications or positions of responsibility in GATE, and engaged in professional learning in GATE. These teachers were also likely to be more supportive of the provision of acceleration for gifted students. Teachers' years of teaching experience did not influence their attitudes towards giftedness and gifted learners. However, more experienced teachers were found to be more supportive of the provision of acceleration than were less experienced teachers.

Teachers' Perceptions of Differentiated Pedagogical Strategies

As outlined in Chapter 6, the *Differentiated Learning for Gifted and Talented Education* (DiL_GATE) scale was used to analyse teachers' perceptions of their own differentiated strategies (research question 1b). The means and standard deviations for the scale are reported in Appendix L. A factor analysis was used to determine whether teachers' perceptions of differentiation pedagogical strategies differed according to their backgrounds and teaching experiences. Three constructs were identified and labelled *product differentiation*, *process differentiation*, and *content differentiation*. To determine whether the scores on three constructs differed according to teachers' background and

experience (i.e., their school type, position of responsibility in GATE, professional learning in GATE, qualifications in GATE, and years of teaching experience), a series of five one-way ANOVAs were performed. Each ANOVA is explained in further detail below.

School type. To examine the impact of school type on teachers' perceptions, *school type* (primary school, OC primary school, non-selective secondary school, and selective secondary school) was entered in a one-way ANOVA as an independent variable, and the three constructs (i.e., *product differentiation*, *process differentiation*, and *content differentiation*) were entered as dependent variables.

A significant difference in scores was found between groups for the construct, *product differentiation*, $F(3, 688) = 6.45, p < .001, \eta_p^2 = .03$. Teachers in selective secondary schools ($M = 4.12, SD = .65$) scored significantly higher on *product differentiation* than did those in primary schools ($M = 3.82, SD = .64$), $p = .005$, and secondary schools ($M = 3.72, SD = .59$), $p < .001$, indicating they were more supportive of product differentiation. No significant differences were found in scores between OC primary schools and other groups of schools (non-OC primary schools, $p = .280$; non-selective secondary schools, $p = .235$; selective secondary schools, $p = .231$).

A large, significant difference in scores was found between groups for the construct, *process differentiation*, $F(3, 688) = 44.75, p < .001, \eta_p^2 = .16$. Teachers in OC primary schools ($M = 4.38, SD = .40$), $p < .001$, non-OC primary schools ($M = 4.29, SD = .46$), $p < .001$, and selective secondary schools ($M = 4.16, SD = .50$), $p < .001$, scored higher than did those in non-selective secondary schools ($M = 3.89, SD = .50$), indicating that they were more supportive of process differentiation.

Finally, a significant difference in scores was found between groups for the construct, *content differentiation*, $F(3, 688) = 10.82, p < .001, \eta_p^2 = .05$. Teachers in

selective secondary schools ($M = 4.64$, $SD = .42$) scored significantly higher than did those in non-OC primary schools ($M = 4.28$, $SD = .50$), $p < .001$, OC primary schools ($M = 4.42$, $SD = .46$), $p = .014$, and non-selective secondary schools ($M = 4.21$, $SD = .53$), $p < .001$, thus indicating greater support for content differentiation.

Position of responsibility in GATE. To examine the impact of position of responsibility in GATE on teachers' perceptions, *position in GATE* (yes, no) was entered into a one-way ANOVA as an independent variable, and the three constructs (*product differentiation*, *process differentiation*, and *content differentiation*) were entered as dependent variables. For the construct, *process differentiation*, Levene's test for homogeneity revealed violation of the assumption of homogeneity of variance, $Levene(1, 690) = 4.47$, $p = .035$, indicating significant differences within each group. The Brown-Forsythe Robust Test of Equality of Mean was used to test differences between groups for this variable only.

Teachers with positions of responsibility in GATE ($M = 3.95$, $SD = .60$) scored significantly higher on *product differentiation* than did those with no responsibility in GATE ($M = 3.72$, $SD = .64$), $F(1, 690) = 27.24$, $p < .001$, $\eta_p^2 = .04$, indicating they were more supportive of product differentiation. Teachers with positions of responsibility in GATE ($M = 4.27$, $SD = .47$) also scored significantly higher on *process differentiation* than did those with no responsibility in GATE ($M = 4.04$, $SD = .52$), $Brown-Forsythe(1, 651) = 42.73$, $p < .001$, $\eta_p^2 = .06$, indicating they were more positive about process differentiation. The effect size was medium for *process differentiation*. Finally, teachers with positions of responsibility in GATE ($M = 4.44$, $SD = .44$) scored significantly higher on *content differentiation* than did those with no responsibility in GATE ($M = 4.19$, $SD = .53$), $F(1, 690) = 34.57$, $p < .001$, $\eta_p^2 = .05$, indicating they were more supportive of content differentiation. Across all three constructs, therefore, teachers with current

positions of responsibility in GATE were more positive towards differentiated learning than were teachers without positions of responsibility in GATE.

Professional learning in GATE. To investigate the impact of professional learning in GATE on teachers' perceptions, *professional learning in GATE* (no professional learning, pre-service training, professional training, action learning, and conferences) was entered into a one-way ANOVA as an independent variable, and the three constructs (*product differentiation*, *process differentiation*, and *content differentiation*) were entered as dependent variables.

A significant difference in scores was found between groups for the construct, *product differentiation*, $F(4, 687) = 4.42, p = .002, \eta_p^2 = .03$. Teachers attending GATE conferences ($M = 3.92, SD = .58$), $p = .001$, scored significantly higher than did those without professional learning in GATE ($M = 3.72, SD = .66$), indicating they were more supportive of product differentiation. No significant differences were found between teachers with no professional learning and the remaining groups (pre-service training, $p = 1.000$; professional training, $p = .500$; action learning, $p = .560$).

A significant difference in scores was also found between groups for the construct, *process differentiation*, $F(4, 687) = 2.57, p = .037, \eta_p^2 = .03$. Teachers undertaking conferences ($M = 4.20, SD = .49$), $p = .004$, scored significantly higher than did those without professional learning in GATE ($M = 3.97, SD = .52$), indicating they had more positive perceptions about process differentiation. No significant differences were found between teachers with no professional learning and the remaining groups (pre-service training, $p = 1.000$; professional training, $p = .733$; action learning, $p = .150$).

Finally, a significant difference in scores was found between groups for the construct, *content differentiation*, $F(4, 687) = 5.11, p < .001, \eta_p^2 = .03$. Teachers attending GATE conferences ($M = 4.40, SD = .45$), $p < .001$, scored significantly higher than did

those without professional learning in GATE ($M = 4.20$, $SD = .54$), indicating they had more positive perceptions about content differentiation. No significant differences were found between teachers with no professional learning and the remaining groups (pre-service training, $p = .988$; professional training, $p = .504$; action learning, $p = .125$).

Qualifications in GATE. To examine the impact of qualifications in GATE on teachers' perceptions, *qualifications in GATE* (no qualifications, graduate certificate, graduate diploma, and Master's degree) were entered into a one-way ANOVA, and the three constructs (*product differentiation*, *process differentiation*, and *content differentiation*) were entered as dependent variables.

A significant difference in scores was found between groups for the construct, *product differentiation*, $F(3, 688) = 5.47$, $p = .001$, $\eta_p^2 = .02$. Teachers who held a Master's degree ($M = 4.11$, $SD = .60$), $p = .002$, scored significantly higher than did those without qualifications in GATE ($M = 3.78$, $SD = .63$), indicating they were more positive about product differentiation. No significant differences were found between teachers with no qualifications and other groups (graduate certificate, $p = .190$; graduate diploma, $p = .955$).

A significant difference was also found between groups for the construct, *process differentiation*, $F(3, 688) = 8.21$, $p < .001$, $\eta_p^2 = .04$. Teachers holding a Master's degree ($M = 4.43$, $SD = .46$), $p < .001$, scored significantly higher than did those without qualifications in GATE ($M = 4.11$, $SD = .51$), indicating they were more positive about process differentiation. No significant differences were found between teachers with no qualifications and other groups (graduate certificate, $p = .137$; graduate diploma, $p = .878$).

Finally, a significant difference was found between groups for the construct, *content differentiation*, $F(3, 688) = 7.33$, $p < .001$, $\eta_p^2 = .03$. Teachers holding a Master's degree ($M = 4.52$, $SD = .47$), $p = .001$, scored significantly higher than did those without qualifications in GATE ($M = 4.27$, $SD = .51$), indicating they were more positive about

content differentiation. No significant differences were found between teachers without qualifications and other groups (graduate certificate, $p = .132$; graduate diploma, $p = 1.000$).

Years of teaching experience. To test the impact of years of teaching experience on teachers' perceptions, *teaching experience* (0-5 years, 6-15 years, 16-25 years, 26-35 years, and 36-52 years) was entered into a one-way ANOVA as an independent variable, and the three constructs (*product differentiation*, *process differentiation*, and *content differentiation*) were entered as dependent variables.

No significant differences were found between groups for *product differentiation*, $F(4, 687) = 2.10, p = .079, \eta_p^2 = .012$; and *process differentiation*, $F(4, 687) = 2.30, p = .058, \eta_p^2 = .013$. However, significant differences were found between groups for *content differentiation*, $F(4, 687) = 4.05, p = .003, \eta_p^2 = .023$. Teachers with 26-35 years of teaching experience ($M = 4.34, SD = .49$), $p < .002$, and 36-52 years of experience ($M = 4.42, SD = .47$), $p < .047$, scored significantly higher than did teachers with 0-5 years of teaching experience ($M = 4.22, SD = .52$), 6-15 years of experience ($M = 4.28, SD = .51$), and 16-35 years of experience ($M = 4.28, SD = .52$), indicating that experienced teachers were more supportive of *content differentiation* than were early career (0-5 years) and mid-career (6-15 years) teachers. No significant differences were found between 0-5 years of teaching experience and the remaining groups (6-15 years, $p = .172$; 16-25 years, $p = .253$), 6-15 years of teaching experience and the remaining groups (16-25 years, $p = 1.000$; 26-35 years, $p = .357$; 36-52 years, $p = .588$), and 16-25 years and the remaining groups (26-35 years, $p = .303$; 36-52 years, $p = .538$).

Summary. Significant differences in scores were found for *school type*, *position of responsibility in GATE*, *professional learning in GATE*, and *qualifications in GATE* in all the three constructs. While the effect sizes for the three constructs were generally small, a

few medium and large effect sizes for the construct, *process differentiation*, were also found. The results indicated that teachers who worked with gifted students in selective schools, held qualifications or positions of responsibility in GATE, and engaged in professional learning in GATE were likely to have positive perceptions about differentiated pedagogical strategies for gifted students (i.e., product, process, and content differentiation). Teachers' years of teaching experience did not generally influence their perceptions of differentiated learning for gifted students (i.e., product and process differentiation). However, more experienced teachers were found to be more supportive of *content differentiation* than were less experienced teachers.

General Summary

Teachers' attitudes towards gifted learners and their perceptions of differentiated pedagogical practices were examined. The results indicated positive attitudes towards giftedness and gifted learners (research question 1a), and positive perceptions towards product, process, and content differentiation (research question 1b) from teachers who worked with gifted students in selective schools, held qualifications or positions of responsibility in GATE, and engaged in professional learning in GATE.

Teachers' attitudes towards gifted learners and differentiated learning were not influenced by the number of years of teaching experience. No significant differences in attitude constructs were found between less experienced and more experienced teachers towards giftedness or gifted learners (research question 1a), and pedagogical provisions (i.e., process and product differentiation) for gifted learners (research question 1b). However, more experienced teachers indicated greater support for *acceleration* and *content differentiation* for gifted learners than did less experienced teachers.

The discussion of the results of teachers' attitudes towards, and their perceived understanding of, giftedness and differentiated learning, is presented in Chapter 10. In the

next chapter, the results of students' perceptions of teachers' use of differentiated pedagogical strategies are reported.

CHAPTER 8

RESULTS: GIFTED STUDENTS' PERCEPTIONS AND PERSPECTIVES

In this chapter, gifted students' perceptions of their teachers' pedagogical practices, and their perspectives of classroom engagement and the qualities of an effective teacher are reported and compared with the perceptions and perspectives of teachers (research question 2). The results are derived from a newly developed scale for students, *Differentiated Learning for Students* (STUDiL), and teacher interviews conducted by gifted students as "co-researchers" in Phase 1 of the study (see Appendix H for student survey and Appendix I for student-teacher interview questions).

In the first section, I compare student and teacher ratings of teachers' use of pedagogical strategies for differentiation. In the second and third sections, I use content analysis of students' qualitative descriptions of classroom engagement and qualities of an effective teacher respectively for the identification of themes. In both these sections, I also compare the student perspectives with the teachers' responses to interviews conducted by gifted student "co-researchers".

Comparing Students' and Teachers' Perceptions of the Differentiated Pedagogical Strategies being used by Teachers

Students' perceptions of teachers' pedagogical strategies were assessed using a newly developed scale, *Differentiated Learning for Students* (STUDiL), and were then compared with teachers' perceptions of their use of pedagogical strategies. As noted in Chapter 7, teachers' perceptions of their own differentiated strategies were assessed using the scale, *Differentiated Learning for Gifted and Talented Education* (DiL_GATE). Student perceptions of these same teachers' pedagogical strategies were assessed using the scale, STUDiL. This enabled comparisons to be made on 12 matched items (see Table 8.1).

A series of 12 one-way ANOVAs was performed to investigate if any significant difference existed between the students' ($n = 802$) and the teachers' ($n = 867$) perceptions about any of the 12 pedagogical strategies. As separate ANOVAs were performed simultaneously on the single data set, thus risking the inflation of Type 1 error, a Bonferroni adjusted alpha of .004 per test ($.05/12$) was used. The assumption of homogeneity of variance was violated for 10 of 12 analyses (i.e., Levene's statistic was significant, $p < .05$), and the Brown-Forsythe test is reported in such cases. There was no violation for *task choices* and *flexible grouping*, and standard F tests are reported in these cases, instead.

A significant difference between students' and teachers' perceptions ($p < .001$) was found for 10 out of 12 differentiated pedagogical strategies (see Table 8.1 for descriptive statistics). Students perceived significantly fewer *task choices* being offered to them than did their teachers, $F(1, 1645) = 150.73, p < .001, \eta_p^2 = .08$; and also perceived significantly fewer *flexible grouping* arrangements, $F(1, 1651) = 708.00, p < .001, \eta_p^2 = .30$. For *flexible grouping*, the difference was large. Indeed, the mean scores (see Table 8.1) indicated that students rated the pedagogical strategies of *task choices* and *flexible grouping* as the lowest of all the 12 strategies measured in the STUDiL.

For those tests which violated the assumption of homogeneity, the Robust Test of Equality of Means, Brown-Forsythe, indicated that students perceived they were offered significantly fewer *challenging tasks*, $Brown-Forsythe(1, 1405) = 279.50, p < .001, \eta_p^2 = .15$; and significantly fewer tasks related to *concepts-based learning*, $Brown-Forsythe(1, 1481) = 208.97, p < .001, \eta_p^2 = .11$, than did their teachers. For *challenging tasks*, the difference was large. The teachers also reported being given fewer *real-life problems*, $F(1, 1595) = 12.14, p < .001, \eta_p^2 = .01$; fewer opportunities to *evaluate solutions*, $F(1, 1561) = 29.70, p < .001, \eta_p^2 = .02$; and fewer opportunities for *self evaluation*, $F(1, 1492) = 66.41,$

$p < .001$, $\eta_p^2 = .04$, than did their teachers. Finally, they reported being offered significantly fewer activities associated with *imaginative solutions*, $F(1, 1473) = 154.27$, $p < .001$, $\eta_p^2 = .09$, and fewer opportunities to express *diverse views*, $F(1, 1535) = 180.22$, $p < .001$, $\eta_p^2 = .10$, than did their teachers. Interestingly, students reported being *more* strongly engaged with *independent projects* than teachers realised, $F(1, 1646) = 39.86$, $p < .001$, $\eta_p^2 = .02$.

Table 8.1

Means and Standard Deviations for Scores on Pedagogical Strategies in Student and Teacher Surveys

Pedagogical Strategies	Students		Teachers	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Independent projects	3.94	.97	3.64	.98
Gather evidence	3.87	1.01	3.81	.96
Real-life problems	3.87	.87	4.01	.76
Evaluate solutions	3.78	.90	4.01	.75
Concepts	3.78	.89	4.34	.67
Challenging tasks	3.75	.92	4.41	.63
Creativity	3.69	.89	3.73	.97
Imaginative solutions	3.67	.98	4.20	.72
Diverse views	3.56	.94	4.12	.76
Self evaluation	3.47	1.06	3.85	.81
Task choices	3.10	1.03	3.68	.89
Flexible grouping	3.07	.88	4.16	.79

Note. Students ($n = 802$); Teachers ($n = 867$).

There were, however, exceptions for teachers' *creativity* ($p = .391$) and their ability to *gather evidence* ($p = .215$). A majority of students and teachers agreed (more than 61% of students and teachers for *creativity*, and more than 65% of students and teachers for *gathering evidence*) that these pedagogical strategies were being offered "often" or "almost always" to students (see Table 8.2).

Table 8.2

Percentile Scores for Students' and Teachers' Perceptions of Teachers' Pedagogical Strategies

Item	Pedagogical Strategies	% Never		% Rarely		% Sometimes		% Often		% Almost always	
		S	T	S	T	S	T	S	T	S	T
1	Task choices	6.6	1.1	19.3	7.5	40.9	32.2	23.9	40.9	9.2	18.3
2	Flexible grouping	2.5	0.4	21.6	1.8	49.6	16.8	19.5	43.7	6.9	37.4
3	Challenging tasks	1.6	0.0	7.6	0.4	25.2	6.7	44.9	44.8	20.7	48.1
4	Self evaluation	4.2	0.0	12.8	4.6	32.8	27.2	31.8	46.8	18.3	21.5
5	Diverse views	2.4	0.1	9.2	1.9	34.0	16.6	38.9	48.2	15.5	33.2
6	Real-life problems	1.2	0.0	3.7	2.6	26.1	20.7	44.5	49.8	24.4	27.0
7	Evaluate solutions	1.6	0.2	5.1	1.1	28.3	23.0	21.8	49.2	21.8	26.5
8	Concepts	1.9	0.2	4.6	0.6	27.4	7.6	45.4	47.7	20.7	43.9
9	Creativity	1.4	0.0	7.0	8.7	30.8	27.4	42.6	39.1	18.6	23.1
10	Imaginative solutions	2.2	0.0	7.6	1.1	33.0	14.9	34.7	46.7	22.4	37.4
11	Gather evidence	1.5	1.7	8.5	7.4	24.2	25.3	33.4	39.8	32.4	25.9
12	Independent Projects	2.0	2.6	5.5	9.2	21.4	29.9	38.8	38.6	32.3	19.7

Note. S = Students ($n = 802$); T = Teachers ($n = 867$). 12 items were selected from the student survey that corresponded with the items in the teacher survey.

Summary. The analysis revealed significant differences, with effect sizes ranging from small to large, in students' and teachers' perceptions for 10 of 12 differentiated pedagogical strategies. The students, on the whole, reported significantly less experience using differentiated strategies in the classroom compared to the teachers who believed these strategies were being implemented more strongly.

Students' Perspectives of Their Classroom Engagement

In this section of the chapter, the students' perspectives of their classroom engagement in a differentiated learning environment are presented (research question 2). A total of 738 students provided written responses to the question, "*How do you know when you are engaged in classroom?*" Thematic analysis of the qualitative responses was undertaken and four categories were identified: *learning and flow*, *substantive communication and interaction*, *teacher's influence*, and *task*. An overview of the categories and themes is presented in Table 8.3. To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from 127 randomly selected students (15.8%). A second, independent rater (past gifted student) who was blind to the identified ratings, coded the data independently. Cohen's Kappa was calculated with these data, and found to reflect a high level of inter-rater agreement ($K = .86$) (Fleiss, 1981, as cited in Robson, 2002).

Learning and flow. The category, *learning and flow*, represented three themes associated with student engagement and are presented below (see Table 8.3). These include *focus and flow*, *deep understanding*, and *enthusiasm to learn something new*. Across all three themes, gifted students' responses showed that they valued engaging in learning for meaning and deep understanding.

Focus and flow. A little more than a quarter (27.8%) of the participating students in the study reported being engrossed in substantive learning and experiencing a dynamic sense of flow in their classroom experiences. As James¹ (non-selective secondary; #39²) stated, "*I do not realise how fast the time goes and when the bell goes I am surprised*". Susan³ (OC primary⁴; #108) echoed these sentiments reporting that "*I suddenly cannot*

¹ Student names are pseudonyms.

² #39 indicates 39th participant student from a particular school.

³ No data were collected about student gender. Pseudonyms have been assigned to both genders.

⁴ OC primary refers to primary school with Opportunity Classes.

hear anything except my task” (see further examples in Table 8.3). The students also articulated that engaging and challenging lessons helped them avoid boredom, with Ashleigh (selective secondary; #154) explaining that she is “...*engaged in the classroom when the lesson is not so boring that I get drowsy or sleepy*”. The students were focused in the classroom when they were given challenge with Alexander (non-selective secondary; #165) reporting that he is “...*able to block out all distractions and [is] interested in what is being said*”. A strong internal locus of control and self-realisation was evident in some students’ responses for staying engaged in the classroom. As Hannah (selective secondary; #237) reported, “*I usually follow the incentive that if I am not engaged in my work, I will easily fall behind*”. The focused desire to bring the tasks to conclusion was evident in Alice’s (OC primary; #37) statement, “*I am so focused to complete all set tasks*”. The state of flow and sustained focus on learning was linked to challenging and engaging learning opportunities for gifted students.

Deep understanding. Deep understanding was identified as the second most common theme (20.9%) for promoting student engagement. Some students reflected upon being able to transfer their learning in different, unfamiliar contexts. As Olivia (selective secondary; #242) noted, for example, “*You are engaged when you completely understand concepts and are able to replicate progress by yourself to different tasks*”. The students expressed the view that deeper understanding of concepts led to the feeling of enjoyment and helped them get involved in peer interaction. Echoing this sentiment, Benjamin (non-selective secondary; #62) reported that, “*when you are understanding what you are learning about, contributing to class discussions and enjoying the class time, you feel engaged*”. A few students made an explicit link between classroom engagement and understanding. Audrey (non-selective secondary; #4), for example, noted, “*I know I have*

had an engaging lesson when I leave the class having a stronger grasp on the topic discussed that day, without feeling like I need to teach myself”.

Enthused to learn something new. Student enthusiasm for new learning was deemed significant for classroom engagement by a smaller number of students (14.8%). The students made explicit that their excitement and engagement in classroom was related to their spirit of inquiry and desire for learning. As Isabella (OC primary; #15) noted, “*I am engaged if I feel excited to know, or when I am curious about what will happen next, or if the new topic was much BETTER than I had imagined!*”. The enthusiasm of learning novel ideas and concepts was evident in Grace’s (non-OC primary; #39) observations, “*I am engaged when I feel like I’m learning something new and it doesn’t always have to be fun*”. Mark (selective secondary; #237) also echoed similar sentiments, “*I know I am engaged in the classroom when I am making notes about important points, focusing, evaluating the material being taught and learning something new*”.

Substantive communication and interaction. The students’ responses about the category, *substantive communication and interaction*, represented three themes associated with student engagement (Table 8.3), and are presented below. Gifted students’ responses demonstrated that they valued inquiry and meaningful discussions, and enjoyed learning from their peers and teachers in learner-centred, differentiated classrooms.

Table 8.3

Primary and Secondary Students' Perspectives about Sources of Influence upon their Classroom Engagement (n = 738)

Category	Theme	Percent	Examples
Learning and flow	Focus and flow	27.8	Students are focused on work, tend to lose track of time, and are deeply engrossed in a topic without consciously making an effort to do so.
	Deep understanding	20.9	Students feel enjoyment when they completely understand concepts and are able to transfer their learning across different contexts.
	Enthusiasm to learn something new	14.8	Learning new ideas and trying to develop new skills being taught is a source of fun for many students.
Substantive communication and interaction	Actively raise and respond to questions	14.9	Asking thoughtful questions to learn more and responding to a variety of questions lead to reflective conversations and promote student engagement.
	Engage in high level discussion	14.6	Students enjoy high level class discussions in which anybody can take part. They find it a good way of sharing ideas and finding solutions to problems themselves, rather than being provided answers or made to work from a textbook.
	Collaborating with peers	7.3	Working together and getting exposed to diverse opinions of peers is stimulating.
Teacher's influence	Meaning-making	16.7	Students are engaged when they listen with intent to their teacher about a topic of interest, and put things together to build a coherent perspective.
	Instructional pedagogy	11.7	Students are engrossed in their learning when their teacher explains concepts well, uses a variety of pedagogical strategies in an interesting manner, and provides useful feedback.
Task	Interest	12.3	Tasks that tap student interest lead to sustained enjoyment and enthused learning.
	Relevance and complexity	4.5	Relevant and authentic tasks involving creativity and problem-solving lead to deeper engagement as students can relate to the challenging concepts in their everyday lives.

Actively raise and respond to questions. Responding to and raising questions in the classroom was perceived by 14.9% of the students as a driver of classroom engagement. The students were of the view that actively asking questions helped them clarify their misconceptions about ideas and gain deeper understanding of concepts with Henry (non-OC primary; #14) observing, *“I ask thoughtful questions to learn more”*, and Matilda (selective secondary; #32) noting, *“When I ask questions and they are answered in a manner that I understand”*. Some students expressed keenness to respond to questions when they were engrossed in their learning, with Liam (non-OC primary; #25) reporting, *“I am desperate to answer a question”*, and Zara (non-selective secondary; #17) explaining, *“I am engaged when I’m constantly answering questions, laughing, helping other people learn”*. The students also expressed the view that their ability to respond to questions demonstrated their level of understanding of the content. As Simon (selective secondary; #76) stated, *“I know I’m engaged in the classroom when I am able to answer questions, [and] understand the topic of the subject”*. The student responses overall indicated that engaging in high level questioning stimulated reflective conversations, deepened gifted students’ understanding, and promoted engagement in a differentiated classroom.

Engage in high level discussion. Active participation in high-level discussions and interactions was perceived by 14.6% of the students as a source of classroom engagement for learning. As Daniel (OC primary; #65) noted, *“I know I am engaged when I am presenting my ideas frequently and they are effective in reaching the overall goal of the discussion”*. Isaac (OC primary; #117) also concurred, *“Everyone gets involved and it is like a conversation”*. Many students found discussions absorbing, with Elizabeth (selective secondary; #91) reporting, *“I am engaged when I am adding to the class discussion”*, and Hudson (non-selective secondary; #164) professing, *“I feel like voluntarily participating in*

class discussions". Instead of remaining passive observers, students showed preference for active engagement. Sarah (non-selective secondary; #173), for example, affirmed, "*I enjoy actively participating in class discussions*". Purposeful interaction was perceived by gifted learners as conducive to student engagement.

Collaborating with peers. Engaging in cooperative learning was perceived by a small number (7.3%) of the students as a good opportunity to listen to and work with their peers, with Eva (OC primary; #28) discerning, "*Everyone hears each other's ideas*", and Madison (OC primary; #152) concurring that she gets engaged, "*when I cooperate with others [and] when I get help or help other students*". The students expressed the view that collaborating with their peers helped them explore a diversity of perspectives and use different ways to interpret the same information. As Jacob (selective secondary; #1) observed, "*It helps me to listen in on different opinions which then helps formulate my understanding of what we do in class*". Exposure to diverse opinions also stimulated some students' divergent thinking, with Luke (OC primary; #68) recognising that "*discussing interesting things with other people and sharing creative ideas make me feel engaged*". The students perceived collaboration with peers as a productive activity for developing an engaged community of learners.

Teacher's influence. For the category, *teacher's influence*, two themes associated with student engagement were identified: *meaning-making* and *instructional pedagogy* (Table 8.3). Teachers were perceived to make a difference in student engagement by enabling students to appreciate the value of learning activities. Many students indicated that the teachers sparked their desire to listen for understanding and engage in learning. The findings about the two themes are presented below.

Meaning-making. The students (16.7%) expressed their desire to listen to the teacher attentively particularly when the topic was of interest or when they actively wanted

to make meaning in the classroom, with James (non-selective secondary; #33) noting, “*When I actually listen I understand [emphasis in original]*”, and Jessica (non-OC primary; #13) reporting, “*I feel engaged when I want to listen and create my own understanding*”. Similarly Lucy (selective secondary; #86) observed, “*I listen without missing a word as there is an interesting/important topic at hand*”, and Max (selective secondary; #258) professed that he gets engaged, “*when I am listening with intent to the teacher and actually want to take notes so I understand*”. Ivy (non-selective secondary; #125) explained that being attentive was easier when they were listening for understanding, “*I am listening and actually taking in what the teacher is saying and I find it easy to concentrate*”. Other students also affirmed this view, with Oscar (non-selective secondary; #63) reporting that “*active listening and joining class discussions*” promoted student interest, and Sophie (non-selective secondary; #91) contending that “listening and thinking at the same time” led to student engagement.

Instructional pedagogy. Some students (11.7%) referred to their teacher’s ability to teach effectively by using a range of pedagogical approaches. The students commented upon their teachers’ capacity to explain the concepts well, with Emma (non-selective secondary; #118) stating, “*When the teacher is explaining things in a way that I understand*”, and Riley (selective secondary; #209) communicating that he gets engaged “*when the teacher uses various formats to teach the content eg: textbook, media and explaining through speech and using the board*”. A few students commented upon their teacher’s enthusiasm to inspire them, with Scarlett (non-selective secondary; #109) observing her engagement rising, “*...when the teacher is motivated to teach us and is engaged as well*”, and Sebastian (non-selective secondary; #132) also noting his own increased engagement, “*when the teacher is enthusiastic about the lesson*”. Some students commented about receiving constructive feedback from their teachers, with Summer (non-

selective secondary; #30) recognising that “*good reflection, feedback and recognition from the teacher*” encouraged her to stay engaged and improve her work.

Task. For the category, *task*, two themes associated with student engagement were identified: *interest* and *relevance and complexity* (Table 8.3). The students valued tasks which inspired interest, instilled deep thinking, and were relevant and authentic. The findings about the two themes are presented below.

Interest. The students (12.3%) expressed the view that they engaged in a learning activity or a lesson when they were interested in the content or topic under study, with Connor (non-selective secondary; #15) affirming, “*When the topic is interesting, I want to learn more*”, and Emily (selective secondary; #340) expressing her sense of engagement, “*when I find the topic fascinating and exciting*”. Some students had prior knowledge of a topic and expressed *personal* interest for understanding it more. As Lucas (non-OC primary, #25) reflected, “*I just feel passionate about the topic, such as our topic this term: Antarctica. I am doing environmental changes and I am very thoughtful about the environment*”. The alignment of instructional content and activities with students’ individual interests ignited their engagement with the topic. As Chloe (selective secondary; #12) argued, “*The content being taught needs to be of interest to students. When that is done, most of the time the students will be engaged and challenged*”. When the teachers created tasks that tapped into the students’ interests and passion, the students reported being enthused about their learning.

Relevance and complexity. Challenging and relevant tasks incited a small number of students’ (4.5%) interest and engagement in classrooms, with Georgia (selective secondary; #266) reporting that “*I am engaged when I am challenged to the extent that is fun to learn*”, and Holly (selective secondary; #196) explaining her increased engagement, “*when the activity involves the class in thinking, not just taking notes from*

the board". The students were also motivated by the inherent complexity in tasks, with Xavier (non-OC primary; #19) identifying tasks that "*involve creativity and problem solving*", and Dylan (selective secondary; #212) proclaiming his engagement, "*when I feel as though I have made a connection between a problem and solution*". Student engagement was enhanced when the content was relevant to students' lives, with Mason (non-OC primary; #18) recognising increased engagement with tasks "*...that I can link to myself*", and Stella (selective secondary; #322) discerning, "*You are able to remember what the teacher has said and you are able to apply this in everyday life*".

Comparing Students' and Teachers' Perspectives of Classroom Engagement.

In this section, I compare students' and teachers' perspectives of classroom engagement by analysing data emerging from gifted students' interviews with teachers ($n = 32$), in which gifted student "co-researchers" asked teachers an *identical* prompting question to that answered by students in the online survey: "*How do you know your students are engaged in the classroom?*" Four key themes were identified in teachers' responses: *learning and flow*, *substantive communication and interaction*, *teacher's influence*, and *task* (see Table 8.4). To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from 12 randomly selected teachers (37.5%). A second, independent rater (a teacher) who was blind to the identified ratings, coded the data independently. Cohen's Kappa was calculated with this data, and found to reflect a high level of inter-rater agreement ($K = .85$) (Fleiss, 1981, as cited in Robson, 2002).

Learning and flow. Both students ($n = 802$) and teachers ($n = 32$) indicated *focus and flow* as the top source of classroom engagement. More than half of the 32 teachers interviewed (59.4%) reported that an effective teacher creates learning experiences that generate *focus and flow*. During this state of flow, gifted students are engrossed in their learning. Patricia (selective secondary teacher) emphasised "*...valuing emotional and*

psychological wellbeing of students. Nothing is more important than their mental state of mind. Students will learn and sustain their focus when they are not distracted by other things on their mind". While for students (20.9%), classroom engagement primarily meant deeper understanding of and engagement of complex concepts, for teachers (37.5%) the classroom engagement was primarily perceived by the extent to which the students were *enthused to learn something new*. As Heather (non-selective secondary teacher) noted, *"There is a substantial conversational interaction between the students who are discussing a new topic or a particular question. Students portray their enthusiasm and are diligent enough to ask questions or participate in class discussions"*. Six of the 32 teachers (18.8%) reported fostering *deep understanding* by differentiating learning. As Dennis (selective secondary teacher) explained:

I start by looking at what outcomes have to be taught. I then consider the learning needs of the class—if I have a strong GAT class, there may be some outcomes which may be taught very quickly, for example, top students don't often help with identifying information in a source so I will complete this outcome quickly by moving straight to guided practice. This will allow for more time for extension activities which will challenge students and promote deep understanding.

Substantive communication and interaction. Compared to 14.8% of students, more than one quarter of teachers (28.1%) reported the use of skilful *questioning* on behalf of both teachers and students generated student engagement. Linda (selective secondary teacher) articulated that an effective teacher asks questions *"to clarify misconceptions and deepen understanding"*. Students could also be the source of communication and questioning strategies that promoted engagement. As Colin (non-selective secondary teacher) noted, *"A prominent indicator is when students reciprocate and several students respond or seek to provide their responses to the question asked"*. Warren (non-selective

secondary teacher) also acknowledged that on other occasions the students “*may be undertaking their own independent learning and asking their own formulated questions*”. While teachers perceived students’ *engagement in high level discussion* (21.9%) and *collaboration with peers* (18.8%) as key sources of influence for the category, “substantive communication and interaction”; fewer students identified *engagement in high level discussion* (14.6%) and *collaboration with peers* (7.3%) as key sources of engagement for this category (see Table 8.4).

Teacher’s influence. The teachers (12.5%) reported that using *instructional pedagogy* led to student engagement. Classroom engagement ensued when teachers used a range of pedagogical strategies in their instruction. As Michael (OC primary teacher) noted, “*I use many strategies to keep students involved in learning such as group discussion, independent learning, and quiet time*”. Compared to 16.7% of students, 6.3% of teachers reported student engagement when students wanted to listen for meaning-making, with Anna (non-selective secondary student; #135) explaining that engagement ensues when, “*...you listen intently and understand*”, and Peter (non-selective secondary student; #11) reiterating the view that classroom engagement occurs, “*...when I am focus on the topic listening to the teacher and understand what the teacher is saying*”.

Task. Compared to 4.5% of students, the teachers (15.6%) reported that tasks with *relevance and complexity* promoted student engagement. The connection between task relevance and engagement was evident in Louise’s (OC primary teacher) observation, “*Students get engaged when I present information they can relate to*”. While 6.3% of teachers reported that student engagement ensued when they were interested in the content or topic under study, 12.3% of students expressed *interest* in task as a source of influence upon classroom engagement, with Faye (non-OC primary student; #20) explaining her increased engagement, “*...if it is a topic that I am interested in or know about*”, and

Antonio (selective secondary student; #205) recognising his elevated interest, “...*when I find the topic discussed interesting and engaging*”.

Summary. Students’ and teachers’ responses indicated both similarities and differences in their perceptions of factors that enhance classroom engagement. In terms of similarities, both students and teachers indicated *focus and flow* as one of the top sources of classroom engagement. Teachers and students hold different perceptions based on their role and their perspectives about learning. For students, thus, classroom engagement primarily meant deeper understanding of and engagement with complex concepts, meaning-making using higher order thinking, and interest in learning tasks. For teachers, the classroom engagement was primarily perceived by the extent to which the students engaged in high level discussion, raised questions, and demonstrated enthusiasm and excitement in their learning.

Table 8.4

Students' (n = 738) and Teachers' (n = 32) Perspectives about Sources of Influence upon Classroom Engagement

Category	Theme	Percent	
		Student	Teacher
Learning and flow	Focus and flow	27.8	59.4
	Deep understanding	20.9	18.8
	Enthusiasm to learn something new	14.8	37.5
Substantive communication and interaction	Actively raise and respond to questions	14.9	28.1
	Engage in high level discussion	14.6	21.9
	Collaborating with peers	7.3	18.8
Teachers' influence	Meaning-making	16.7	6.3
	Instructional pedagogy	11.7	12.5
Task	Interest	12.3	6.3
	Relevance and complexity	4.5	15.6

Students' Perspectives of the Qualities of an Effective Teacher

In this section, the findings about the participating students' perceptions of the qualities of an effective teacher are reported (research question 2). A total of 742 students responded to the question, "*What are the three most important qualities of an effective teacher?*" Three key categories were identified: *personal-professional disposition*, *pedagogical knowledge and skills*, and *professional practice*. An overview of the frequency of the categories and the associated themes is presented in Table 8.5. To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from 127 randomly selected students (15.8%). A second, independent rater (past gifted student) who was blind to the identified ratings, coded the data independently. Cohen's Kappa was calculated with this data, and found to reflect a high level of inter-rater agreement ($K = .82$) (Fleiss, 1981, as cited in Robson, 2002).

Personal-professional disposition. Effective teachers were perceived by students as caring and kind, and helpful and approachable. They were passionate and motivating, related to students well, and were demanding but fair. The students' views about an effective teacher's personal-professional disposition are reported below (see Table 8.5 for further examples).

Table 8.5

Primary and Secondary Students' Perspectives about the Qualities of an Effective Teacher (n = 742)

Category	Theme	Percent	Examples
Personal-Professional Disposition	Kind, caring and patient	32.2	Effective teachers engage in respectful listening to students, deal with restless children patiently, and care about their students' lives in and out of school.
	Helpful and approachable	29.9	Teachers put their heart and soul into helping their students and are always approachable.
	Passionate, motivating, and a sense of humour	26.3	Exemplary teachers are passionate about their subject, students, and learning; teach by inspiration; have a sense of humour; and motivate students to strive to achieve their best potential.
	Relates to students well	16.4	Teachers are able to connect with students, help them solve problems, and respect them as people.
	Demanding but fair	14.8	Effective teachers know how to "control" students to the level that they can enjoy the class and learn, are fair and unbiased, and exercise great judgments in classroom.
Pedagogical Knowledge and Skills	Clear explanations of concepts	14.8	Teachers explain complex concepts in ways that students can understand clearly.
	Knows subject and students well	14.2	Thorough understanding of the subject and students helps teachers create differentiated experiences.
	Excellent communicator	11.2	Exemplary teachers possess highly developed communication skills to engage gifted learners.
	Insightful and fosters creativity	8.6	Effective teachers promote originality and foster new ways of teaching to make learning fun.
Professional Practice	Learner-centred teacher	38.1	Understanding that all students learn differently, adapting learning to suit individual needs, and respecting student choices are the hallmarks of a learner-centred teacher.
	Engaging teacher	30.1	Successful teachers engage students with interesting problems making learning experience delightful.
	Creates a positive learning environment	19.9	Creating an orderly and organised learning climate where students feel comfortable to ask questions and discuss with fellow classmates promotes student high performance.
	Uses a variety of pedagogical strategies	18.7	Effective teachers use a range of interactive ways of teaching to engage students. They ask thoughtful questions, challenge students to think from different perspectives, regularly check students' understanding of the subject, and provide students ongoing productive feedback.

Kind, caring, and patient. About one third of the students (32.2%) indicated that kind, caring and patient teachers were effective in promoting their learning and growth. Amelia (OC primary; #65) observed that patience in teachers was “*essential when dealing with restless children in an appropriate manner*”. Students valued caring and kind teachers, with Stephen (selective secondary; #296) noting that an effective teacher “*refrained from getting angry when I cannot understand something and ask the same question again*”, with Justin (non-selective secondary; #2) stating that exemplary teachers, “*...explained things well by being calm with students*”; and with Julia (non-selective secondary; #149) professing that students regarded those teachers who “*actually cared about their students’ lives in and out of school*”. For Katie (selective secondary; #147), such teachers were “*understanding of the fact that everybody learns in different ways*”. The students expressed a shared view that caring teachers showed a concern for all students’ wellbeing and inspired students to engage in their own learning.

Helpful and approachable. The students (29.9%) reported that helpful and approachable teachers were effective in facilitating their learning. Dan (selective secondary; #161) noted that these teachers, “*...help you if you are struggling and don’t wait for you to fall behind before helping*”. The supportive teachers actively sought to assist the students in need, with Flynn (non-selective secondary; #48) observing that such teachers were “*looking to help the individuals with specific problems*”, with Lily (non-selective secondary; #136) claiming that such teachers were “*approachable and always available when needed*”, and with Jasper (non-selective secondary; #45) discerning that these teachers were “*always smiling when giving help*”, and “*helped in and outside of class and made you think*”. Younger students made similar observations, with Mitchell (OC primary; #119) indicating that helpful teachers were “*...always trying their best in teaching*”, Blake (non-OC primary; #137) recognising that such “*hardworking*” teachers

had a “*commitment to their work*”, and Mia (OC primary; #10) noting that these teachers were “*determined to help and teach students*”.

Passionate, motivating, and a sense of humour. The students (25.1%) reported that avid teachers enthused them to learn. Students variously recognised inspiring teachers, with Harry (OC primary; #101) noting that these teachers were “*full of enthusiasm and energy*”, Evie (non-selective secondary; #66) expressing that they had a “*passion for their subject*”, and Ethan (selective secondary; #269) articulating that such teachers had “*the ability to engage and interact with the students with a positive attitude*”. According to Clare (non-selective secondary; #23), enthusiastic teachers were “*ADAPTIVE*” as “*some students learn differently so by altering an activity to particular student/s they can engage them so the student learns more effectively*” (emphasis in original). Effective teachers were able to motivate students to work, with Jordan (non-selective secondary; #77) noting that these teachers “*constantly encouraged students to do their best and attempt everything*”; and Ella (selective secondary; #254) observing that these teachers could “*inspire and fulfil you to do better than what you already are and show you the lessons of life*”. The students appreciated a sense of humour among teachers, with Joel (selective secondary; #327) expressing the view that his engagement increased when teachers were “*humorous and fun to learn with*”, with Bethany (selective secondary; #264) professing that effective teachers encouraged “*integration of humour with learning in the class*”; and with Hamish (OC primary; #42) acknowledging that he enjoyed teachers who were “*funny, unexpected and exciting*”. Teachers’ enthusiasm, motivation, and sense of humour were perceived as conducive to student engagement.

Relates to students well. Effective teachers were perceived as being able to understand the importance of knowing and connecting with students by gifted learners (16.4%). Charlie (OC primary; #33) observed that these teachers were “*able to connect*

with students”, and Susanne (non-selective secondary; #4) opined that the teachers were “*able to relate to the different ways students work best, not just sticking to one method of teaching*”. According to Charlotte (selective school; #17), effective teachers took genuine interest in gifted learners by forming “*a closeness and understanding of each student in their care*”. Similarly, Imogen (non-selective secondary; #10) discerned that such teachers could “*empathise with their students*”, and Jayden (selective secondary; #134) commented that effective teachers were “*able to understand any complications a student had in completing any work*”. Some students focused on teachers’ ability to form respectful connections with students, with Lachlan (non-selective secondary; #12) contending that the teachers’ ability to foster connections with students was enhanced by developing “*a mutual respect with their students*”; Matthew (non-selective secondary; #184) noting that such teachers held “*respectful authority*”, and Brooke (selective secondary; #259) affirming that these teachers “*treated the students as intelligent people*” and did not “*talk down to students*”. Effective teachers formed deferential connections with students to assist them in their learning.

Demanding but fair. The students (14.8%) reported that successful teachers maintained balance in the way they managed classrooms. As Claudia (non-OC primary; #21) noted, “*To me, an effective teacher should have a balance between fun and seriousness and use a variety of ways to teach lessons*”. Many students variously reported that effective teachers were demanding but fair, with Logan (OC primary; #97) identifying such teachers to be “*a little strict but fun*”, and Bryce (OC primary; #28) explicating that they were “*not too strict but not too loose either*”. Hayley (selective secondary; #209) indicated that an effective teacher “*knows how to control the students to the level that they can enjoy the class, learn and not be strictly controlled by the teacher*”, and Edward (OC primary; #41) proclaimed: “*We work hard and play hard!*” Effective teachers

demonstrated concern for treating students with fairness, with Samuel (non-selective secondary; #140) observing that these teachers “*let everyone have a fair go in the class*”, and Thomas (non-selective secondary; #92) reporting that they “*treat EVERYONE equally and not just pay attention to particular students*” (emphasis in original). Students commented about teachers’ sense of fair play, with William (non-selective secondary; #71) noting that there was “*no bias*”, and Nicole (selective secondary; #203) discerning that the teachers did not “*deliberately penalise or aim personal vendettas against particular students*”. The teachers’ ability to have a “*relaxed control*” and their sense of justice and fair play were perceived as conducive to student learning in the classroom.

Pedagogical knowledge and skills. The students reported that effective teachers explained concepts clearly, knew their subject and students well, were excellent communicators, and were insightful thinkers (see Table 8.5). The students’ views about an effective teacher’s pedagogical knowledge and skills are reported below.

Clear explanations of concepts. The students (14.8%) indicated that effective teachers provided cohesive explanations to support student understanding of concepts. The students variously commented teachers’ ability to provide clear explanations, with Gemma (non-selective secondary; #142) commenting that effective teachers “*explain concepts effectively and simply*”, Ebony (OC primary; #157) noting that they “*make the key points very clear*”, and John (OC primary; #150) reporting that these teachers “*make sure that everyone can understand a problem or question*”. Savannah (non-selective secondary; #35) explained that the teachers used “*different ways to explain the information for different people/learning styles*”. Kieran (non-selective secondary; #97) elaborated that these teachers “*offered lots of different ways to make information more understandable (eg. mind maps, tables etc), including media (presentations, video clips, audio)*”. Some students reported that they valued teachers’ thorough approaches to teaching complex

ideas. Annie (selective secondary; #36), for example, elucidated, *“Teachers try to explain things in depth and they care about the need for everyone to understand them”*. The students valued the teachers’ ability to provide clear explanations of different concepts and ideas.

Knows subject and students well. The students (14.2%) indicated that effective teachers knew their subject and students well, with Jasmine (non-selective secondary; #7) reporting that they possessed *“a wealth of knowledge that they are willing to share with their students”*, Lisa (selective secondary; #175) noting that they had *“a complete understanding of the subject they teach”*, and Jack (selective secondary; #265) observing that they demonstrated *“a willingness to go beyond what is in the curriculum”*. Such teachers were perceived as knowledgeable about students’ developmental stages, with Alyssa (OC primary; #14) discerning that they knew *“what a child’s thinking is like on a particular age and use that info through the lesson”*, and Harrison (non-selective secondary; #167) articulating that they understood students’ *“strengths and weakness”*. Similarly, Bella (primary secondary; #170) noted that these teachers had *“an understanding that all students have a different level of skills”*, and Brandon (non-selective secondary; #134) observed that they took the time to *“understand the needs of their students”*. Effective teachers applied their knowledge of students’ stages of development in creating differentiated learning experiences.

Excellent communicator. The students (11.2%) reported that effective teachers were excellent communicators. At the very outset, the teachers communicated the learning intentions to their students, with Callum (non-selective secondary; #162) reporting, *“The teachers clearly state what is required and expected”*, and Noah (selective secondary; #93) observing that they *“communicate their expectations for me to work hard and to complete my work to the best of my ability”*. Rhys (non-selective secondary; #27) observed that

“loud, clear voice, eye contact, hand movements, using persuasive or engaging language” enhanced a teacher’s communication and engaged students. Effective teachers’ communication was a two-way street, with Abbie (non-selective secondary; #78) noting that it encompassed *“communication through the involvement of students”*, and Stephanie (OC primary; #124) indicating that the teachers had *“the ability to understand what students are asking”*. Effective teachers were perceived as possessing highly developed, interactive communication skills to engage gifted learners.

Insightful and fosters creativity. Some students (8.6%) observed that effective teachers were insightful and possessed a high degree of intelligence, with Ava (OC primary; #16) observing that these teachers were *“really smart and knew what they were getting at”*, Abigail (selective secondary; #34) noting that they provided *“intelligent, deep answers to questions”*, and Archie (selective secondary; #138) stating that they had *“good teaching ability”*. Students noted that effective teachers fostered divergent thinking and creative ways to teach gifted learners, with Sara (OC primary; #2) indicating that these teachers *“encouraged new, creative ideas and expected quality work”*, and Mona (OC primary; #98) observing that they *“made the activities fun and creative”*. Students variously described their creative teachers, with Patrick (selective secondary; #271) noting that the teachers not only encouraged creative thinking but were also *“creative in their teaching”*, Mackenzie (OC primary; #47) asserting that they had a *“different way of teaching compared to other teachers”*, and Shane (OC primary; #42) proclaiming that they delivered lessons with *“unexpected and exciting”* moments of learning. Teachers who were creative thinkers and promoted creativity in gifted learners were perceived to ignite student engagement and student learning.

Professional practice. Effective teachers were learner-centred, engaging, fostered a positive environment, and used a variety of pedagogical strategies (see Table 8.5). The

students' perspectives about an effective teacher's professional practice are reported below.

Learner-centred teacher. More than one third of the students (38.1%) reported that effective teachers were (a) focused on learning rather than teaching, (b) adapted learning to suit individual needs, and (c) respected learners' choices. The students expressed the view that these teachers educated students effectively, with Harper (selective secondary; #313) commenting that they assisted students *"learn new things [and] learn as much from students"*, Madison (selective secondary; #268) observing that they were *"open to being wrong"*, and Sienna (selective secondary; #196) reporting that they *"really cared about the students in the classroom whether they were learning from the lesson"*. As Braxton (selective secondary; #211) opined, these teachers did *"not just teach for an assessment but for the understanding and education of the students"*. Such teachers, Eli (non-selective secondary; #181) noted, differentiated learning for individual students by *"giving work that gets harder and harder from simple"*. Echoing similar sentiments, Bonnie (selective secondary; #344) observed that they had the *"ability to adapt to student needs"* and *"gain a better understanding of each individual, not just the class, that way helping individuals separately, when needed"*; Monique (non-selective secondary; #93) reported that they *"acknowledged students' strengths and weakness and catered to them separately"*; and Darcy (non-selective secondary; #190) commented that they used various modes of learning such as *"class discussion, individual/group projects, class videos"*. Furthermore, Casey (selective secondary; #310) expressed the view that effective teachers *"give a certain amount of freedom in choosing what topics to complete assessment tasks"*, and Marcus (OC primary; #102) argued that they *"should let the children be more independent as high school will be hard for the student"*. The learner-centred teachers were perceived

as effective as they immersed gifted students in constructing their own learning, differentiated learning to meet individual needs, and provided freedom of choice.

Engaging teacher. The students (30.1%) reported that effective teachers made learning absorbing. Rose (OC primary; #124) observed that the teachers had the ability “*to make engaging lessons to educate as well as entertain students*”, and Sean (selective secondary; #101) noted that they “*teach the topic in a fun and creative way*”. Zoe (selective secondary; #160) discerned that such educators “*enjoyed being a teacher and wanted to teach*”, and Holden (selective secondary; #198) affirmed that they “*showed variety and interactive ways of teaching*”. The teachers, according to Tahlia (selective secondary; #175), had “*the ability to engage in interesting conversations and discussions with students [and] the ability to think of interesting ways to communicate potentially boring subjects or topics*”. Alexis (selective secondary; #210) reported that the students were engaged in classrooms when the teachers “*grasp and maintain students’ attention*”. The teachers, Nicholas (selective secondary; #167) further spelt out, were “*not boring, droning on long speeches, made the lesson more fun and interactive*”. Carmel (non-OC primary; #3) also affirmed that she found the teachers engrossing “*when they are having as much fun as us students, and when they love their job so they bring a positive attitude towards the class*”. The students expressed the view that engaging teachers sustained high level of student involvement in tasks and made learning a delightful experience.

Creates a positive learning environment. Effective teachers were perceived by students (19.9%) as skilled in creating an environment in which gifted students felt challenged and safe to explore and express their uniqueness. Scott (non-selective secondary; #7) noted that effective teachers were “*able to control every student in the classroom and make the classrooms a comfortable environment to learn in*”. Annabella (selective secondary; #236) observed that efficacious teachers had “*a control over the*

class, while maintaining an atmosphere where students feel comfortable to ask questions to students, and discuss with fellow classmates” because “*otherwise it’s too noisy and distracting for learning*”. These teachers were “*concerned about the students’ safety and prevented them from doing dangerous activities*”, Marlene (non-OC primary; #12) affirmed. Orderly teachers organised classroom space effectively, Jake (OC primary; #124) noted, and handled routine tasks efficiently, “*so they know what they are going to do for the day*”. Further, as Willow (selective secondary; #74) observed, effective teachers were able to “*stay on track*” and “*keep the class focused*”. Zoe (OC primary; #102) also affirmed that these teachers did not “*go off subject in class discussions as this makes the student forget what was discussed before*”, and did not “*get distracted*” while teaching. Further, these teachers had “*the ability to keep students FOCUSED on the task*”, professed Surya (selective secondary; #189, emphasis in original), and they were “*attentive in class situations*” to individual needs. The students observed that effective teachers were organised, orderly, and fostered high student achievement outcomes.

Uses a variety of pedagogical strategies. The students (18.7%) observed that effective teachers used a repertoire of strategies to enhance student learning. Tegan (non-selective secondary; #134) observed that the teachers used “*a range of learning techniques i.e. not just lectures*”, and were able to cater for “*various learning styles (ie. class discussion, individual/group projects, class videos, etc)*”. Accomplished teachers “*used a wide range of resources to enhance student learning*”, Margaret (non-selective secondary; #179) noted, and employed metalanguage of the discipline that the students “*have to use in exam*”. Constructive feedback from the teachers, carefully adapted to individual needs, was deemed valuable by the students, with Ashna (non-selective secondary; #100) noting that effective teachers had “*the ability to regularly mark and give constructive criticism on work*”, and Joy (non-selective secondary; #201) reporting that teachers provided regular

feedback especially on “*assessments and assignments that have been submitted for marking*”. The students expressed the view that effective teachers employed a range of pedagogical strategies to maximise student learning.

Comparing Students’ and Teachers’ Perspectives of the Qualities of an Effective Teacher. In this section, I compare students’ and teachers’ perspectives of the qualities of an effective teacher by analysing data emerging from gifted students’ interviews with teachers ($n = 32$), in which gifted student “co-researchers” asked an *identical* question to that answered by students in the previous section: “*What are the three most important qualities of an effective teacher?*” Three key themes were identified in teachers’ responses: *personal-professional disposition*, *pedagogical knowledge and skills*, and *professional practice* (see Table 8.6). To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from 12 randomly selected teachers (37.5%). A second, independent rater (a teacher) who was blind to the identified ratings, coded the data independently. Cohen’s Kappa was calculated with this data, and found to reflect a high level of inter-rater agreement ($K = .82$) (Fleiss, 1981, as cited in Robson, 2002).

Personal-professional disposition. Both students ($n = 802$) and teachers ($n = 32$) identified *kind*, *caring*, and *patient* teachers as the foremost quality of effective teachers. Compared to 32.2% of students, about two-thirds of 32 teachers interviewed (65.6%) reported that effective teachers tend to be caring and nurturing, with Sandra (non-OC primary teacher; #6) describing an exemplary teacher as “*someone who cares and builds rapport with students*”. In comparison to 26.3% of students, 56.3% of teachers reported that an effective teacher is *passionate and motivating*, with Gregory (non-OC primary teacher) noting that an exemplary teacher is “*passionate about making connection with the students, parents and school*”, Elaine (selective secondary teacher) reporting that effective

teachers have “*compassion and sympathy*”, and Dawn (selective secondary teacher) noting that these teachers have “*dedication and perseverance*” and “*enthusiasm and love for teaching and learning*”. As Tina (non-selective secondary teacher) articulated, “*You got to have a love of teaching—if you don’t love it then it’s not the right job for you!*” Finally, compared to 16.4% of students, teachers (28.1%) also reported that exemplary teachers are approachable and are able to *relate with students well*.

Pedagogical knowledge and skills. Compared to 14.2% of students, about one third of teachers (31.3%) reported that an effective teacher *knows subject and students well*. Teachers variously commented on an effective teacher’s pedagogical approaches, with Valerie (selective secondary teacher) reporting, “*I have the satisfaction of knowing that students have gained something from my lesson*”, and Sheryn (non-selective secondary teacher) stating, “*I allow for multiple perspectives and encourage abstract and conceptual ideas in the content and tasks given to students*”. Compared to 14.8% of students, 6.3% of teachers identified providing *clear explanation of concepts* as a quality of an effective teacher. Simran (OC primary student; #68), for example, observed that effective teachers “*...provide a coherent explanations of different concepts, and ensure that students understand them clearly*”.

Professional practice. Compared to 38.1% of students, 21.9% of teachers identified effective teachers to be *learner-centred*. As Carol (selective secondary student; #313) noted an effective teacher not only “*...helps learn new things, but learns as much from students*”, and Elaine (selective secondary teacher) also observed that an effective teacher is not “*the foundation of knowledge in front of the room but being a curious person in learning process*”. Similarly, compared to 30.1% of students, 15.6% of teachers identified effective teachers to be *engaging*. Further, compared to 19.9% of students, 25% of interviewed teachers reported that an effective teacher *creates a positive learning*

environment. As Rhonda (non-selective secondary teacher) commented, “*I create [a] friendly and calm environment while making sure lessons are creative and productive so students don’t lose interest*”. Further, Graeme (selective secondary teacher) noted that an effective teacher “*involves students in decision making in solving problems*” and “*adapts or changes plans or lessons to follow up on students’ interests or on students’ suggestions*”.

Summary. The students’ and teachers’ responses about the qualities of an effective teacher indicated similarities and differences between their perspectives. Both students and teachers identified kind, caring, and patient teachers as efficacious teachers. For students, effective teachers were primarily learner-centred who focused on learning rather than teaching, adapted learning to suit individual needs, respected students’ choices, had the ability to teach in an engaging and fun way, and were helpful and approachable. For teachers, effective teachers were primarily passionate and motivating with a sense of humour, knew their subject and students, related well to students, and created a positive learning environment. There are, therefore, both synergies and differences in the students’ and teachers’ perspectives about the qualities of an effective teacher.

Table 8.6

Students' (n = 742) and Teachers' (n = 32) Perspectives of the Qualities of an Effective Teacher

Category	Theme	Percent	
		Student	Teacher
Personal-Professional Disposition	Kind, caring and patient	32.2	65.6
	Helpful and approachable	29.9	21.9
	Passionate, motivating, and a sense of humour	26.3	56.3
	Relates to students well	16.4	28.1
	Demanding but fair	14.8	9.4
Pedagogical Knowledge and Skills	Clear explanations of concepts	14.8	6.3
	Knows subject and students well	14.2	31.3
	Excellent communicator	11.2	12.5
	Insightful and fosters creativity	8.6	6.3
Professional Practice	Learner-centred teacher	38.1	21.9
	Engaging teacher	30.1	15.6
	Creates a positive learning environment	19.9	25.0
	Uses a variety of pedagogical strategies	18.7	9.4

General Summary

In this chapter, gifted students' perceptions of their teachers' differentiated pedagogical practices, of factors that influence classroom engagement, and of the qualities of an effective teacher were compared with teachers' own perceptions (research question 2). Significant differences in student and teacher perceptions were found for 10 out of 12 differentiated pedagogical strategies, with students reporting less provision of these strategies than teachers. Thus, although teachers believe that they are already implementing differentiating strategies for gifted learners, those same gifted learners themselves do not believe this to be the case.

When the students' qualitative responses about the classroom engagement and the qualities of an effective teacher were compared with those of the teachers, similarities and differences were found between their perspectives. Both students and teachers identified "focus and flow" as a key source of classroom engagement, and "kind, caring, and patient teachers" as effective practitioners. For students, however, classroom engagement also meant deeper engagement with complex concepts and meaning-making using higher-order thinking. For teachers themselves, classroom engagement was evident in high-level discussion, raised questions, and demonstrable enthusiasm and excitement in learning. Further, students' responses indicated that effective teachers were primarily learner-centred honouring individual needs, providing choices to students, and offering help as needed; whereas teachers' responses indicated that effective teachers were passionate about their subject and teaching, and knew their subject and students.

The variations in students' and teachers' perceptions of differentiated pedagogical practices and of effective teachers may go some way to explaining why students and teachers also rate the provision of differentiation in their own settings differently. I explore these possibilities further in the Discussion Chapter 10. In the next chapter, I focus on

principals' perceptions of teacher practice and their self-reported leadership actions in implementing and sustaining school-wide differentiation for gifted learners.

CHAPTER 9

**RESULTS: PRINCIPALS' PERCEPTIONS, UNDERSTANDING,
AND SELF-REPORTED LEADERSHIP ACTIONS FOR
DIFFERENTIATED LEARNING OF THE GIFTED**

The purpose of this chapter is to report the principals' perceptions, understanding, and self-reported leadership actions for school-wide differentiated learning of the gifted. In the first section, the principals' and teachers' perceptions of the use of differentiated pedagogical strategies are reported and compared (research question 3). In the next two sections, I report the case-study interviews with four exemplary principals. As the primary researcher, I conducted all four interviews. The principals' understanding of differentiated learning for gifted students (research question 4a), and their self-reported leadership actions in implementing school-wide differentiated learning (research question 4b) are each presented in the two sections.

Comparing Principals' and Teachers' Perceptions of the Differentiated Pedagogical Strategies being used by Teachers

In this section, the principals' perceptions of the differentiated pedagogical strategies that teachers in their schools use (research question 3) are compared with teachers' own perceptions of their use of these strategies. As indicated in Chapter 7, teachers' perceptions of their own differentiated pedagogical strategies were assessed using the scale, *Differentiated Learning for Gifted and Talented Education* (DiL_GATE). The principals' perceptions of these same teachers' pedagogical practices were assessed using an identical scale, *Differentiated Learning for Gifted and Talented Education: Principals* (DiL_GATE_P). This enabled direct comparisons to be made on 36 matched items (Table 9.1; also see Appendix M about percentile scores for principals' and teachers' differentiated pedagogical strategies).

To test for differences between the principals' ($n = 120$) and the teachers' ($n = 867$) perceptions, a series of ANOVAs were performed. As 36 separate tests were performed simultaneously on the single data set, thus risking the inflation of Type 1 error, a Bonferroni adjusted alpha of .001 per test ($.05/36$) was used. Levene's test showed that the assumption of equality of variances was violated for 15 cases (e.g., peer evaluation, problem finding, and project based learning), and in these cases equal variances are not assumed and Brown-Forsythe tests are used, instead.

A significant difference was found for 25 out of 36 differentiated pedagogical strategies (see Table 9.1 for descriptive statistics). For strategies related to concept-based learning for the gifted, there was a significant difference between principal and teacher ratings. Principals reported significantly fewer tasks being used for *concept-based learning* than did teachers, $Brown-Forsythe(1, 152) = 16.25, p < .001, \eta_p^2 = .017$; significantly fewer activities focused on *whole to part learning*, $Brown-Forsythe(1, 148) = 43.86, p < .001, \eta_p^2 = .049$; and significantly fewer *challenging tasks*, $F(1, 970) = 64.20, p < .001, \eta_p^2 = .062$. The effect size was medium for *challenging tasks*.

For strategies related to differentiated learning for gifted students, there was also a significant difference between principal and teacher ratings. Principals reported significantly fewer learning tasks that *modify outcomes* than did teachers, $F(1, 975) = 24.04, p < .001, \eta_p^2 = .024$; significantly fewer opportunities to *adjust individual practice*, $F(1, 972) = 35.94, p < .001, \eta_p^2 = .036$; significantly fewer tasks that *vary pace* for gifted learners, $F(1, 965) = 24.56, p < .001, \eta_p^2 = .025$; significantly fewer tasks that *link to existing knowledge*, $F(1, 971) = 71.88, p < .001, \eta_p^2 = .069$; and significantly fewer opportunities to identify *background knowledge*, $F(1, 975) = 34.13, p < .001, \eta_p^2 = .034$. The effect size was medium for the strategy, *link to existing knowledge*.

Table 9.1

Means and Standard Deviations for Principals' and Teachers' Perceptions of Teachers' Differentiated Pedagogical Strategies

Item	Pedagogical Strategies	Teachers		Principals	
	(T) In my classes, I: (P) In my school, my teachers:	<i>Means</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
35	motivate and promote wellbeing of my students by building their self-confidence and publicly recognising their achievements	4.56	.59	4.33	.83
8	plan curriculum to provide a variety of learning experiences	4.51	.62	4.23	.80
36	liaise with parents/caregivers in order to foster home-school partnerships	4.07	.91	4.15	.83
2	teach by using examples and illustrations of concepts	4.34	.67	4.08	.69
22	embed learning technologies into learning and teaching activities	4.14	.76	4.04	.80
9	link new material to students' existing knowledge	4.52	.59	4.01	.78
12	use flexible within-class ability grouping to maximise student learning	4.16	.79	3.96	.92
28	encourage student-student collaboration and discussion	4.24	.69	3.95	.73
3	show how parts of the subject are interrelated	4.37	.64	3.92	.71
7	set challenging tasks for all learners	4.41	.63	3.91	.70
11	vary the pace of my lesson to cater for individual learning needs	4.22	.68	3.89	.72
14	incorporate higher-order thinking into learning tasks	4.32	.69	3.89	.72
13	use questions including analysis, synthesis and evaluation to stimulate whole-class discussion as well as individual reflection	4.26	.73	3.86	.68
1	extend and/or modify syllabus outcomes to meet the learning needs of gifted students	4.21	.76	3.85	.81
6	adjust the amount of individual practice that students need to master content	4.20	.71	3.78	.77
5	incorporate students' background understandings including cultural knowledge in teaching and learning	4.18	.75	3.75	.77
25	have students to reflect on what they have learnt and how they think	4.04	.76	3.72	.74
26	provide meaningful, positive feedback linked to explicit criteria	4.30	.68	3.72	.83

Item	Pedagogical Strategies	Teachers		Principals	
	(T) In my classes, I: (P) In my school, my teachers:	<i>Means</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
34	foster a challenging thinking climate	4.17	.74	3.72	.77
23	encourage students to find solutions to real-life and authentic problems	4.01	.76	3.71	.79
17	encourage students to explore diverse points of view to think about ideas in a different manner	4.12	.76	3.69	.78
18	encourage students to offer imaginative solutions to problems	4.20	.72	3.65	.72
24	make use of exemplars/model answers for analysis in whole-class discussion	4.03	.82	3.64	.75
31	make use of project-based learning approach	3.65	.93	3.62	.76
15	provide opportunities for students to select, implement and evaluate solutions to problems or issues	4.01	.75	3.60	.68
30	encourage students to gather evidence from multiple sources through research-based techniques (e.g., print, surveys, interviews)	3.81	.96	3.51	.87
29	encourage students to learn methods of inquiry, investigation, and research used by experts in different disciplines	3.69	.95	3.50	.85
4	eliminate curriculum content for students who have already mastered it	3.60	.94	3.47	.81
32	encourage students to undertake independent extended research project(s)	3.64	.98	3.46	.77
20	get students to evaluate their own work	3.85	.81	3.45	.79
33	actively teach study skills	3.69	.97	3.41	.84
27	encourage students to pose their own problems or questions on a topic	3.73	.84	3.37	.74
19	directly teach creative thinking skills	3.73	.97	3.34	.82
16	provide students freedom of choice in a range of ways such as selection of topic & tasks, opportunities for self-directed learning	3.68	.89	3.26	.76
21	encourage students to evaluate each other's work	3.65	.86	3.24	.78
10	bring experts/specialists to the classroom to share their knowledge with the students	3.10	1.02	3.14	.85

Note. T = Teachers ($n = 867$); P = Principals ($n = 120$). The teachers and principals were given identical survey. Means of responses to 36 items are arranged in descending order for the Principal survey.

Similarly, for strategies about fostering collaborative learning among gifted students, there was a significant difference between principal and teacher ratings. Principals reported significantly fewer opportunities for *questioning* than did teachers, $Brown-Forsythe(1, 161) = 35.99, p < .001, \eta_p^2 = .032$; significantly fewer opportunities for *student collaboration*, $Brown-Forsythe(1, 142) = 82.45, p < .001, \eta_p^2 = .106$; and significantly fewer *variety of experiences* for gifted learners, $Brown-Forsythe(1, 139) = 13.53, p < .001, \eta_p^2 = .020$. The effect size was medium for *student collaboration*.

For strategies related to evaluation and reflection, there was also a significant difference between principal and teacher ratings. Principals reported significantly fewer opportunities for gifted learners to engage in *self evaluation* than did teachers, $F(1, 965) = 60.67, p < .001, \eta_p^2 = .059$; significantly fewer tasks that provided *feedback*, $F(1, 965) = 194.49, p < .001, \eta_p^2 = .168$; significantly fewer tasks that promoted *student reflection*, $F(1, 966) = 29.23, p < .001, \eta_p^2 = .029$. The principals, however, reported significantly more opportunities for *peer evaluation* than did teachers, $Brown-Forsythe(1, 965) = 27.76, p < .001, \eta_p^2 = .028$ (see Table 9.1). The effect size was large for *feedback*.

For strategies related to divergent thinking, there was also a significant difference between principal and teacher ratings. Principals reported fewer opportunities for gifted learners to express *diverse views* than did teachers, $F(1, 962) = 42.03, p < .001, \eta_p^2 = .042$; significantly fewer tasks that promoted *imaginative solutions*, $F(1, 964) = 176.69, p < .001, \eta_p^2 = .155$; significantly fewer opportunities to embed *learning technologies*, $F(1, 968) = 32.89, p < .001, \eta_p^2 = .033$; and significantly fewer tasks that fostered *creative thinking skills* among gifted learners, $Brown-Forsythe(1, 174) = 12.76, p < .001, \eta_p^2 = .010$. The effect size was large for the strategy, *imaginative solutions*.

Similarly, for strategies related to higher-order thinking and challenging learning, there was a significant difference between principal and teacher ratings. Principals

reported fewer learning tasks that foster *higher-order thinking* among the gifted than did teachers, $F(1, 967) = 39.50, p < .001, \eta_p^2 = .039$; significantly fewer opportunities to *evaluate solutions*, $F(1, 965) = 31.78, p < .001, \eta_p^2 = .032$; significantly fewer tasks that address *real life problems* for the gifted, $F(1, 970) = 15.91, p < .001, \eta_p^2 = .016$; significantly fewer use of *exemplars*, $F(1, 965) = 15.31, p < .001, \eta_p^2 = .016$; significantly fewer opportunities to learn *study skills*, $Brown-Forsythe(1, 171) = 18.03, p < .001, \eta_p^2 = .014$; and significantly fewer opportunities to engage with a *challenging environment*, $F(1, 965) = 39.21, p < .001, \eta_p^2 = .039$.

Based on Bonferroni adjusted alpha level of .001 per test (.05/36), the differences in the perceptions between the principals and the teachers were found to be non-significant for the following pedagogical strategies: *flexible grouping*, $F(1, 969) = 6.60, p = .010$; *compacting*, $Brown-Forsythe(1, 974) = 3.98, p = .046$; *use experts/specialists*, $F(1, 970) = .229, p = .632$; *topic choices*, $Brown-Forsythe(1, 963) = 6.57, p = .011$; *inquiry and research*, $F(1, 963) = 3.84, p = .050$; *gather evidence* $F(1, 964) = 6.43, p = .011$; *problem finding*, $Brown-Forsythe(1, 166) = 8.99, p = .003$; *project based learning*, $Brown-Forsythe(1, 173) = 6.45, p = .012$; *independent projects*, $Brown-Forsythe(1, 169) = 7.46, p = .007$; *motivation*, $Brown-Forsythe(1, 137) = 8.77, p = .004$; and *liaise with parents* $F(1, 962) = 0.94, p = .332$.

In sum, for 24 of 36 differentiated pedagogical strategies for the education of gifted learners, the principals' perceptions were significantly different from the teachers' perceptions, with effect sizes ranging from small to large. For two thirds of the strategies listed, the principals reported these strategies being employed less often than did the teachers.

To better understand the lack of congruence between the principals' and the teachers' perceptions of differentiated pedagogical understanding and strategies for

educating the gifted, interviews with four principals were undertaken. The principals' understanding of differentiated learning for gifted students is analysed first, followed by their self-reported leadership actions for school-wide differentiated learning.

Principals' Understanding of Differentiated Learning for Gifted Students

In this section, I report the case-study interviews that I conducted with four school principals. I report their understanding of differentiated learning for gifted students (research question 4a). Using content analysis, I identified five themes for the category, "principals' understanding". An overview of the themes with examples is provided in Table 9.2. To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from all four principals. A second, independent rater (a principal of a selective secondary school) who was blind to the identified ratings, coded all four interview transcripts independently. Cohen's Kappa was calculated with these data, and found to reflect a high level of inter-rater agreement ($K = .84$). The identified themes are presented below.

Understanding of the need for school-wide differentiation. The four principals expressed a shared view that for effective differentiation across the school *all* teaching programs—supported by a recognition of student diversity and appropriate identification processes for gifted learners—should be differentiated to meet the individual learning needs of gifted students. When asked about her expectations from teachers about differentiation, for example, Sharon (non-selective secondary school) articulated her insistence that all teaching programs were designed to foster differentiated learning in the school:

I insist that all teaching programs are differentiated. Every year I check programs and look for that differentiation...that for the gifted and talented academic kids, there's a

different scope and depth, there might be different projects that the students do, [and] how the students present their work or assessment tasks might be different.

Two of the four principals, Stephanie (primary school) and James (selective secondary school), emphasised the need to view all students as a heterogeneous group with a diversity of abilities and gifts. When asked about her understanding of differentiation, for example, Stephanie (primary school) emphasised the need for valuing the unique differences among individual learners and honouring each gifted student's needs:

For me, differentiation is [about] valuing the difference in the classroom setting. It enables me to ask, "Okay, culturally, emotionally, academically, what does this child need?" You walk into the classroom: it's engaging, it seems alive. If you see the work samples, it's not twenty of the same. It's a personalised learning environment.

Similarly, James (selective secondary school) discussed the need to appreciate the full range of diversity in gifted students' abilities and readiness:

We got to appreciate that within that GATS [gifted and talented students] group in this selective school there is a tremendous range of abilities and needs so that we've got to be able to address those kids who sit at the very top end of the GAT scale, those kids who sit in the middle of the GAT scale, but also those kids here who don't display, [or] don't meet the criteria of gifted and talented yet. So, it's being able to address all of their needs.

Table 9.2

Principals' Understanding of Differentiated Learning for Gifted Students

Principals' Understanding	Examples
Understanding of the need for school-wide differentiated learning	Meeting the cognitive and socio-emotional needs of diverse gifted learners requires school-wide approaches to differentiation. Accurate, timely and early identification of giftedness is a crucial first step in helping a gifted learner to fulfil her or his potential. Principals must support teachers in the desire and beliefs to make a difference in every gifted child's life.
Principals' expectations of teachers	Teachers need to have extensive knowledge of gifted students' needs, collaborate with their peers to develop responsive programs, and engage students in challenging and authentic learning.
Understanding of effective differentiated practice	<p>Effective differentiated practice includes involving teachers in setting school-wide goals for differentiation, using pre-assessments to determine gifted learners' prior knowledge and skills, planning conceptual differentiated units, providing opportunities for acceleration, and flexible routines for gifted learners.</p> <p>There is a focus on engaging students in higher-order thinking and substantive discussion, and ensuring that the tasks are significant and have real world connections.</p>
Understanding of the relationship between differentiated learning and assessment	Assessments should be for learning in terms of where that learning can progress to next, and should be aligned with extended learning outcomes. In differentiated programs, assessments should be differentiated and aligned with differentiated outcomes.
Alignment of perceptions about differentiated pedagogical knowledge and practice	<p>If there is a dissonance between principals' and teachers' perceptions of differentiated pedagogical practice in the classroom, it is because, among other reasons, the principals have the whole school perspective. They see across all curriculum areas. They also tend to have a broader understanding of effective practice whereas individual teachers tend to see it more often within the confines of their own subject.</p> <p>A sense of alignment among the principals' and teachers' perceptions about teacher practice is desirable as it ensures consistency of teacher practice across the school.</p>

When asked about their understanding of effective differentiated learning for gifted students, all four principals reported that identifying a student's giftedness was considered by the principals a significant first step in ensuring that the student's cognitive and socio-emotional needs were met. All four principals also reported that identification processes were already in place at their schools. For example, Stephanie (primary school) discussed how the learning support team in her school facilitated the identification of gifted students' progress in class and on assessments. Jessica (primary school) similarly spoke about the collaborative processes at her school, involving a learning support team, previous year's teachers, and current teachers of identified gifted students:

We have an identification process in place and all of our identified students are placed on a register with supporting information. At the end of each school year our learning support team organises transition meetings for our identified students. Each student's current teacher meets with the new teacher and discusses the strategies that have worked to date and what these children's needs are. They talk about the areas of strength and the enablers that will allow the students to manifest their gifts.

Both Sharon (non-selective secondary school) and Jessica (primary school) highlighted the importance of continually revising gifted and talented identification processes. Sharon reported cluster groupings of identified gifted students in her school. At the same time, Sharon pointed out that the identified students' placements in these classes were regularly monitored to ensure that the rigour of the process was maintained: *"Part of our program is that once you're in the gifted and talented class you don't automatically stay there"*. Jessica (primary school) reported that the teachers in her school were vigilant in identifying signs of *"hidden giftedness"*, focusing particularly on gifted students with special needs such as gifted students with learning disabilities, underachievers, and students from culturally diverse backgrounds such as ESL (English as Second Language)

students so that their language needs are not masking the fact that they may be gifted in other areas.

Furthermore, James and Stephanie also pointed out that differentiated learning should not be viewed as a narrow construct (i.e., in academic terms only). While Stephanie (primary school) wanted her school community to “*nurture the whole child*”, James (selective secondary school) similarly advocated a holistic approach to differentiated learning:

We certainly differentiate the curriculum in terms of the academics but I think the other important element in a selective school such as this is being able to provide enormous opportunities for extracurricular involvement that sits alongside the traditional curriculum patterns within the school...such as drama, public speaking, debating and competitions. It fits in very much with our school’s ethos about providing holistic education and that’s really what we push here.

In sum, the principals emphasised the need for school-wide differentiation to ensure that the gifted learners’ individual needs were acknowledged and addressed in their schools. The principals expressed a shared view that accurate, timely, and early identification was regarded as a crucial first step in helping a student to fulfil her or his potential. The concept of differentiation for the principals was not about focusing on academics alone. The principals wanted their school communities to focus on holistic development of gifted learners.

Principals’ expectations of teachers. When asked what they expected teachers of gifted learners to “*know, understand and do*”, all four principals expressed the view that teachers needed to have extensive knowledge of gifted students’ needs to develop responsive programs, and engage students in challenging and authentic learning.

With regards to student needs, for example, all four principals reported that for effective differentiation the teachers needed to know where each student was in her or his journey towards reaching the specified learning goal. For example, Stephanie (primary school) noted that at the commencement of a unit the teachers in her school “*know what the child knows so you can see where the gap is that they need to know, not just teach the lesson because that’s what you planned*”, while Jessica (primary school) made the observation that a deep understanding of gifted learners’ readiness, interests, and learning profiles allowed the teachers to develop units of study that align with what I term as “learner-centred” units of study.

With regards to developing responsive programs, James (selective secondary school) noted the need for teachers to engage in responsive programming and regular professional learning from teacher perspective:

I want to see teaching programs which are dynamic and proactive and responsive to the needs of each of the students. I want to see teachers experimenting with things. I want to see them taking risks. I want to see them trying out new things. I want to see them having engaging powerful dialogues with their colleagues both within the school and outside of the school. I want to see them embracing every professional learning opportunity that we can provide them with. Most of all I want to see them having a passion for teaching kids of this ability in this sort of a setting.

In creating responsive programs, knowledge of gifted students’ needs and readiness helped teachers to *collaborate with their colleagues* during staff meetings. Both Jessica and Stephanie (primary schools) spoke about their teachers bringing differentiated work samples (e.g., from “*low, middle and high achieving student*”, according to Jessica) and their teaching programs to the staff meetings, and sharing them with their colleagues. They both reported that the teachers discussed their students’ learning progression and sought

feedback from their peers about the *impact* of their teaching on the individual student's learning.

With regards to engaging students in challenging and authentic learning, Jessica (primary school) noted that when she visited the classrooms she focused not on the teachers but on what the *students* were doing. Jessica reported what she hoped to see in the classrooms:

I think if I'm walking in just as an observer in the classroom then I would like to see children not only engaged but *empowered* in what they were doing as well. I would like to see that the children had chosen certain elements of the task and that they had a say in the direction that their learning was taking.

On the other hand, Sharon (non-selective secondary school) communicated her expectations about what I term 'learner-centred' pedagogy where "*students are the teachers sometimes*", and teachers engage gifted students in relevant and significant learning activities. Sharon added that in such learner-centred classrooms, there was discourse and extension of complex concepts, an inquiry-based approach to learning, and the teachers used, where appropriate, various gifted and talented models such as Maker (Maker, 1982) and Williams (Williams, 1993) to challenge gifted learners. Sharon reported that the teachers in her school needed to engage in authentic differentiated learning. She looked for genuine differentiation in *all* teachers' programs so that gifted students were not disadvantaged by any teacher who teaches them. Sharon remarked: "*To me, that's equity*".

Thus, the principals expressed the view that, for differentiated learning to be effective, the teachers needed to know gifted students' learning needs, readiness, and learning profiles. The principals expected the teachers of the gifted to develop responsive and authentic programs that engaged and challenged the students. To develop such

programs and enhance their expertise in teaching gifted learners, the principals expected their teachers to undertake regular professional learning collaboratively.

Understanding of effective differentiated practice. In response to my question, *“How do you know when a teacher is effectively differentiating for gifted learners in the classroom?”*, all four principals provided extended responses. I report the principals’ strategies for gaining an understanding of effective practice and their identification of effective differentiated practice.

Strategies for gaining understanding of effective differentiated practice. The principals stressed that to be effective educational leaders they needed to have an understanding of their teachers’ practice. They reported a range of strategies for gaining such understanding. For example, both Jessica and Stephanie (primary schools) reported that regular discourse with teachers about their classroom practices provided them insight into how the teachers were meeting the needs of gifted learners. To Stephanie, *“... it’s around the questions that [teachers] ask. They’re open ended, higher order. They’re constructivist based so that the children can bring it back to their real life experience. [Teachers] focus on the learning journey.”* The principals shared the view that teachers should be involved in setting goals for school-wide differentiated learning.

The principals also relied on their executive, including head teachers, to keep them abreast of teachers’ practices. James (selective secondary school) observed that the review of teachers’ programs provided school leaders a glimpse into teachers’ intended differentiated practices in classrooms:

When we have a look at the independent individual units of work the teachers are preparing, we look for the evidence there— that there is opportunity for differentiation, that not every student is going to be taught the same way, that the teachers are looking at a range of opportunities for differentiation through assessment.

Jessica (primary school) deliberated about the power of shared dialogue that energised teachers in sharing their teaching practices:

Teachers will come to me and say, “Oh, I just had the most amazing experience where we were doing this activity when I asked this question, and this student has come back and asked, ‘What about this, how about that?’” The students have come in with a whole new exciting idea and the lesson has gone in a direction that they [teachers] didn’t think it would go.

Finally, Sharon (non-selective secondary school) reported listening to students’ own perspectives on teachers’ pedagogical practices in classrooms: *“The kids talk about the work they do that encourages them to do their personal best. The kids talk about learning different content, [using] different processes, and having different products.”* Interestingly, student voice was not mentioned by the remaining three principals, despite a commitment to student-centred pedagogies and practice reported by all.

Elements of effective differentiated practice. When asked about their understanding of teachers’ use of effective differentiation for gifted learners in the classroom, the principals reported their shared understanding that effective differentiated practice involved using pre-assessments for gaining prior knowledge of gifted learners, integrating learner-centred approaches into teaching, planning concept-based differentiated units, having flexible classroom routines, and providing opportunities for acceleration when needed.

The need to use pre-assessments of gifted learners before teaching a unit of study was highlighted by Jessica (primary school): *“It’s not only knowing where the students are but also where they want to go”*. A similar view was expressed by Stephanie (primary school):

Using learning tools like KWL [what a student knows (K), wants to know (W), and has learned (L)] charts, you can see where the gap is, and not just teach the lesson because that's what you have planned. [The] focus [is] on the learning journey.

Depending upon gifted students' differentiated stages of learning (i.e., their levels of understanding of concepts, their levels of motivation, and the way they learn), the teachers provided differentiated pathways (i.e., differentiated content, process, or product) for students to demonstrate their understanding and mastery of specified learning goals.

All four principals focused on learner-centred approaches to teaching in their schools to ensure differentiated focus on student growth and learning. For example, Jessica (primary school) explained the gradual shift taking place at her school from what the teacher wants to *teach* to what the students want to *learn* and where the students are in the learning continuum:

So rather than saying "This is what I'm doing with my class", they [teachers] would talk about their students from an *Individual Learning Plan* point of view, "For this particular student, this is where [we] are tracking in reading and writing, this is where [we] are tracking in numeracy, and these are the strategies that are planned for putting in place".

The principals noted the power of collaborative, learner-centred approaches for planning differentiated units of learning for gifted students. Stephanie (primary school) noted that collaborative planning promoted deeper understanding of developing differentiated units, provided ongoing opportunities to receive individualised feedback on planning and practice, and offered mutual support, "*We emphasise collaborative planning on how you design your program. The teachers collaboratively write their reports. It has reduced their load and they don't just feel individually responsible. They feel collectively*

responsible.” Jessica (primary school) also emphasised the efficacy of collaborative planning:

Teachers collaboratively plan and say, okay, how do we extend these outcomes, how can we deepen this content, how can we look at the processes in the class and make sure children have lots of avenues to show and demonstrate their learning?

The principals reported that conceptual programming and focus on big ideas was critical to the intellectual development of gifted learners. They spoke about the power of concept-based learning to provoke curiosity and inquiry, and how conceptual thinking promoted the ability to transfer knowledge and skills across similar and diverse contexts. The emphasis on concept-infused learning was evident, for example, in Jessica’s observation:

The teachers have a full day to plan their conceptual units and their literacy units.

Conceptual programming makes it quite easy to map the extended outcomes and to deepen students’ understanding by asking the big questions and getting them to justify their responses.

The need for challenge and complexity in individualised planning was also underscored by James (selective secondary school) who highlighted the value of backward mapping and whole-to-part concept-based learning in differentiated programming for gifted learners. James reported that concept-based learning helps students understand the interconnectedness in individuals’ lives, elevates student thinking, and creates motivation for learning.

The principals acknowledged the need for flexible classroom routines such as in-class ability grouping and pacing to cater for individualised learning experiences. Jessica (primary school) noted that grouping must be flexible to accommodate the growth of each

student. Jessica pointed out that flexible and open learner-centred environments provide students the opportunities to explore their imagination, try out new ideas and possibilities, and become autonomous learners. For Jenny, the impact of “*flexible grouping arrangement*” can be evident in “*the level of enthusiasm and the level of importance that you see the child is putting into the task*”. Jessica also emphasised the need for flexibility to be able to look back and acknowledge if the school did not get it right for identification processes for gifted learners:

We need to consider what we do when we get it wrong. What do you do if a year or so down the track we start to question the accuracy of identification? How do we set the system up so that it’s a flexible model, where we’re not restricted in terms of children sort of moving in and out of classrooms and having an individual learning plan based on how they’re performing?

Three principals expressed the view that flexible approaches to differentiated learning such as relaxing of time constraints enable gifted students to pursue their learning in more depth or move more rapidly through the routine curricular requirements.

Finally, the principals pointed out that for differentiated learning to be truly meaningful, gifted students should be provided accelerated curriculum, where needed. All the principals reported that the gifted students were offered opportunities for acceleration in their schools. For example, James (selective secondary school) noted:

We differentiate our curriculum by offering opportunities for acceleration courses in the school. We actually had a boy who came first in the State in mathematics whilst he was still in year 11. If these students had waited for year 12, they would probably still have got those outstanding results but why delay them by a year when they’re able to achieve earlier at that sort of a level?

Various forms of acceleration were reportedly available in the schools, including grade-based acceleration and subject-based acceleration within the same year group. In an example of subject-based acceleration, for example, Sharon (non-selective secondary school) reported that opportunities for acceleration were provided to the students in Aboriginal Studies in Year 8 so that they could complete the Board requirements by Year 9 and sit for HSC examination in Year 11. Grade-based acceleration was generally more limited than subject-based acceleration in the four schools, but was nonetheless available to gifted learners. Importantly, whether grade-based or subject-based acceleration was used, the principals reported that the identified gifted learners generally flourished when they were given the opportunities to accelerate.

In sum, the principals reported that the use of pre-assessments, learner-centred approaches to teaching, concept-based learning, ability grouping and varied pacing, and the provision of accelerated curriculum are effective forms of differentiation for gifted learners.

Understanding of the relationship between differentiated learning and assessment. When asked about how syllabus outcomes, instruction, and assessment were aligned and *differentiated* for gifted learners, the principals emphasised the centrality of relationship between differentiated learning and assessment. The principals pointed out the need for a clear connection between the learning goals of a unit or a lesson (outcomes), how students would learn to attain the desired goals (instruction), and how the students would demonstrate if they had been successful in achieving the particular goals (assessment). As Jessica (primary school) explained:

They [teachers] have a full day where they plan their conceptual units. They map the extended outcomes and make sure that the content is modified or deepened or extended where it needs to. A lot of it is about doing the pre-assessments beforehand and knowing

where the students are at and what where they want to go. But we would also be looking at ongoing assessment throughout the term, and we would have additional assessments items that map onto the *extended* outcomes that show the greater depth of understanding of concepts and how they transfer to the real world.

Interestingly, Sharon (non-selective secondary school), however, pointed out the dichotomous tension between ongoing teacher practice, which is differentiated in her school, and annual school testing, which is not:

Part of what I ask for in programs being differentiated is that the assessment tasks are aligned with the *extended* outcomes and pedagogy and are, therefore, differentiated. The exception is that we have yearly exams across the whole year and in those exams everybody does the same task. Otherwise we're not able to say who came first in subjects for the presentation day.

James (selective secondary school), too, cautioned the perceived nexus between assessment and reporting that was centred on narrow quantitative measures, *"We have to get away from the notion that whatever you assess, you then report these in terms of marks and grades."* Indeed, all four principals shared the common view that assessment should not just be used as assessment of learning (summative assessment) but also to promote learning (formative assessment) of gifted learners. Formative assessment was perceived by the principals as an integral part of differentiated learning. The principals reported that a well-designed formative assessment such as a peer- or self-feedback (Stephanie) could provide students with critical feedback, improve student learning, and inform teachers about the effectiveness of their teaching. For example, James (selective secondary school) elaborated:

I think it goes back to what the purpose of assessment is: assessment of learning, and assessment *for* learning. I think we can't escape from the assessment of learning in terms of meeting requirements for reporting to parents and certainly to ensure that we're meeting syllabus objectives. But I think when we're talking about differentiated curriculum we need to make a distinction between the two [kinds of assessments]. Learning in itself shouldn't have any finite conclusion. It should be the next step towards the next phase of learning. Assessment should be *for* learning in terms of where that learning can progress to next.

The principals also emphasised that teachers' own reflective practice was fundamental in implementing a well-designed differentiated learning program. In Sharon's school (non-selective secondary), teachers engaged in individual and faculty evaluations at the end of each unit of study, whereas in Jessica's school (primary), teachers put aside time to assess and reflect, *"What's worked well this year? What would we like to change? How do we go forward? It's taking the time to evaluate so that we can make decisions for the future"*. Reflection meetings had been productive, according to Jessica, because *"they do force teachers to be explicit. The difficulty and ease with which people can talk about an individual child tells you a little bit about the level of differentiation that's happening in the classroom."*

In sum, the principals reported that the alignment of differentiated learning outcomes, teaching strategies, and assessments ensured the efficacy of differentiated learning for gifted students. However, for end-of-year reporting purposes the reported student outcomes were based on summative assessments which were not differentiated. The principals also reported that the evaluations and reflections of teachers' work were ongoing and collaborative. They were of the consensus view that the teachers engaged in self-assessment, reflection on practice, and ongoing professional dialogue with their

colleagues to enhance their classroom pedagogy and improve gifted students' learning outcomes.

Alignment of perceptions about differentiated pedagogical knowledge and practice. At the beginning of this chapter, I compared principals' and teachers' perceptions of the use of differentiated pedagogical strategies. As reported earlier (see p. 184), significant differences in perceptions were found for two-thirds of strategies (24 out of 36) with the principals reporting these strategies being employed less when compared to the teachers. Interestingly, in their own interviews, the four principals acknowledged that their own perceptions of teachers' pedagogy might not be congruent with teachers' self-perceptions. They suggested various possible reasons for the dissonance between principals' and teachers' perceptions about differentiated pedagogical knowledge and practice, including insufficient background and experience in GATE. They noted that this dissonance might be stronger in cases where teachers (or principals) did not have sufficient background and experience in teaching gifted students. Sharon (non-selective secondary school) and James (selective secondary school) both highlighted the importance of professional development in the education of the gifted for developing deep knowledge of giftedness and differentiated learning, with Sharon arguing that “...*some schools might not have had professional learning in GATE as their key school target in the School Plans*”, and James contending that:

I think the teachers believe they're doing it [differentiating curriculum]. I don't think that they're saying something that they don't believe. But I think that that there are also some misconceptions in what they're making reference to. Perhaps part of that is because they don't have deep understanding of what is involved in implementing higher-order thinking skills or effective differentiation or how to vary pace. I think there needs to be more

professional development that provides them with the understanding to be able to make those judgements more accurately.

Sharon (non-selective secondary school) and James (selective secondary school) both also noted that the principals may have had more rigorous expectations than teachers. James and Stephanie (primary school) referred to principals' holistic perspectives about school-wide differentiation and their ability to grasp the big picture across all curriculum areas. They pointed out that the principals have an understanding of good practice across the school whereas individual teachers tend to see it more often within the narrow confines of their own subject area. As Stephanie put it, *"The principals are focused on the output (i.e., valued added teaching and its validation); whereas the teachers pay attention to the input (i.e., their day to day experiences of teaching in the classroom)."*

When asked how to develop a sense of alignment between the principals' and teachers' perceptions about teacher practice, Jessica (primary school) noted:

I think it comes down to developing a shared understanding between the principal and the teachers about what giftedness is, what a higher order activity looks like, what substantive communication [is], what differentiation [is], so people can all be talking the same language.

James (selective secondary school) in turn emphasised the need for teachers to extend beyond their own faculties and focus on school-wide, interdisciplinary approaches to learning:

In a high school, I think you've got to get people out of their faculty areas more [and] get them working across the school. For example, we had our cross-curricular creativity project, *Imagination First*, here earlier this year and it gave teachers an opportunity to get outside of their narrow syllabus areas and see what was happening in other parts of the

school. I think if we can expand and elaborate upon that sort of a model then we start to get people seeing and believing what they can do.

Sharon (non-selective secondary school) was, however, guarded about the possibility of developing greater aligned perceptions with some of the teachers in the school. Sharon commented about the challenges that she had encountered not only from the wider community but also from some of her own staff members about making special provisions for the gifted learners:

There are teachers who are doing it [differentiation] in the classroom and they do the full gamut. [They] live it and breathe it. There are others who think it's a chore. Every time we have enrichment days for gifted students through the year, I get complaints about why everyone isn't having one. I even have staff who do it, "Why should just the gifted and talented kids have these extension days?"

In sum, the principals shared the view that a more aligned, shared understanding among the school leaders and the teachers about the characteristics and elements of differentiated learning was needed in schools. The principals reported that the alignment between the principals' and teachers' perceptions about differentiated pedagogical practices would ensure consistency of teacher practice and, as a consequence, high performance outcomes for *all* gifted learners.

Principals' Understanding of Self-Reported Leadership Actions for School-wide Differentiated Learning

In the previous section, the principals' understanding of differentiated learning and pedagogical practices for gifted learners was presented. In this section, I report the principals' understanding of their own leadership actions in implementing and sustaining differentiated learning (research question 4b). Using content analysis, I identified ten

themes related to the category, “leadership actions” (see Table 9.3 for an overview). To ensure the reliability of the coding scheme, inter-rater reliability was determined using data from four principals (100%). A second, independent rater (a principal of a selective secondary school) who was blind to the identified ratings, coded the data independently. Cohen’s Kappa was calculated with this data, and found to reflect a high level of inter-rater agreement ($K = .85$) (Fleiss, 1981, as cited in Robson, 2002). The identified themes are presented below.

Identifying and communicating a visible reason for change. The principals acknowledged that identifying a visible reason for change and communicating the goal clearly to the teachers was most desirable for building a shared sense of purpose. Stephanie (primary school) reported having clear, strategic targets which were aligned with the Region’s strategic directions, *“Looking at the new strategic directions, it was very clear that we need to differentiate learning across Northern Sydney Region; and in the school that was the most important target.”* Stephanie emphasised the value of embedding key targets in the School Plan so that all staff members in the school knew about their responsibility to achieve the specified goal. To achieve the target of differentiated learning, Stephanie introduced structural changes in the school:

I have changed the process of how we [organise] committees at the school. They’re not called committees. They’re called WIGS, short for Wildly Important Goals, using Stephen Covey’s phrase. I’ve got everybody using the same language. When we talk about having our WIGS meeting, I can see there is a shift from the “committee” approach which is an organisational structure, to a “group” approach which is a group of people responsible for some Wildly Important Goals [WIGS].

Stephanie explained that the WIGS group met twice a term. The group reported back at the staff meetings. Stephanie ensured everyone understood that such meetings were part of the

staff professional learning which meant that every staff meeting became more meaningful with everyone involved. The importance of the systems approach was evident when Stephanie explained how the School Plan provided strategic directional focus to all the stakeholders involved. James (selective secondary school) also conveyed the importance of articulating a clear reason for undertaking a major initiative to the whole school staff:

I think you've got to model it first of all and believe in it passionately and get your staff on side to understand and accept why it's such a high priority in the school. We put it ["leading differentiated learning"] down as a major school focus for next year so that we channel resources, time and professional learning into that particular area. We convey that message to the whole school, and it's a message that comes out consistently from me as principal, from the executive and, therefore, it filters down to every member of the staff.

Communicating the change initiative in itself was not enough. James (selective secondary school) explained that the message needed to be followed through by clear, specific strategies on how to achieve the specified strategic target. He identified a process of holding executive conferences every year followed by voluntary professional learning lunches where staff join together and are encouraged to have a dialogue about differentiation for gifted learners.

Table 9.3

*Principals' Understanding of Leadership Actions that Support, Facilitate, and Sustain School-wide Differentiated Learning for Gifted**Students*

Leadership Actions	Examples
Identifying and communicating a visible reason for change	Educators have an obligation to make sure that they give every child that opportunity to engage in learning that's appropriate for their particular level of ability.
Setting up a guiding coalition	Team building entails including all stakeholder groups within the school, developing teacher expertise, building trust among team members, and pursuing school goals collectively.
Developing a shared vision and strategy	A shared vision of school-wide differentiation for gifted learners is that every teacher will know their children, their style of learning and their interests, and then will be able to build on that child's capabilities so that each child feels confident and successful as a learner.
Building and sharing knowledge and information	To enrich understanding of differentiated learning for gifted learning requires a multi-faceted approach, including professional reading, attending professional learning workshops, and ongoing dialogue with experts and academics in the field.
Enabling student voice	It is about creating a learning climate that honours the capacity of young people to engage in learning as partners. But the school is not there, yet.
Committing resources to foster collective capacity of staff	<p>Building collective capacity of teachers entails planning, ongoing program reflection meetings, developing Individual Learning Plans (ILPs), annual review meetings, and regular reflections. Differentiation is the primary focus for all of these activities.</p> <p>Building teachers' expertise for educating gifted learners requires that teachers' professional learning is evidence-based and collaborative, and involves ongoing reflection and feedback.</p>

Leadership Actions	Examples
Empowering teachers for school-wide differentiation	<p>Empowering teachers for school-wide differentiation requires distributing leadership, trusting teachers, and providing time for teachers to discuss and reflect on student learning.</p> <p>Collaboration of groups and collaborative projects across stages where there's a level of peer mentoring and coaching empowers teachers to achieve school goals.</p>
Acknowledging teachers	Recognising teachers publicly for their valued contributions in differentiation for gifted learners builds momentum in achieving school goals.
Embedding changes into school culture	<p>Developing a culture of excellence in the school is about having high expectations and setting aspirational targets. Embedding changes into school culture requires aligning school systems and processes with new initiatives such as school-wide differentiation. However, it is people who change first. Cultural change always comes last.</p>
Setting sustainable future directions	Setting sustainable future directions in differentiated learning means innovating learning, developing differentiated units for gifted learners, engaging students' voices in school improvement, building learner-centred approaches to student learning, and continued professional learning of teachers in educating the gifted.

The principals reported the importance of having clarity of communication and keeping a sustained focus on building a shared sense of purpose in the school community through specific, concrete, and practical strategies.

Setting up a guiding coalition. A ‘guiding coalition’ is defined here as a team of staff members who can promote and facilitate the change process in the school towards a common goal. The exemplary principals’ responses indicated the need to build a guiding coalition who could facilitate differentiated learning in the classroom by guiding and supporting teachers across the school. For example, Jessica spoke about developing people by providing individualised support, offering intellectual stimulation and modelling appropriate values and practices:

It’s about believing in people. At the core of most teachers is that willingness, that enthusiasm and desire to make a difference in every child’s life. It’s looking at individual teacher’s strengths and acknowledging it and valuing it. [It’s about] knowing that part of the role of leadership is to help [teachers] build on those strengths and to help them get to the next step in their own learning.

The principals reported that team building entailed developing expertise of teachers, building trust through lots of conversations and joint activities, and pursuing a shared goal which appealed to “*both the head and the heart*” (Stephanie, primary school). James (selective secondary school) similarly reported that the guiding group of staff members help develop a shared sense of purpose among teachers so that “*individual teachers stop thinking of my students in my classroom, and start thinking of our children in this school.*”

Developing a shared vision and strategy. In response to the question, “*What role do you see teachers playing in creating the vision?*”, the principals shared the view that the guiding vision for the future must be a *shared* mental image of what a school or

classroom might look like in a changed and improved state. During our interview, Stephanie (primary school) opened a folder containing each teacher's personal vision statements and explained that the enactment of personal visions integrated with a shared sense of school vision spurs teachers' motivation to achieve the desired goals:

I shared their [teachers'] personal mission statements with all the parents at the Education Week. I shared them in the newsletter. I said to the teachers, "Right, you guys have the most amazing aims, beliefs and passion. How do we bring that back to the children?"

Developing a *shared* image of the future was integral to Stephanie's vision in the school:

We want to teach our students how to care, respect one another, achieve their personal goals and lead successful lives. Making a true difference. Working [together], we [staff] were laughing, playing, dreaming, leading and then we put them [mission statements] up around the staff room.

For Jessica (primary school), "*the vision can only be a vision if the whole school is brought into it*". Jessica explained that in her school, the senior management team has been very mindful and purposeful about what messages are communicated at the administrative meetings, team leader meetings, grade meetings, and professional learning meetings. The leadership team in the school ensured that a strong message about implementing differentiation in classrooms was shared with teachers. Jessica also regularly reminded teachers about the *impact* they can have upon children's learning.

Painting the mental picture about his school's future vividly, James (selective secondary school) hoped to attain consistency across the school, "*For me, personally, if I could walk into any classroom in this school in any faculty area at any time and see evidence that there was differentiation happening that would be a wonderful moment for*

me.” However, James noted that differentiation was not a school-wide phenomenon yet, and that only pockets of it were happening in the school. James hoped for a greater consistency in the school so the students could walk into any subject with any teacher and have the same sort of methodology coming through in differentiating learning for gifted students.

The principals spoke about their student-centred visions and reported that a guiding vision would be embraced by the staff members if the school leaders developed a *shared* image of the preferred future in collaboration with the teachers.

Building and sharing knowledge and information. When asked how they continue to enrich their understanding of differentiated learning for gifted learners, the principals reported that they developed their own knowledge and understanding through a variety of avenues such as professional reading, attending professional learning workshops, and discussions with experts. Sharon (non-selective secondary school) highlighted the value of having an academic mentor from a university, for example, while Jessica stressed the importance of modelling to her staff in building new knowledge, *“Keeping myself immersed in what counts; being proactive and getting involved. I can only help my staff in moving forward with student learning if I’m actively engaged with them in the process.”*

Although these knowledge-building pathways were diverse, all four principals readily reported engaging in, and leading, differentiating learning for gifted students. Despite having a busy daily schedule the principals acted as *lead learners* in their schools and created the time to continue to learn from and grow with their colleagues.

Enabling student voice. In response to the question, *“How do you incorporate gifted students’ voices into planning and evaluating teaching practices to ensure their needs are being met?”*, the principals generally reported that their schools tended to use

student voice more as an opportunity to communicate ideas and opinions rather than as a means for enabling students to influence change or help improve teaching and learning.

James (selective secondary school) noted, *“I am big on it and it’s an area that I still haven’t explored to the depth that I want to. This is something that I believe we need to look at.”* Sharon (non-selective secondary school) similarly spoke about infusing student voice in teaching and learning:

Students aren’t basically involved in planning. I know some teachers [who] as part of their teaching a unit or a topic take evaluations from the students at the end of it. So they’re getting some feedback. But probably out of all of the questions, it’s one thing that I think we are probably a bit deficient in.

Stephanie (primary school) also reported that enabling student voice needed greater focus in her school and described current efforts as *“almost tokenistic”*. Although children were given opportunities to *engage and listen to one another* via Student Representative Councils and other pathways, no mechanism currently existed for student voices to be heard by their teachers. Stephanie deliberated about the notion of enabling student voice beyond the classroom in the future. She expressed the view that student voice could also be used in the selection panel for appointing teachers in schools, *“If I had my way, every time you had a selection panel you’d have the children. But look, you can’t do everything in one hit. These are things that will be developed over time”*.

Amongst the four principals, Jessica (primary school) alone had concrete mechanisms in place to promote student voice in her school. Nonetheless, she too expressed the need for further work:

Part of it is through the student leadership opportunities that we have in the [school]: ...the executive roles that they take on, the eco-ambassadors, and even in the playground where

the house captains run playground programs. I think our teachers are very respectful and open to the students' ideas for what needs to happen around change in the school. But we've still got a way to go in that area.

In sum, the principals expressed a shared view that student voice in the schools was used more to seek opinions, or feedback at the end of a teaching unit. However, the principals expressed their keenness to use student voice in improving learning and teaching, generating greater student autonomy, and increasing student engagement.

Committing resources to foster the collective capacity of staff. Professional learning was identified by the principals as foundational for leading change in schools. When asked how they enhance professional learning of staff in meeting the needs of gifted and talented students, the principals were of the consensus view that collective capacity building (i.e., teachers working and learning together) had a strong impact on teacher effectiveness, generated commitment among teachers, and led to improved student outcomes. Stephanie (primary school) explained how she continues to promote the collective efficacy of teachers, *"We have stage meetings so every fortnight they undertake professional learning and they talk about it in their teams. We use PMI charts to do that. We use an action learning approach, so it's about mentoring, coaching others."*

Stephanie expressed the view that professional learning of teachers needs to be linked to the School Plan, data-informed, and focused on students' achievement outcomes:

We make sure that teachers understand the importance of differentiation through professional learning sessions at the school that are linked to the management plan. We look at the data, look where the gaps are, and then we focus on the [required] professional learning.

The principals ensured that professional learning of teachers for educating the gifted students was given due primacy in their schools. Sharon (non-selective secondary school), for example, encouraged teachers to undertake professional learning in educating gifted learners:

It [educating the gifted] is a high priority in this school. I put time into explaining to people how our gifted and talented classes are created, why they're there and the need and importance to cater to those kids. I support teachers going on any professional learning to do with gifted and talented teaching and learning.

Given her background in the education of gifted students, Sharon often conducted professional learning of the teachers herself at the school so that it was embedded in practice. However, if the staff members undertook any professional learning outside the school, Sharon expected them to share their knowledge with the rest of the staff team.

Investing school resources to maximise teacher learning was acknowledged by James (selective secondary school) as a significant step towards building a foundation for school effectiveness, *"We're putting our budget together for our professional learning strategy for next year. I would envisage that a significant part of next year's professional learning funds will be channelled towards differentiation"*. Understanding giftedness, how gifted students learn, and the distinction between giftedness and high achievement were perceived by Jessica (primary school) as vital for meeting the needs of gifted learners. Jessica also reported that for building the collective capacity of teachers, a clear learning focus was maintained for each of the four terms of the school year, and any administrative work during the team meetings was kept to a minimum:

So each week in the meetings, professional learning might be about [bringing] evidence or work samples, a narrative about the student who needed the most support in numeracy or it might be about conceptual programming. The focus has to be about student learning.

Thus, the principals considered evidence-based, collaborative professional learning for educating the gifted as a key strategy for improving student outcomes. The principals shared the view that collective capacity building of teachers helped make their practices public, made teachers accountable to one another, and created greater impact upon both teachers' and students' learning.

Empowering teachers for school-wide differentiation. In response to my question about the most successful strategies for school-wide differentiation, the principals noted that teachers on their own could not be very effective unless a school-wide approach was taken to meet the learning needs of gifted students. Sharon (non-selective secondary school), for example, ensured that the whole school was involved in meeting the needs of the gifted:

I actually think nearly everything that you do in gifted and talented education and what you want a gifted and talented classroom to look like is actually applicable on a whole school level. That's also a message that my staff would have from me.

However, making differentiated practices transparent to other teachers was reported by the principals as potentially demanding. Jessica (primary school) addressed this issue by ensuring that the focus of peer observation was not the teacher but the *students* in the classroom:

We have a very open transparent school in terms of watching each other's practice. Part of what helps with that is to keep the focus on what the children are doing in the classroom. That makes it a little bit less intimidating for a teacher. It also means that we are less worried about how polished and slick it looks, and we are looking at what actually makes the *impact* on student learning.

In addition, for Stephanie (primary school), collaborating with the parent community meant that the parents were familiar with differentiated practices so the teachers could communicate with the parents in a more meaningful manner about their children's learning:

I think schools often identify [giftedness], bring a child into the gifted and talented program and then you don't know what's happened. There's a vacuum in communication. So I'm trying to bring the communication back into a collaboration between school and home.

The principals acknowledged that they could not achieve change single-handedly. Empowering teachers to showcase their practices of educating gifted students to their colleagues was perceived as a rewarding professional learning strategy. While Sharon (non-selective secondary school) encouraged teachers to share their strategies of differentiation for gifted learners on school development days, Jessica (primary school) employed strategies such as mentoring the staff members, enabling teacher leadership, and exercising distributed leadership. As Jessica elaborated, *"It's strong mentoring and it's putting the time into the mentoring. Each executive has team leaders and committee leaders that they are working with. We distribute leadership through strong mentoring."* Development of effective practitioners of differentiated learning through modelling and mentoring was also supported by James (selective secondary school), *"When you have young inexperienced teachers, you are able to pair and buddy them up with successful teachers who are doing these exciting, innovative and exemplary practices."*

Having trust in the executive and encouraging the teachers to build their expertise, according to James, helped foster school-wide implementation of differentiated practices, *"I rely and I trust my head teachers to be supervising at a faculty level. And if differentiation is not happening in classrooms then I would like to be able to support those*

teachers with relevant professional learning.” For Jessica (primary school), keeping the fire within the teachers alive and valuing the ongoing development of teachers was critical:

It’s never losing sight of the fact that at the core of most teachers is that willingness and that enthusiasm and desire to make a difference in every child’s life. But for that to manifest and actually make a difference in the school you have to empower people. [It’s] knowing that a part of the role of leadership is to help teachers build on [their] strengths and help them get to the next step in their own learning.

The principals reported that empowering teachers to differentiate learning facilitated school-wide differentiation. The principals were involved in actively developing exemplary practitioners, distributing leadership, and encouraging teachers to showcase their best practices in the school. The principals expressed the view that when teachers are enabled to make improvement in student outcomes they work collaboratively in building engaged learning communities.

Acknowledging teachers. Planning deliberately for short-term wins, highlighting successes as a direct result of an initiative, and recognising teachers for their meaningful contributions were some of the key measures that the principals reported as significant in achieving the shared school vision and goals. Sharon (non-selective secondary school) reported regular acknowledgement of those teachers who had continued to make a difference:

We have a morning tea every Thursday and the main thing I do is [to] acknowledge and recognise people who have done things beyond the call of duty or where kids have had great success. As part of School Development Day, I get these people who have done great differentiation and really made a difference to talk to the whole staff about what they are doing that is actually making a difference.

Acknowledging ongoing successes of teachers helps build momentum towards the change vision. At the same time, James (selective secondary school) pointed out that while he continued to celebrate the teachers' work, he was also conscious of the fact that many of his colleagues considered it as part of any good teacher's vocation:

In our newsletters, I am constantly putting out items of success and achievement. While I acknowledge the students who are involved, I never fail to also acknowledge the teachers [who] lie behind those projects. I think it's hard sometimes also to adequately recognise staff in terms of the hours of work that they put into projects. Quite honestly, sometimes I don't think the staff really want to be acknowledged. They do it because it's what they love doing.

The principals were of a consensus view that the value of teacher recognition was to reaffirm in the minds of teachers that the evidence-based strategies for differentiation were working. The principals publicly acknowledged the "change agents" for their hard work. They ensured that ongoing acknowledgement of teachers' successes provided meaningful milestones to achieving the shared school vision.

Embedding changes into school culture. The principals highlighted the need to institute the changes into school culture in response to new initiatives such as school-wide differentiated learning for gifted students. They reported that school culture was not something one could change easily. They emphasised that cultural change always came *last*: after the teachers' actions had been successfully altered, and after the staff members had seen the connection between the new actions and the improvement in student outcomes. Jessica (primary school) noted that bringing cultural change requires a lot of ongoing conversations, as without ongoing dialogue and support the staff members are often reluctant to embrace new practices:

I don't think you can do it all. I think it's about the distributed leadership. It's about having those discussions with your leadership team and then with your teachers. And it's about empowering and trusting your teachers. There's a need to put some money into providing time for teachers to observe what children are doing in each other's classroom and to reflect on that.

James (selective secondary school) believed that teachers tend to thrive in a high performance culture, arguing that *"It's about developing in the school a culture of excellence. It's about having high expectations... I think there's always scope for improvement. You have to keep setting aspirational targets."* James discussed strategies for ensuring that the previous culture did not reassert itself. He explained that the executive in his school used the teachers' annual review process to ensure that new differentiated practices were documented and encouraged.

In sum, the principals expressed a shared view that they employed a range of approaches such as aligning school systems and processes with the new initiative and ensuring that the teachers could visibly see the results of the change initiative. The principals engaged teachers in ongoing professional discourse, and helped them understand that *people change first* as cultural change always comes last.

Setting sustainable future directions. When asked about the future directions that need to be undertaken to support differentiated learning for gifted students, the principals reported that setting sustainable future pathways of successfully implemented practices in schools was essential. The principals identified student voice as something they would wish to develop further at a sustainable level to enhance learning and teaching in their schools. Stephanie (primary school) noted that the school needed to utilise *"student voice and sustain where we're going in terms of school planning and professional learning"*. Stephanie wanted to ensure that *"the alignment of people's capacity"* and all strategic

change efforts were “*linked back to the purpose of what we do*”. A similar focus on student voice and sustained professional learning in differentiation was reported by Jessica (primary school), “*We have work to do in regard to supporting teachers in differentiation and in making sure the conversations are around what the children are doing and achieving.*”

Innovating learning, developing differentiated units, and building learner-centred approaches to student learning were the core of sustainable future directions for James (selective secondary school). He also spoke about developing productive partnerships with universities to bridge theory and practice, and prepare effective teachers for educating the gifted:

You know the other area I think we could also be looking at is what’s happening in terms of teacher training before they get to our schools. We have a lot of students coming here from the universities to do their practicums. I’m not sure that we’re tapping in enough into what’s going on at the university level.

Stephanie (primary school) reflected about the holistic dimension of differentiated learning in the future:

In the end it’s about heart and spirit, isn’t it? And that’s what differentiation is. It’s not just purely academic. If you know a child [and] what motivates them then we’re doing the right job. Because what do we remember when we went to school? It’s not just the strategies. It’s who cared. High expectations. And the belief that a child can do it.

The teachers, according to Jessica (primary school), need to identify key “*learning windows*” in the classroom when they could generate enthusiasm about their own learning, “*It is about teachers recognising where those key moments are, where they can push the children on, and how to get them excited about new possibilities.*” Building sustainable

future pathways required that all educators worked in concert for engaging and challenging the gifted learners. James (selective secondary school) reflected:

I think we have an obligation not just in selective schools obviously but I think in every school to make sure that we give every child that opportunity to engage in learning that's appropriate for their particular level of ability. Rather than have the one size fits all model, what we've got to try and do is look for every possible opportunity to break out of that mould of the one size fits all and create a new mould for every child. I've got seven hundred and twenty five boys here. I'd like to have seven hundred and twenty five different moulds that each of them can fit in.

The principals expressed the view that building sustainable future directions requires engaging in school-wide differentiation, embedding student voice into learning and teaching, building responsive teaching programs, sharing leadership widely, and ensuring that the new practices are part of the school culture so that *all* teachers understand the rationale for differentiated learning of gifted students. The principals were of the consensus view that mere speeches and pronouncements are not sufficient in leading change. They reported that high performance cultural change requires ongoing, sustainable leadership actions.

In sum, the insights of exemplary principals reveal that in order to enact school-wide differentiation for gifted learners, effective principals establish a visible reason for the change initiative, form a powerful guiding coalition of teachers to facilitate differentiated learning across the school, and develop and communicate the shared vision. They build the collective capacity of teachers through ongoing professional learning, promote learner-centred approaches to teaching by enabling gifted students' voices, acknowledge teachers' contributions, and consolidate and anchor changes into the school culture.

General Summary

In this chapter, the principals' perceptions of teachers' differentiated pedagogical practices, their understanding of differentiated learning and of their self-reported leadership actions in implementing and sustaining differentiated learning were presented (research questions 3, 4a and 4b). ANOVAs were performed, and significant differences were found between the principals' and the teachers' perceptions of differentiated pedagogical strategies being used in their schools. The principals suggested a host of possible reasons for the dissonance between the perceptions of principals and the teachers, including the disparities between their understanding, attitudes, and experiences about educating the gifted. The principals also suggested a range of strategies to foster aligned understanding between the principals and teachers for educating gifted learners.

The principals expressed the need for a deep and rich understanding of differentiated learning for gifted students, including knowledge of gifted learners' readiness and needs, early identification of gifted learners, and planning concept-based differentiated units of study to engagement in ongoing program evaluation and reflection. To implement and sustain differentiated learning for gifted students, the principals expressed a shared view that school-wide leadership actions were essential for building a shared vision, developing effective staff teams, enabling student voice, generating short-term wins, instituting changes into the school culture, and setting sustainable future directions. These findings are discussed further in the next chapter.

CHAPTER 10

DISCUSSION

The purpose of this study was to examine teachers', students', and principals' perceptions of giftedness and education for gifted learners. Particular attention was paid to each group's perceptions of differentiated learning opportunities for the gifted.

In this chapter, I discuss the findings of the study in four sections. In the first section, I discuss teachers' attitudes towards giftedness and gifted learners (research question 1a), and teachers' perceptions of their own differentiated practices for gifted learners (research question 1b). In the second section, I examine students' perceptions of teachers' differentiated pedagogical strategies, and their perspectives of classroom engagement and the qualities of an effective teacher. I compare these perceptions with those of teachers (research question 2). In the third section, I examine the similarities and differences in the perceptions of principals and teachers about differentiated learning (research question 3). I then discuss principals' understanding of, and their self-reported leadership actions for, school-wide differentiation for gifted learners (research question 4). In the fourth section, I draw the above three sections together by illustrating a representation of school-wide differentiation for gifted learners. I conclude the discussion by examining implications for practice, limitations of the study and implications for future research.

Teachers' Attitudes towards Giftedness and Perceptions of their own Practices

In this section, I first discuss the study's findings about teachers' attitudes towards giftedness and gifted learners (research question 1a). I then discuss the study's findings about teachers' perceptions of their own differentiated pedagogical strategies for gifted learners (research question 1b).

Teachers' attitudes towards giftedness and gifted learners. The study's findings indicated that four main factors were associated with more positive attitudes towards giftedness and gifted learners. These factors were (a) current teacher employment in selective schools, (b) holding qualifications in GATE, (c) holding position of responsibility in GATE, and (d) engagement in professional learning in GATE. In contrast, teachers in non-selective settings, and teachers without expertise or professional learning in GATE, reported less positive attitudes towards gifted students and pedagogical strategies for differentiated learning. These findings are consistent with previous research which has also demonstrated positive attitudes held by teachers who work in selective settings (e.g., Lassig, 2009), hold qualifications in GATE (e.g., Chessman, 2010), hold position of responsibility in GATE (e.g., Bangel, Moon, & Capobianco, 2010), and undertake professional learning in GATE (e.g., Geake & Gross, 2008).

Interestingly, the number of years of teaching experience in the classroom did not predict positive attitudes towards giftedness and gifted learners. Those with more years of experience held no more positive or negative attitudes than those who were just beginning their careers. Past research (Bégin & Gagné, 1994b; Perković Krijan & Borić, 2015) demonstrates that teachers with the number of years of general teaching experience did not report any difference in their attitudes towards pedagogical approaches. Similar (but more nuanced) findings emerged in this study about teachers' perceptions of differentiated pedagogical practices for gifted learners. While teachers with more general classroom experience were more likely to support the provision of acceleration and content differentiation than were less experienced teachers, they were no more likely to support any other differentiated practice (e.g., outcomes, process, and product differentiation). The lack of support for differentiated practices by teachers with years of general teaching experience could be due to their lack of experience in working with gifted students, lack of

appropriate pedagogical content knowledge for educating them, or inconsistent school policies for educating gifted learners (Chessman, 2010; Cramond & Martin, 1987; Lassig, 2009).

However, the above finding that teachers with more general classroom experience were supportive of *acceleration* and *content differentiation* specifically, but not any other forms of differentiation, is unexpected and requires further consideration. Recent research shows that teachers typically attribute more negative outcomes to acceleration than positive ones (e.g., Rambo & McCoach, 2012). Similarly, teachers with a high number of years of teaching experience have also been found not to possess positive attitudes towards acceleration (Hoogaveen et al., 2005). However, there is no documented evidence of the association of teachers' years of teaching experience with their attitudes towards strategies for content differentiation specifically. It is possible that the support for acceleration and for content differentiation, particularly by experienced teachers, was influenced by the administrative school region in which this particular study took place. As noted in Chapter 6, the Northern Sydney Region was comprised of a number of schools with high achievement records and a number of selective schools. Differentiated practices of acceleration and of content differentiation had long been heavily supported at the leadership level (i.e., school principals, school education directors, and regional director; see Appendix N for the Northern Sydney Region 2012-2014 Plan). Thus, experienced teachers may have had greater opportunities to observe the positive effect of acceleration and the use of advanced content with gifted learners. This exposure may, in turn, have enabled them to see beyond the commonly-held stereotypical interpretations about such educational interventions (see Jung, 2014) and, thus, focus on their positive impact.

It is not surprising that teachers with professional learning in GATE showed positive attitudes towards gifted learners and towards differentiation for the gifted: this is

precisely what such learning targets. Past research has shown that engagement in ongoing professional learning in GATE fosters positive attitudes towards gifted students and their education, deepens understanding of gifted students' learning needs, gives teachers vocabulary to frame their thinking about gifted learners, and equips them with practical skills for differentiation (Adams & Pierce, 2004; Geake & Gross, 2008; Gross, 1994; Gubbins, 2008, 2014; Hansen & Feldhusen, 1994; Lassig, 2009; McCoach & Siegle, 2007; Megay-Nespoli, 2001; Rowley, 2012; Tomlinson et al., 1995; Tomlinson et al., 1997; Westberg et al., 1993).

More interesting, however, is the finding that exposure to gifted learners and gifted education practices in selective settings foster positive teacher attitudes. As discussed in Chapter 3, sociocultural environments shape both our beliefs and our attitudes (see Ajzen & Fishbein, 2005). Regular contact with gifted students may, therefore, assist teachers in gaining insights into gifted learners' interests and in developing rigorous educational options to meet their diverse needs (Bégin & Gagné, 1994a, 1994b; Jung, 2014; Lassig, 2009; Olszewski-Kubilius & Dixon, 2008). In this study, for example, James (selective secondary school principal) also noted that teachers working with gifted students in his school were "*sensitised to the needs of gifted learners*" and tended to have positive attitudes for educating the gifted. Employment in selective schools provides teachers opportunities to more closely observe the range of issues that affect gifted students in practice (Lassig, 2009). It may also be the case that regular exposure to gifted learners enhances teachers' self-efficacy to address the needs of gifted learners (Tomlinson, 2012) because those teachers who feel more confident about using differentiated pedagogical practices also come to view differentiation as more valuable.

Teachers who held qualifications in GATE in this study—in particular, those possessing postgraduate qualifications in GATE—held significantly positive attitudes

towards a range of differentiated pedagogical strategies. Research shows that teachers who undertake formal qualifications in GATE are also likely to hold positive attitudes towards giftedness and gifted learners, are able to identify gifted children more effectively than untrained teachers, and use teaching strategies they did not know before their training began (Borland, 1978; Chessman, 2010; Hansen & Feldhusen, 1994; Gross, 1997a; Plunkett, 2000a). Furthermore, many students who participated in the current study also identified their teachers' expert knowledge of the subject and the field as one of the key characteristics of effective teachers of the gifted, as echoed in previous studies (Siegle et al., 2014; Vialle & Tischler, 2009).

Similarly, teachers who held positions of responsibility in GATE (e.g., a GATE coordinator) also reported positive attitudes towards gifted learners and to a range of differentiated pedagogical provisions. This is not surprising as, like teachers in selective schools, they too are frequently exposed to gifted learners and are more likely to develop insights into gifted learners' needs. They are likely to have volunteered for these positions: thus suggesting pre-existing positive attitudes, too. In addition, these teacher leaders are likely to coordinate the programs and provisions for educating the gifted in schools, offer a series of teacher professional development opportunities with an emphasis on programming for gifted students, be readily accessible to consult with teachers individually and/or groups in addressing the diverse needs of the gifted, and offer a range of networking opportunities (Matthews & Foster, 2005). Finally, in developing initiatives for GATE in their school, the teacher leaders are afforded additional opportunities for mentoring and reflection. They act as coaches in supporting teachers, especially novices, and are willing to share their expertise, instructional materials, and other resources in educating the gifted (Tomlinson et al., 1995).

The findings regarding differentiated learning of gifted students hold somewhat challenging implications for the improvement of teacher attitudes towards gifted learners. For example, it is often not possible to give all teachers exposure to a large body of gifted learners in non-selective schools, in contrast to teachers in selective schools who experience regular exposure to gifted learners. While exposure to gifted learners may be limited in practical terms to all teachers in non-selective schools, it is nonetheless important to consider the research literature on the diversity and heterogeneity of gifted learners (e.g., Clark, 2013; Reis et al., 2015) which means it is likely that these teachers will encounter at least some gifted learners in their classrooms each year. As such, the finding that professional learning in GATE is also associated with improved teacher attitudes offers the most substantial promise for the wider teaching community. Effective professional learning in GATE is also positively associated with both teachers' efficacy and teachers' sense of efficacy beliefs (Dixon, Yssel, McConnell, & Hardin, 2014). It might, therefore, be suggested that the study's findings highlight the importance of offering *all* teachers specific and targeted professional learning in GATE (Bangel et al., 2010; Cramer, 1991; Cross & Dobbs, 1987; Feldhusen, 1997; Gallagher, 2000; Parke, 1989; Toll, 2000; Tomlinson et al., 1994).

Teachers' perceptions of their own pedagogical strategies. Three constructs related to teachers' self-reported use of differentiated strategies (i.e., *content differentiation*, *process differentiation*, and *product differentiation*) were assessed in this study. These were in addition to the more general investigation of teachers' attitudes towards giftedness and gifted learners, discussed above, and highlight the extent to which teachers believe they *employ* differentiation in practice. The results once again indicated that teachers who (a) worked with gifted students in selective settings, (b) held qualifications in GATE, (c) held positions of responsibility in GATE, or (d) engaged in

professional learning in GATE, were more likely to hold positive perceptions about differentiated pedagogical strategies for gifted students (research question 1b). This section builds on the previous section by offering additional insights into teachers' positive attitudes and their resultant supportive actions. In particular, this section demonstrates that teachers holding positive attitudes towards gifted learners (due to their expertise and experience in GATE) were also found to be supportive of using differentiated pedagogical strategies for gifted students in the classroom.

With regards to *content* differentiation, for example, teachers who taught in selective schools, held qualifications or positions of responsibility in GATE, or engaged in professional learning in GATE rated their use of *concept-based learning*, *exemplars*, and *whole to part learning* significantly higher than teachers without knowledge or experience in GATE. They also recognised a greater need for engaging gifted learners in *higher-order thinking*, *linking new content to prior knowledge*, *exemplars*, and appropriate *feedback*. With regards to *process* differentiation, teachers with knowledge, responsibility, or background in GATE rated their use of provisions such as *within-class ability group interaction*, *varied pacing*, and *adjusting the amount of individual practice* higher than teachers without expertise in GATE. Similarly, with regards to *product* differentiation, teachers with knowledge, position, or background in GATE rated their use of provisions such as *independent learning*, *problem-based learning*, *real-life problems*, and *inquiry and research* higher than teachers without knowledge or expertise in GATE. They also recognised a greater need for providing gifted learners product *choices*, promoting *creativity* in products, encouraging *self and peer evaluation*, and fostering *metacognitive reflection* on student work.

As in the previous section, these findings again demonstrate the importance of professional learning, experience, and expertise in GATE. Teachers who had this

background held views consistent with recognised best practice in the field for differentiating *content*: demonstrating an understanding that gifted students require content that is qualitatively different from mainstream learners (Maker & Schiever, 2010; Rogers, 2007; VanTassel-Baska et al., 2000). They also recognised that differentiation of content must be accompanied by appropriate learning experiences and strategies (*process*) to support the needs and interests of gifted students. The findings about these teachers' use of ability grouping and pacing, for example, are important because research shows that gifted learners' achievement outcomes are higher when they are grouped according to their ability in the context of a differentiated curriculum (Brulles, Saunders, & Cohen, 2010; Rogers, 2007). One of the important findings of this study is that the teachers with knowledge and understanding of GATE reported *modifying learning outcomes* to ensure that challenge and complexity in learning activities and content match the learning needs of gifted learners. Although no previous empirical research about outcomes differentiation exists, this finding is consistent with the opinions expressed by many scholars about extending learning outcomes and making them more substantive for gifted learners (Heacox, 2009; MacLeod, 2004; VanTassel-Baska, 2003; VanTassel-Baska & Stambaugh, 2006).

The findings about *product* differentiation also show that teachers with expertise and experience in GATE recognise that gifted learners create products that address a real problem and a real purpose (Newman et al., 2015), engage in self and peer evaluation of their products (VanTassel-Baska, 2004), engage in metacognition (Shore, 2000), and participate in inquiry and research (VanTassel-Baska, et al., 1998). On the other hand, irrespective of their number of years of teaching experience, teachers who did not possess expertise or experience in GATE held views that were inconsistent with recognised best practice in differentiation.

Thus, teachers who engage in professional learning in GATE or hold qualifications in GATE have deeper understanding of using differentiated pedagogical strategies for educating gifted learners. It is, therefore, not surprising to see these teachers report positive attitudes towards using differentiated practices in their classrooms, consistent with past research (e.g., Adams & Pierce, 2004; Lassig, 2009). For teachers who teach in selective schools, however, different explanations may apply. For these teachers, the school environment may play a stronger role (e.g., Lassig, 2009; Olszewski-Kubilius & Dixon, 2008). It may be, for example, that differentiation is more commonly used in this environment, where students' exceptional (and varied) skills are on display (Finn & Hockett, 2012; Jung, 2014). Thus, teachers without formal qualifications in GATE may also come to learn about such strategies informally. They may also be part of more frequent reflective staff discussions in the school about ways to meet the needs of gifted learners (Tomlinson et al., 2008; Tomlinson & Imbeau, 2010). Similarly, teachers holding positions of responsibility in GATE are likely to lead and co-ordinate school-wide differentiated learning, and support other teachers, especially beginning teachers, in educating gifted learners (Matthews & Foster, 2005; Tomlinson et al., 1995). Given the alignment of teacher attitudes and practices in the above two sections, it is clear that those teachers with positive attitudes towards giftedness and differentiated learning for the gifted are also more likely to report actually *using* these differentiated practices.

Summary of findings and implications for teaching. The study's findings revealed a diversity of views and attitudes towards giftedness and education of gifted learners, influenced by expertise and experience in GATE. Thus, teachers who worked with gifted students in selective schools or had regular contact with gifted learners, held qualifications or positions of responsibility in GATE, and engaged in professional learning in GATE, had positive attitudes towards giftedness and gifted learners (research question

1a). These teachers were also more likely to self-report the use of differentiated pedagogical practices related to three constructs, that is, *content differentiation*, *process differentiation*, and *product differentiation* in classrooms than those without experience and expertise in GATE (research question 1b). The support from teachers with *number of years of teaching experience* was, however, mixed.

The influence of teacher background and experience in GATE upon teacher attitudes and differentiated practices for educating gifted learners is illustrated in Figure 10.1. The arrow indicates the direction of positive influence of teachers' background, experience and expertise in GATE upon teacher attitudes and perceptions. The model demonstrates that teachers who work in selective settings and engage with gifted learners, hold positions of responsibility in GATE, engage in professional learning in GATE, and possess qualifications in GATE, have positive attitudes towards giftedness and gifted learners. They are also likely to be supportive of content, process, and product differentiation for educating gifted learners in the classroom.

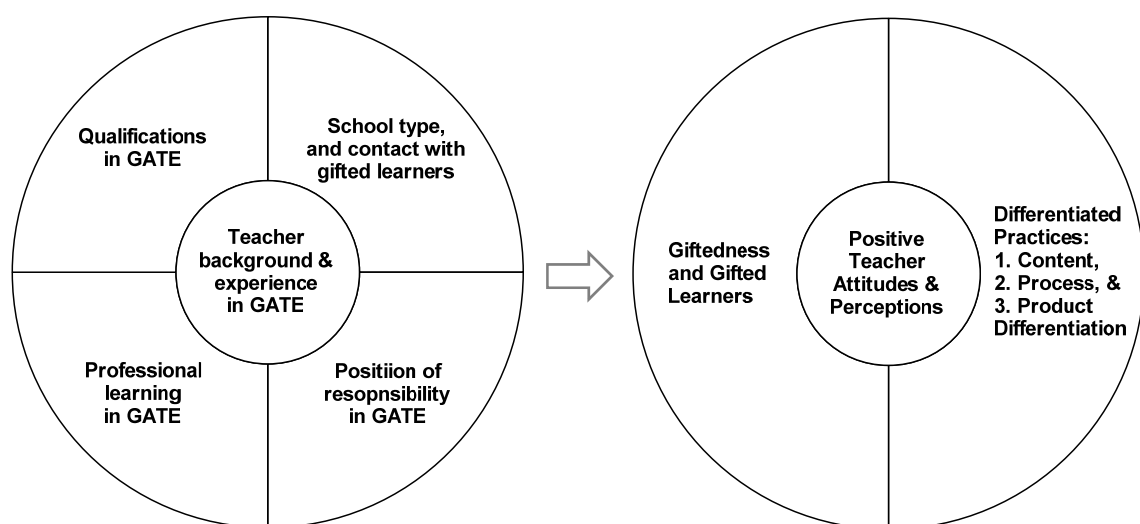


Figure 10.1. The influence of teacher background and experience in GATE upon teacher attitudes and differentiated practices for gifted learners.

The findings regarding teachers' attitudes towards gifted learners and their perceptions of using their own differentiated strategies for the gifted have implications for teaching in classrooms. Teachers who do not hold positive attitudes towards giftedness may not be supportive of differentiated learning to meet the specific needs of gifted students in the classroom. Consistent with previous research, this study's findings about lack of teachers' own perceived use of differentiated strategies could be due to teachers' attitudes and beliefs about giftedness and differentiated learning, lack of sufficient subject matter knowledge for educating the gifted, limited contact with gifted learners, inappropriate differentiation of curriculum, and lack of relevant pedagogical skills and teacher efficacy (Hawkins, 2009; Tomlinson, 1995; VanTassel-Baska & Stambaugh, 2005). Unless these barriers are overcome, gifted students will continue to be underserved in classrooms and schools.

Moreover, unexamined attitudes may result in behaviours and practices that are highly resistant to change. Through university coursework and targeted professional learning in GATE, teachers can change their attitudes and translate those attitudes into supportive educational practices for the gifted in the classroom (Adams & Pierce, 2004). However, as discussed in Chapter 3, attitudes are formed as a consequence of deeply held beliefs. To bring lasting change in attitudes, teachers' inherent *beliefs* (i.e., tacit assumptions about students and academic material to be taught) need to undergo change (Ajzen, 2012). This study's findings indicate that teachers would require professional learning or qualifications in GATE that would challenge their assumptions and provide alternative understanding about educating the gifted. Clearly, general classroom experience is not sufficient to ensure positive attitudes towards giftedness and gifted learners, or foster positive perceptions about using differentiated pedagogical practices for gifted learners in the classroom.

Gifted Students' Perceptions and Perspectives

In this section, students' perspectives of the qualities of an effective teacher, their perspectives of classroom engagement, and their perceptions of teachers' use of differentiated pedagogical strategies are examined (research question 2). Next, the implications that arise from engaging with gifted students as "co-researchers" are discussed.

Students' perspectives of the qualities of an effective teacher. Students' responses to the question about the qualities of an effective teacher revealed that they identified kind, caring, and patient teachers as efficacious teachers. Significantly, they also emphasised *professional practices* of an effective teacher. They identified effective teachers as those who were primarily learner-centred, adapted learning to meet individual needs, respected student choices, used a variety of pedagogical strategies, and had the ability to teach in an engaging manner. These findings are consistent with past studies about gifted learners' perspectives of the qualities of an effective teacher (Chan, 2011; Kanevsky & Keighley, 2003; Kanevsky, 2011; Mills, 2003). Given the unique characteristics of gifted learners (Robinson et al., 2007) such as their capacity to comprehend complex ideas at a faster pace (Colangelo et al., 2004) and solve problems more readily (Davis et al., 2011), and their heightened emotional intensity (Clark, 2013), gifted learners require effective teachers who understand their needs. Moreover, gifted learners' voices about the qualities of an effective teacher also need to be heard and enacted. In this study, I compare students' and teachers' perspectives of the qualities of an effective teacher of gifted learners, and discuss the comparison findings below.

Like students, the teachers who were interviewed by the student "co-researchers" also identified *kind, caring, and patient* teachers as the most important quality of an effective teacher. However, these teachers rated *professional knowledge* higher than the

professional practice of an effective teacher. Thus, according to the interviewed teachers, effective teachers knew their subject and students, explained concepts clearly, were excellent communicators, and related well to students. While the different methodological formats (i.e., surveys versus interviews) used for students and teachers may lend themselves to differences in response length and detail, it is noteworthy that the content of these responses also varied markedly.

The students reported that they highly value teachers who are focused on *learning*, who differentiate learning to suit learning needs, and who value students' choices. According to the students, such teachers achieve this learner-centred focus because they are focused on deepening students' understanding rather than teaching for assessments. These teachers continually encourage student learning and extend the curriculum to new concepts the students have not previously encountered. These findings are consistent with previous studies about effective teachers of the gifted which demonstrate the importance of meeting students' individual needs (Missett & McCormick, 2014), of providing choices to gifted learners (Kanevsky & Keighley, 2003), and of promoting autonomous learning (Johnsen & Goree, 2015). The findings also align with gifted students' statements about their own preferred ways of engaging with challenging curriculum and peers (Gentry et al., 2002), about seeking choices in developing products that require advanced analytical or critical thinking skills (Kanevsky, 2011), and about having independent learning opportunities (Gentry et al., 2011). Interestingly, the participating teachers placed less emphasis on meeting individual learner needs and providing choices to students. These teachers emphasised, instead, that effective teachers should possess strong knowledge of their subject matter. This difference in students' and teachers' perspectives raises questions about the extent to which teachers provide individualised, differentiated learning that meets the needs of gifted students.

Further, the students identified effective teachers as those who cognitively and emotionally engage them in classrooms, and make the lessons fun-filled and interactive experiences. According to the students, these teachers are skilled in *creating positive learning environment*; use a *variety of pedagogical strategies*; provide regular, productive *feedback*; and are *organised and focused on high achievement*. These exemplary teachers create a challenging learning environment that is learner-centred, open, flexible, and infused with richness and complexity for gifted learners to explore and extend their ideas. The students also reported that effective teachers provide ongoing *constructive feedback* on the strengths and weaknesses of a student's learning, and what to do next. They are committed to excellence and encourage gifted learners to achieve their best. While many of the above findings are consistent in the literature from the researchers' and teachers' perspectives (e.g., Ayers et al., 2004; Chan, 2011; Hattie & Gan, 2011), these findings are unique in the sense that they represent the voices and perspectives of *gifted* students who responded to an open-ended question about the qualities of an effective teacher. Furthermore, while the teachers who were interviewed by student "co-researchers" also stressed the importance of creating a positive classroom environment, with minimal discipline issues, they did not place the same emphasis on the importance of using a range of interactive teaching strategies. These differences in students' and teachers' perspectives once again highlight the importance for teachers of engaging in professional learning in GATE, and encouraging teachers to undertake qualifications in GATE. This inference is reinforced by the study's quantitative finding (Phase 1) that teachers with background in GATE rated such pedagogical strategies (e.g., *learning in a challenging climate, feedback*) higher than those without experience in GATE.

Students and teachers in the study each regarded *caring* teachers as important for gifted learners: those who *relate to students well*, care about their students' lives, and are

calm and *approachable*. These perceptions are consistent with previous research (Kanevsky & Keighley, 2003; Kanevsky, 2011), with effective teachers demonstrating strong understanding of their students' intentions and needs (Porath, 2009). In this sense, schools are not merely sites where pedagogical strategies are implemented. Instead, in the hands of learner-centred teachers, the schools become places where relationships are fostered and nurtured (Nieto, 2003). Also consistent with best practice teaching outlined in previous studies (e.g., Hansen & Feldhusen, 1994; Heath, 1997; Maddux, Samples-Lachmann, & Cummings, 1985; Mills, 2003; Whitlock & DuCette, 1989), both students and teachers recognised the importance of teachers' passion, motivation, and inspiration to encourage students to achieve their best.

Moreover, teachers' *clear explanations of concepts, intelligence, and excellent communication* were perceived as conducive to learning by the students. The participating students noted that effective teachers provide cohesive explanation of concepts, and help students understand key issues. Such teachers know their students well and are sensitive to the aspects of the curriculum that students might find difficult to grasp. These findings are consistent with previous research that expert teachers know the structure of knowledge in their disciplines, and use this knowledge for building cognitive roadmaps to assist students in their learning (Bransford, Brown, & Cocking, 2000). The students reported that effective teachers are divergent thinkers, are imaginative and stimulating in the classroom, are open to new ideas, and employ creative ways to ignite student learning. These findings echo previous studies (Bishop, 1968; Chan, 2011). However, fewer teachers emphasised concept-oriented learning compared to the students in this study. These qualitative responses are also supported by the quantitative survey results, in which gifted students reported significantly less experience using *concepts-based learning* and *challenging tasks* compared to the teachers (see the relevant Results Chapter 8). This discrepancy in

perceptions highlights the importance of school leaders encouraging teachers to undertake targeted professional learning for the education of gifted learners.

In sum, a comparison of students' and teachers' responses about the qualities of an effective teacher highlighted both similarities and differences between the two groups. Both students and teachers identified particular *personal-professional dispositions* as being important, such as care for the students, motivation, and approachability. However, gifted students focused more strongly on qualities related to *professional practice* such as learner-centredness, respect for learners' choices, and focus on each learner's individual needs. The teachers, on the other hand, emphasised the importance of *pedagogical knowledge and skills* such as knowing their subject and students, and being excellent communicators. Given the wide body of research which shows that listening to, and enacting, student voices and perspectives leads to enhanced teaching practices, stronger student-teacher relationships, and improved student outcomes (Fielding, 2001 2012; Mitra, 2003, 2004; Rudduck & McIntyre, 2007), it is concerning that the students valued teacher qualities related to *professional practice* more highly than the teachers.

Students' perspectives of classroom engagement. When asked to write about their perspectives of classroom engagement, the participating students identified interesting and challenging learning activities that helped them avoid boredom and monotony. Many students commented about their lack of self-consciousness and the sense of timelessness while being engaged in a learning task. This lack of self-consciousness and sense of timelessness is identified by Csikszentmihalyi (1990) as a state of *flow*, whereby students become engrossed with their learning or tasks at hand, and block out all distractions around them. Some gifted students (selective secondary school) *explicitly* referred to the term, "flow", in regards to task engagement. While the finding about the state of flow is consistent with previous studies (Csikszentmihalyi, 1990; Dweck, 1989,

2006; Elliot, 2005), the explicit connection made by gifted students between *challenging* tasks and being *immersed* in those learning tasks is significant and further highlights the importance of differentiation for meeting the learning needs of the gifted.

Closely aligned to the conception of flow was students' preference for *deep understanding*, particularly for topics that were *relevant* to them. As noted in the relevant Results Chapter 8, some students made explicit links between deep understanding of complex concepts and classroom enjoyment. Significantly, many students reflected about being able to *transfer* their learning across different contexts due to their engagement with concept-based learning. Gifted students have a greater preference for complexity (Gentry & Owen, 2004), and concept-based learning deepens students' understanding, elevates students' thinking, and gives them the ability to transfer their knowledge and skills to new contexts (Erickson, 2007; Tomlinson, 1998; VanTassel-Baska, 2003). While there are many studies that highlight gifted students' preference for complexity and challenge (e.g., Gentry, Rizza, & Gable, 2001; Kanevsky, 2011), and emphasise the importance of concepts-based learning (Avery & Little, 2003; VanTassel-Baska et al., 2000; VanTassel-Baska & Little, 2011), this study articulates *gifted students' own voices* about their explicit preference for concept-based learning as a source of engagement.

Furthermore, meaning-making in the classroom (i.e., constructing own understanding of ideas/concepts, and seeking relevance in their lives) was also a source of engagement for students. Many gifted students enjoyed thoughtfully designed, authentic tasks that were challenging, tapped into their interests and passion, and were meaningful and relevant to their lives. While past research highlights the importance of challenge, choice, and relevant and meaningful learning (Gentry & Owen, 2004; Gentry et al., 2002; Hill, 2013; Kanevsky & Keighley, 2003; Kanevsky, 2011), none to date has considered gifted students' own preference for meaning-making in the classroom. In addition, both

mainstream and gifted students reported their engagement in tasks that were of *interest* to them, consistent with previous research, which also shows that interest in a particular area or topic has a reciprocal relationship with mastery goals (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Siegle & McCoach, 2005). When students' backgrounds, experiences and values are represented in the curriculum, they value their learning and are motivated to be engaged in classrooms and beyond (e.g., Gentry & Owen, 2004; Gentry & Springer, 2002). However, as reported in the Results Chapter 8, fewer teachers identified interest-based tasks as sources of engagement compared to the students in this study.

Given their already reported preference for complexity, gifted students identified *substantive communication and interaction*—focused on deep learning and meaningful conceptual connections—as crucial to classroom engagement. Student responses indicated that they valued inquiry and meaningful discussions, and enjoyed learning from peers and teachers in differentiated classrooms. The feeling that one is contributing something useful to the learning of others has been associated with student motivation (Schwartz, Lin, Brophy, & Bransford, 1999). Many gifted students in this study considered *actively raising and responding to questions* as a significant driver of classroom engagement. Effective questioning as a deliberate strategy enhances gifted learners' thinking, provides the means for exploring novel possibilities and meaning-making, and challenges them to learn about their world in more rich and complex ways (VanTassel-Baska, 2014). While higher-order thinking processes are effective for all learners, research in the education of gifted students shows that the power of inquiry is crucial for promoting their learning (VanTassel-Baska & Brown, 2007). Many gifted students' responses in this study demonstrated that they valued inquiry and meaningful discussions, and enjoyed learning from their peers and teachers in learner-centred, differentiated classrooms.

Some gifted students in this study valued the opportunity to *work with peers* in the classroom and explore a variety of perspectives to interpret the same information. They also noted that collaborating with their peers provides them exposure to diverse opinions which stimulates their divergent thinking. The quantitative results of this study, however, also demonstrated that a greater proportion of gifted students reported being more strongly engaged with *independent study* than their teachers realised (see Chapter 8). Past studies have not provided consistent results about gifted students' work preferences. While some findings have indicated that gifted students prefer to *work alone* (French, Walker, & Shore, 2011; Li & Adamson, 1992; Pyryt, Sandals, & Begoray, 1998), others have shown gifted learners' preference for the provision of *independent study* which stresses the important role teachers can play in enabling and supporting independent learning, for example, through structured group work (Chan, 2001b; Patrick, Bangel, Jeon, & Townsend, 2005; Ricca, 1984; Ristow, Edeburn, & Ristow, 1985). French et al. (2011) also noted that while the identified gifted learners indicated a preference for working alone, their eagerness to work in groups increased when they felt they would be supported and appreciated in their group. Students' preference for independent study is an important finding because it suggests the importance of providing choice by teachers in project work as well as content.

Irrespective of their preference for independent learning and choice, and of the mixed findings regarding students' preferences for collaborative work preferences, students valued classrooms in which they frequently engaged in *substantive communication and interaction* with their teachers. The students noted that actively asking questions helped them clarify their misconceptions about ideas and gain deeper understanding of concepts. They also reported that active participation in high-level discussions in a collaborative learning environment fostered their classroom engagement. Researchers have shown that these positive student-teacher interactions with gifted

learners in the classroom promote positive attitudes among gifted students towards their subject area, and are also a key impetus for talent development (Gentry et al., 2008; Lang, Wong, & Fraser, 2005). Teachers who were interviewed by gifted student “co-researchers” recognised the importance of meaningful student-teacher interactions for student learning. These teachers also noted that skilful questioning generates student engagement. These findings indicate that meaningful, positive interactions between teachers and students are a strong indication of the quality of teacher-student relationship, and of teachers’ deep understanding of student needs. Past research demonstrates the importance of positive student-teacher relationships for increased student achievement (Hattie, 2009; Klem & Connell, 2004; Pianta, Hamre, & Allen, 2012), including for gifted learners (Capern & Hammond, 2014; McCoach & Siegle, 2003b; Siegle et al., 2014).

Finally, meaningful interaction and communication with teachers and peers also generated student *enthusiasm* for the spirit of inquiry, and many gifted students rated *learning something new* as an important source of student engagement. The students’ responses indicated that their enthusiasm was steeped in their desire for learning for understanding, and building on their existing knowledge. They were particularly enthused about learning novel concepts and ideas through ongoing challenging learning activities. These findings are congruent with gifted students’ characteristics such as being highly inquisitive and curious (Renzulli et al., 2002; Rotigel, 2003), having a preference for complexity (Shore, Rejskind, & Kanevsky, 2003), and being receptive to new ideas and experiences (Davis, 1992; Davis, Rimm, & Siegle, 2011; Rogers, 2007; Selby, Shaw, & Houtz, 2005). When interviewed by gifted “co-researchers”, the participating teachers also strongly rated gifted students’ *enthusiasm and excitement* in learning and their *engagement in high level discussion* as key determinants of student engagement.

In sum, the students' and teachers' responses about classroom engagement also indicated similarities and differences between their perceptions. Both students and teachers indicated *focus and flow* as one of the top sources of classroom engagement. However, for students, classroom engagement signified *deep understanding* of complex concepts, active *meaning-making*, enthusiasm for *learning something new*, and engagement with higher-order thinking. For teachers, on the other hand, engagement in high level discussions, raising questions, and demonstrating enthusiasm in learning were perceived as primary sources of student engagement. These differences in students' and teachers' perceptions once again highlight the need for teachers to engage in professional learning in GATE to gain a deeper understanding of the learning needs of gifted students.

Students' perceptions of pedagogical strategies. Overall, students' perceptions of pedagogical strategy use were incongruent with their teachers' perceptions. The students, on the whole, reported significantly less experience with 10 of 12 differentiated pedagogical strategies (e.g., *task choices*, *flexible grouping*, *challenging tasks*, *diverse views*, and *concepts-based learning*), than did the teachers (see Chapter 8). Relative to teachers, students did not believe differentiation was being practised to the same degree. The dissonance between teachers and students about their perceptions of differentiated practices could be due to a host of reasons. While actual classroom teaching practices were not observed in this study, and therefore, it is not possible to tell in the current study whose perceptions are more accurate, previous studies have shown limited differentiation in the classroom for gifted learners (Archambault et al., 1993b; Reis et al., 2004; Starko & Schack, 1989; Westberg et al., 1993; Westberg & Daoust, 2004). In this study, James, the case-study principal (selective secondary), noted, "*I think the teachers believe they're doing it [differentiating curriculum]. I don't think that they're saying something that they*

don't believe." The teachers seemed to have a genuine belief that they were engaging in differentiation for gifted learners.

However, a majority of participating teachers (90.1%) in this study did not have qualifications in GATE, worked in non-selective schools (85.4%), may not have worked in selective settings, and may not have had experience in teaching gifted learners. As such, it may be that these teachers practised the reported strategies only rarely or infrequently, and thus, less likely to be recognised or reported by students. As noted by James, the case-study principal of a selective high school (see p. 200), it could also be that some of these teachers had misconceptions about their pedagogical practices for gifted learners due to their lack of experience in GATE (Harris & Hemmings, 2008; Lewis & Milton, 2005; Taylor & Milton, 2006). Alternatively, despite the fact that gifted learners' and principals' perceptions about differentiated strategies were more aligned, it is also possible that neither group is aware of *all* differentiated strategies being enacted in the classroom. In the case of gifted learners, their lack of awareness could be because they do not have training in education to be able to recognise all differentiated strategies being implemented. In the case of principals, their perceptions of less implementation of strategies than those of teachers could possibly be because they may not be able to observe all classrooms and see every differentiated strategy in action. It is likely that teachers who are responsible for planning these strategies may be able to notice them more. Further, it is also possible that teachers and students might have had discrepant interpretations of terms in the survey (e.g., "choices"). Finally, a general lack of teacher-student dialogue in schools about learning experiences might have also contributed to dissonant perceptions between teachers and students.

Irrespective of why students and teachers give different ratings, congruence in perceptions is important. First, congruent perceptions between students and teachers

“contribute to optimal teaching-learning processes and help achieving best learning outcomes” (Könings, Seidel, Brand-Gruwel, & van Merriënboer, 2014, p. 11). Second, how students perceive instruction “determines the nature and quality of their learning processes” (Könings, Brand-Gruwel, & van Merriënboer, 2011, p. 737). Large differences between students’ and teachers’ perceptions of practice are likely to have a detrimental effect on students’ learning processes (Könings et al., 2014). To address the problem of incongruent perceptions between teachers and students, teachers should be encouraged to make their pedagogical approaches explicit. When learning and teaching are visible, there is a greater likelihood that students achieve higher performance outcomes (Hattie, 2012). To make teaching and learning explicit requires an effective teacher to know a range of differentiated pedagogical strategies in GATE to build gifted learners’ knowledge and conceptual understanding. Furthermore, students themselves should be offered opportunities to share their perspectives (Kershner & Pointon, 2000; Oldfather, 1995). Teacher-student dialogue about learning experiences, however, is not common in schools (Cook-Sather, 2001, 2006). When students and teachers share their perspectives about teaching and learning, teachers enhance their pedagogical practices, and students experience stronger relationships with teachers and gain new skills for learning (Rudduck & McIntyre, 2007).

In sum, the students believed they were exposed to fewer differentiation strategies such as concepts-based learning and providing task choices than did the teachers. It is, however, unclear the extent to which such strategies are implemented in the classroom. The lack of alignment between teachers’ and students’ perceptions could be due to a host of reasons, including some teachers’ lack of expertise in GATE or lack of experience in working with gifted learners, potential inability of gifted students to recognise differentiated practices in classrooms, and a general lack of teacher-student dialogue about

learning experiences in schools. Listening to student voices and engaging gifted learners in participatory learning processes may lead to more aligned perceptions between students and teachers. Moreover, focusing on differences in perceptions of teachers and students also has the potential of promoting innovation in teaching practices, and building participatory differentiated learning designs, by fostering pedagogical partnerships between teachers and gifted students.

Gifted students as “co-researchers”. In this study, students’ perceptions were sought not only as research participants but also as “co-researchers”. To date, there has been a paucity of research that has engaged gifted students in this way. However, research with non-gifted students shows how powerful such opportunities can be. When given agency to collaborate and “co-research” with teachers to enhance learning, past research shows both academic and social benefits (Cook-Sather, 2010; Levin, 2000; Mitra, 2004; Rudduck & Flutter, 2000; Rudduck, 2007). For example, participation with teachers in collaborative learning and research spurs students’ motivation (Zeldin, 2004; Rudduck & McIntyre, 2007) and self-esteem (Rudduck, 2007), increases their confidence in their capacities as change makers (Mitra, 2001, 2003, 2004), builds trust between students and teachers (Cushman, 2005), facilitates the development of students’ thinking skills such as problem solving and critiquing (Fielding, 2001; Mitra, 2004; Silva, 2001), and fosters metacognition (Fielding, 2001; Mitra, 2004; Rudduck, 2002).

Student participation in school reform has also been shown to have a profound effect upon learning and teaching. Engaging with student voices assists teachers to identify what good instruction looks like, and enables them to modify current instructional approaches accordingly (Rudduck, 2007; Rudduck & McIntyre, 2007). Student participation has given teachers a deeper understanding of students’ learning differences and capabilities (Cook-Sather, 2003; Rudduck, 2007), and enhanced readiness to change

their thinking and practice in the light of these perceptions (Rudduck, 2007). Engagement with students has also strengthened teachers' inclination to receive student feedback (Heshusius, 1995; McIntyre, Pedder, & Rudduck, 2005), and led to the use of innovative approaches in making lessons more relevant and engaging (McIntyre et al., 2005). Gifted student "co-researchers" in this study, who co-wrote the questions for student survey and teacher interviews, and interviewed their own teachers, exhibited perceptive insights in co-designing these instruments. Consistent with Fielding's "Patterns of Partnership" typology (Fielding, 2011, p. 67) which was outlined in Chapter 4, these gifted learners acted as "co-enquirers" and engaged in a collaborative learning partnership with me in this study. Further, the very act of gifted learners' interviewing their own teachers for this study demonstrated that student voice was not merely *listened to* but also *enacted* in this participatory research.

Examining and generalising the existing evidence about the benefits of engaging with student voice in mainstream education can be instructive for the field of the education of the gifted. Enabling gifted students' voices has enormous potential in transforming learning, teaching, and school change processes. Appropriate training is required for both educators and students (Cushman, 2005; Kenworthy, 2011; McIntyre et al., 2005; Mitra, 2007) to build new knowledge, skills, and dispositions. For instance, the principals could ensure that students receive training in building leadership skills, conducting research, interacting with adults in power, setting goals, facilitating meetings, communicating expectations, and developing a work plan. These lifelong skills can become assets as gifted learners grow and develop into men and women of wisdom. Similarly, the principals could ensure that teachers undertake professional learning in gaining access to research evidence about the benefits of student voice, developing skills in implementing student voice, and

providing support to both students and teachers in their efforts to work together and improve student learning outcomes (Manefield, Collins, Mahar, Moore, & Warne, 2007).

Challenges in engaging with student voice. While past research shows benefits of engaging with student voice, as discussed above and also in Chapter 4, there are inherent challenges in engaging with students as collaborative learning partners and “co-researchers”. Inclusion of gifted students as “co-researchers” in my study was potentially challenging as it involved willingness of teachers to be interviewed by their students in primary and secondary schools. For many teachers the notion of student voice can be discomfiting, particularly if it is equated with “teacher voice”. Partnering with students requires a pedagogical shift from teaching to learning (Watkins, 2009), and also requires the establishment of new classroom norms, and new organisational structures (Oakes & Lipton, 2002). To create such a learning environment, adults must relinquish some of their power and responsibility to build a trusting relationship with young people (Weimer, 2013). Without an internal focus on building relationships, student voice can easily become a tokenistic approach to collaborative process of learning. To overcome these potential problems in my study, strong leadership support from the principals in the four participant schools was critical. The four exemplary principals were able to discuss the purpose of this study with their teachers, and reassure them that the inclusion of student voice would not only enhance the already well-established student leadership practices but also enrich learning and teaching practices. The leadership support of the principals fostered supportive mindsets of the 32 teachers who not only participated in the student-teacher interviews but also extensively contributed to the interviews with their insights for this research.

Listening to the multiplicity of student voices (Arnot & Reay, 2007) will help schools improve teacher practice (Fielding, 2004). Rudduck and Demetriou (2003) argued

that young people are “constantly presented in a state of *‘becoming’* rather than as *‘being’* actors in their own right” (p. 285). To bring this transformation, students need to be given opportunities to build a set of skills “to collectively construct and negotiate meaning” (Mitra, 2005, p. 538). Student perspectives on schooling help teachers to reflect on their own practices (McIntyre et al., 2005). Moreover, if students contribute to the development of instruction or a unit of study, they are given a valuable opportunity to engage in a dialogue with, and learn from, their teachers (Könings et al., 2014). My experiences in listening to and enabling gifted student voices reaffirmed the values of mutual respect, and further deepened my understanding of gifted students’ perspectives.

Summary. School reform literature based on gifted students’ voices as “co-researchers” is limited. The insights gained from students’ voices in non-selective schools can be generalised, to some extent, for the education of gifted learners. The potential for consulting gifted students is considerable but can fail to make a difference because of the ingrained habits of not “heeding” what students have to say. Students, on their part, may also not be used to being heard. Breaking these habits of mind requires not only new ways of listening but also shifts in educators’ beliefs and attitudes. Fostering such mindsets requires principals to create conditions in schools that allow student voices to be meaningfully heard and enacted. To transform learning and teaching, effective principals should promote professional learning of teachers for engaging with gifted students’ voices.

Principals’ Perceptions, Understanding, and Self-Reported Leadership Actions

In Phase 2 of this study, I interviewed four “exemplary” school principals from selective and non-selective schools (both primary and secondary). These principals were considered exemplary by virtue of their success in implementing learner-centred differentiated learning, achieving strong academic results, and building a cohesive culture in their schools. I asked these principals about their perceptions of, and their own

leadership actions for, school-wide differentiation for gifted learners (research questions 3 and 4). The principals' insights about leading students, teachers and the wider community to improve the quality of learning and teaching, student achievement, and school effectiveness are discussed in this section.

According to past research, the principal's role in leading high performance student outcomes is critical (Day et al., 2010; Fullan, 2014, 2016; Leithwood, Patten, & Jantzi, 2010; Pont, Nusche, & Moorman, 2008; Slater, 2008). In their review of the literature on leadership and school achievement, Leithwood, Seashore Louis, Anderson, and Wahlstrom (2004), for example, found that school leadership is second only to classroom instruction among all school-related factors that contribute to student learning. However, there is an acute paucity of research about principals' leadership for the education of *gifted learners* in schools. Moreover, the four case-study principals in the current study noted that the leadership role of principals extends beyond the confines of their own institutions. According to these exemplary principals, they are also system leaders—they work in school networks to improve education and are the interface between system-wide reform and their own schools (see Jensen, Hunter, Lambert, & Clark, 2015, for similar discussion). In the following section, I discuss these principals' perceptions, understanding, and their own leadership actions for school-wide differentiated learning of the gifted.

Principals' perceptions of differentiated pedagogical strategies. The quantitative analysis of the Phase 1 survey results (presented in Chapter 9) demonstrated that the participant principals' perceptions about differentiated pedagogical strategies were not consistently aligned with the participant teachers' perceptions. During the case-study interviews, however, all four principals expressed a desire for alignment between the

principals' and teachers' perceptions. According to these principals, such alignment ensures consistency of teacher practice across the school.

The principals suggested a host of reasons for the lack of alignment between the principals' and the teachers' perceptions. First, they explained that school leaders have a more holistic picture of the school than teachers. As school leaders, the principals are focused more on the output (i.e., valued added teaching and its validation) than the input (i.e., day to day teaching experiences in the classroom). As such their understanding of actual classroom practices may differ from teachers' understanding.

Second, consistent with past literature on educational leadership (Hallinger & Heck, 1996; Rowe, 2007), the principals also suggested that they may have more rigorous expectations than the teachers. One exemplary principal noted that some teachers might hold misconceptions about various concepts related to differentiated learning for the gifted (see p. 200)—particularly if they do not have expertise in GATE—and according to all four principals, some teacher might also hold negative attitudes towards the education of the gifted. Consistent with these principals' views, my findings in Phase 1 of the study highlight the importance of background experience or professional learning in GATE for positive teacher attitudes towards gifted students.

Third, while the exemplary principals reported that teachers' expertise in GATE is important, they also noted that different perceptions might emerge in cases where some principals may not have sufficient expertise in GATE. This finding is important because it highlights that the principals without substantive knowledge and experience in GATE may lack a deeper grasp to recognise any misconception or misinterpretation of differentiation in practice. They may, therefore, not be able to provide specific feedback on teachers' use of differentiation in the classroom. Indeed, given the lack of alignment between theoretical leadership preparation programs (with a few notable exceptions) and on-the-job practical

demands for principals (McHatton et al., 2010), a number of school principals may not have specific knowledge and expertise in leading differentiated learning for gifted students. This finding may provide additional insights into the lack of congruence in perceptions of principals and teachers noted earlier (see p. 200).

Interestingly, relative to the incongruent perceptions of principals and teachers (see Results Chapter 9), *principals and gifted students were more in agreement* about the extent to which differentiated strategies were used in classroom. This is an important finding as it underscores that all stakeholders need to have aligned perceptions and shared understanding of pedagogical approaches to ensure optimal learning processes and outcomes for gifted students. Teachers consistently perceived greater implementation of differentiated practices, whereas students and principals consistently perceived less implementation. Reasons for teachers' higher levels of perceptions may be rooted in their vision of themselves as an agent of ideal practice, rather than in the reality of what happens in a classroom. Videotaping of classroom practices, played back for self-critique can be used a strategy to guard against teacher misconceptions in this regard.

The case-study principals argued that positive attitudes and support for implementing differentiated learning for the gifted can be fostered among teachers. As reported in Chapter 9, the case-study principals contended that effective principals encourage teachers to *examine their beliefs* about giftedness and *strengthen their attitudes* towards gifted learners. The case-study principals also professed that successful principals help teachers *gain understanding* of the needs of the gifted. Finally, the case-study principals argued that effective principals undertake *leadership actions* for school-wide differentiation, which has the potential to facilitate *behaviour change* in teachers (i.e., teachers actively implement differentiated pedagogical strategies to meet the needs of gifted learners). The final stage of the change process is accomplished when new

behaviours become automated. However, ongoing sustained focus on school-wide differentiated learning, leadership support, and acknowledgement of teachers are needed to maintain any change in teacher behaviour (Guskey, 2002; Tomlinson & Allen, 2000; Tomlinson et al., 2008; Tomlinson & Imbeau, 2010). The case-study principals' perceived process of changing teachers' beliefs and attitudes into supportive actions for implementing differentiated learning is illustrated in Figure 10.2.

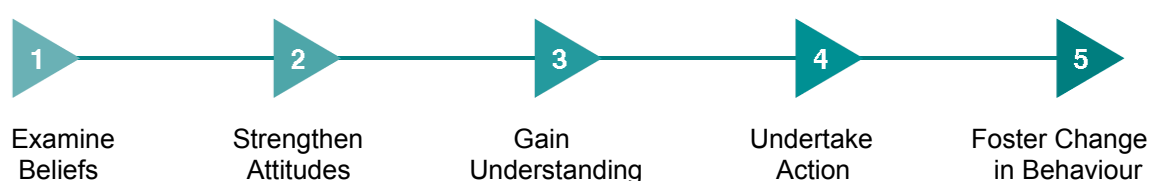


Figure 10.2. Perceived process of leadership practices to foster behaviour change in teachers.

The study's process of leadership practices to foster behaviour change (Figure 10.2) resonates with the theory of change studies outlined earlier in Chapter 3. Similarities can also be seen between the study's representation of leadership practices for behaviour change and Guskey's Model of Teacher Change (2000). While Guskey's model is focused on change in *teachers' attitudes and beliefs*, the representation of leadership practices is focused on change in *behaviour* (Ajzen, 2005, 2012; Eagly & Chaiken, 2005; Ajzen & Fishbein, 2005). However, both Guskey's model and the study's representation of leadership practices (Figure 10.2) concur about the *causes* of shifts in *attitudes* and *behaviour*. Thus, in Guskey's model change in teachers' attitudes and beliefs occurs primarily after teachers perceive a successful change in the learning outcomes of students. Similarly, in this study's representation of leadership practices, change in teachers' *behaviour* occurs *after* specific leadership actions for school-wide differentiation have been undertaken successfully. These leadership actions include building collective capacity of teachers, empowering teachers for school-wide differentiation, and

acknowledging teachers for successfully implementing differentiated learning for the gifted in classrooms. Thus, in both the models, change occurs *after* undertaking specific actions (e.g., leading and enacting differentiated learning).

The case-study principals noted that effective professional learning and development of teachers fosters high student achievement outcomes. This requires principals to have skills in identifying specific problems and learning needs; organising appropriate development opportunities; modelling self-development; and leading learning within the school (Australian Institute for Teaching and School Leadership, 2011). Although principals are not expected to be experts in every subject, they are expected to recognise effective instructions in different subject areas. However, two of the four case-study principals reported that leadership preparation programs in Australia currently do not include modules on gifted education. This finding is supported by Jensen and colleagues (2015, p. 15) who argued that “leadership development programs [instead] tend to focus on developing technical management skills”. Given the lack of information about giftedness in leadership preparation programs, the case-study principals reported that they kept their understanding of meeting the needs of the gifted learners updated through wider reading and ongoing discourse with experts in the field. To gain understanding of effective differentiated practices, the exemplary principals also involved teachers in setting goals for school-wide differentiation. However, at a systems level, the lack of gifted education content in leadership preparation programs may lead principals to begin their careers without the ability to oversee concerns (programmatic or personnel) related to gifted learners (McHatton et al., 2010).

Summary. The perceptions of principals and teachers in the current study were significantly different about the use of differentiated pedagogical strategies for gifted learners. The insights from exemplary principals revealed that these differences in

perceptions could be due to a host of complex reasons, including lack of experience and expertise in GATE. A greater congruence in perceptions was, however, found among the principals and gifted learners about the extent to which differentiated strategies were being used by teachers in classrooms. These findings highlight the importance of systemic confluence of perceptions and pedagogical approaches among *all* school stakeholders, that is, teachers, gifted students, and principals.

Principals' understanding of differentiated learning of the gifted. The study highlighted the importance for principals of having an understanding of differentiated learning for gifted students to enact school-wide differentiation. The case-study principals demonstrated a thorough understanding of differentiated learning for the gifted, deep content pedagogical knowledge, and a strategic leadership focus on collaborative learning. The exemplary principals acknowledged that for the education of the gifted, school leaders need knowledge and understanding of gifted learners' needs, effective differentiated pedagogical strategies, and school-wide approaches to differentiation. They also noted that effective principals are well versed in the latest research in pedagogy, curriculum, assessment and reporting, and wellbeing of gifted learners. The identified themes about the principals' understanding of differentiated learning (see Chapter 9) are italicised in the discussion below.

The exemplary principals demonstrated a perceptive understanding of leading *differentiated learning based on individual needs*. They valued the diversity and unique differences among gifted learners. They understood the importance of addressing *gifted students' needs* based on their interests, readiness, and learning needs across the whole school. This is an important finding from leadership perspective for using school-wide approaches to differentiation for gifted learners, and is consistent with the past literature on effective differentiation (Beecher & Sweeny, 2008; Tomlinson, 2014a). The principals

emphasised a holistic approach to differentiated learning and focused on nurturing “the whole child”. They considered the *identification* of a student’s giftedness as a crucial step in ensuring that a gifted learner’s cognitive and socio-emotional needs are addressed. The exemplary principals understood that by setting differentiated learning for the gifted as a school priority meant that the staff members would take cues from their leaders, and engage in authentic differentiation in classrooms. Given the paucity of research about leaders’ understanding of differentiation (Brighton et al., 2005; Tomlinson & Allan, 2000), these findings are significant as they demonstrate the centrality of the principals’ leadership role in setting priorities for school-wide differentiated learning for the gifted.

As instructional leaders, the exemplary principals understood the significance of *planning concept-based differentiated units; aligning differentiated outcomes, instruction, and assessment; creating flexible classroom routines* such as ability grouping and pacing; and engaging in *program evaluation and reflection*. These are important findings because they highlight the need for school principals to ensure challenge and complexity in curriculum, and to make certain that gifted learners are taught for conceptual understanding in a flexible learning environment so that they can transfer their skills and understanding in different contexts (Rogers, 2007; Tomlinson, 2005). Although the assessments were not differentiated in the final examination at the end of the year, the case-study principals discussed the use of formative assessments through the year to provide students with critical feedback, improve student learning, and inform teachers about the effectiveness of their teaching. The need for *aligning differentiated outcomes, instruction, and assessment* was emphasised by all four principals to ensure that learning and teaching are meaningful and cohesive for gifted learners. This is an important finding of the study as typically the connections among unit outcomes, instruction, and assessment are emphasised (e.g., Wiggins & McTighe, 2005). Differentiation of learning outcomes for

educating gifted students is a significant finding of this study, and the case-study principals acknowledged the importance of extending learning outcomes as a basis to extend and align content, instruction, and assessment for meeting the learning needs of the gifted.

All four case-study principals advocated for *acceleration* of gifted learners where needed, and discussed the positive achievement outcomes of accelerated learners. Given the generally negative attitudes towards and non-implementation of acceleration (Hoogeveen et al., 2005; Vialle et al., 2001), and continued underuse of acceleration despite strong support for acceleration (Assouline et al., 2013; Missett et al., 2014), this finding from a *leadership perspective* about using accelerated provisions for gifted learners is significant. The principals also emphasised that *knowledge of teacher practice* was essential for improving teaching and curriculum. They were realistic that they could not go into every classroom, especially in secondary schools. Therefore, they relied on their head teachers to keep them informed about teachers' practices. The exemplary principals also engaged in listening to gifted students on an ongoing basis. While these findings are consistent with the literature on distributed leadership (Spillane, Halverson, & Diamond, 2001, 2004), they highlight the primacy of involving all stakeholders for the education of *gifted* learners. Significantly, the case-study principals discussed the primacy of the *impact* of teaching upon gifted students, consistent with past research on teaching and learning (Hattie, 2009, 2012, 2015). The principals were of the consensus view that the teachers who employ learner-centred pedagogy engage their students, understand their impact on students, and make learning fun. This is an important finding as it highlights the significance of learner-centred approaches to educating gifted learners, with both teachers and students collaborating as learning partners.

The principals also noted that for differentiated learning to be effective in a school, it should not be isolated to a particular classroom or individual teachers. As "lead

learners”, they emphasised participating with teachers *as learners* in moving the school forward, and building school-wide approaches to high quality differentiated curriculum and pedagogy for gifted students. These findings highlight the importance of school principals having deep knowledge of effective teacher practice in the education of the gifted. Although there is limited research about the principals’ role in leading the education of gifted learners, these findings about knowledge and development of teacher practice are consistent with the literature about leading teacher education (Cotton, 2003; Fullan, 2016; Hattie, 2009, 2012; Leithwood, Day, Sammons, Harris, & Hopkins, 2006; Leithwood & Riehl, 2003; Portin, Schneider, DeArmond, & Gundlach, 2003; Robinson, 2011; Tomlinson & Allan, 2000). Further, the principals noted that understanding of the whole school change is essential for implementing school-wide differentiation in schools. This finding is crucial for sustaining a systemic focus on differentiated learning for gifted learners, and is consistent with the literature about systems approaches to organisational change (Fullan, 2004; Higham, Hopkins, & Matthews, 2009; Pont et al., 2008; Thornton, Shepperson, & Canavero, 2007; Zmuda, Kuklis, & Kline, 2004).

Summary. The insights from exemplary principals highlighted the need for school leaders to have a perceptive understanding of school-wide differentiated learning for the gifted, deep content pedagogical knowledge, and a strategic focus on collaborative learning. The case-study principals demonstrated that knowledge of educating gifted learners enables school principals to provide strong instructional leadership to teachers. Further research could be conducted to determine what teachers and gifted students each believe their principals think about giftedness.

Principals’ understanding of leadership actions for school-wide differentiation. To determine effective leadership practices for implementing school-wide differentiated learning for the gifted, the four exemplary principals were asked about the

role that school principals play in implementing the change vision. Each case-study principal frequently emphasised the importance of leadership actions to initiate and lead change in schools. Change in an organisation's culture occurs through leadership actions; speeches and pronouncements are not enough (Reeves, 2009). During the interviews, the principals variously noted that leaders speak most clearly with their actions, that is, with changes that they make in implementing the shared vision (e.g., leading differentiated learning of the gifted), building collective capacity of staff members (e.g., practice-embedded professional learning for educating gifted learners), and fostering meaningful relationships (e.g., taking the time to understand the personal stories of colleagues). The exemplary principals in this study were passionate and enthused about their leadership actions for leading differentiated learning of the gifted, which are discussed below.

Setting directions of the school with a compelling *vision* for the future—a vivid picture of the changed and improved state—was identified as one of the foremost leadership actions by the case-study principals. The leaders were of the view that the vision of the future must be developed in collaboration with teachers, students, and the wider community to promote a sense of common ownership and create a unity of purpose. Thus, the principals ensured that differentiated learning for gifted students was an identified target in the School Plan, which was understood by the whole school community. They connected the vision of differentiated learning to high performance outcomes of gifted learners. Developing a mutually supportive, collaborative, and trusting relationship with the school community was critical for achieving school goals. This finding is important because developing and communicating the change vision with clarity, simplicity, and consistency is crucial to the success of the change process in schools. Although research is limited about leadership actions for the education of gifted learners, these findings are consistent with past studies in general and educational

leadership literature. (Fullan et al., 2005; Hallinger, 2011; Holman, Devan, & Cady, 2007; Kotter, 1996; Sparks, 2007; Tomlinson et al., 2008).

The case-study principals noted that to implement the shared vision of school-wide differentiation for the gifted in schools, setting up a *guiding coalition* of staff members was critical (for further discussion see Hiebert & Klatt, 2001; Kotter, 2006). According to the principals, finding the right people, creating trust, and engaging the team members in the pursuit of a common goal helps realise the change vision. They focused on developing the expertise of teachers by *building and sharing knowledge and information* about differentiated learning using a host of strategies. These strategies included role modelling and leading professional learning workshops for the staff, engaging with external experts and organisations, and having academic mentors from universities (see Chapter 9). These findings about building a guiding coalition are significant because they highlight the need for principals to work with and through staff members to build a professional learning community that is focused on continuous improvement of learning and teaching (Fullan, 2013).

The exemplary principals reported that they *committed resources to foster the collective capacity of staff members* (i.e., teachers working and learning together) for the education of gifted learners. This finding is consistent with previous research which shows that building collective efficacy of team members leads to school-wide implementation of the change initiative (Dinham, 2008; Fullan, 2007, 2013; Guskey, 2002; Leithwood & Seashore Louis, 2012; Robinson et al., 2008). The case-study principals emphasised building internal capacity, with the leadership of professional learning efforts coming from the subject areas and departments in the school. The principals discussed how working in partnerships, teachers can *think and act collaboratively*. For example, Stephanie (primary principal) pointed out that teachers in her school examine real examples of student work

together, and also write student reports together. The principals emphasised the need for professional learning to be more targeted and focused. They ensured, for example, that the content of professional learning was centred on understanding giftedness, how gifted students learn, and how to transfer theoretical understandings into practical units of differentiated learning that provide challenge and complexity.

These findings are important as they highlight the centrality of investing in collaborative professional learning of teachers for the education of gifted learners (Danielson, 2006; Marzano et al., 2005; Taylor et al., 2006; Tomlinson et al., 2008). Effective professional learning is focused on student outcomes, embedded in practice, evidence-based, organised around collaborative problem solving, and integrated into the school's comprehensive change process (Fullan, 2016; Tomlinson et al., 2008; Wood & Peterson, 2015). The principals discussed the significance of peer-to-peer learning and collaboration. They pointed out that the breadth of knowledge and experience of teachers in a team exposes team workers to different ways of thinking. Working with synergistic teams, the teachers push their thinking further than what is possible individually (Strebel & Keys, 2005). The principals fostered the development of teachers into coaches of their peers. They encouraged teachers to build a network of peers to provide mutual feedback and act as sounding boards for new ideas (Pont et al., 2008). This insight is significant because such collective capacity building focus leads to the development of teamwork (Barnett, Basom, Yerkes, & Norris, 2000) which is centred on strengthening collaborative thinking and "fostering shared purpose through action" (Fullan, 2013, p. 63).

Further, the principals *empowered staff for school-wide differentiation*, which is consistent with previous research (Tomlinson & Allan, 2000; Tomlinson et al., 2008; Tomlinson & Imbeau, 2010). They promoted collegial discourse among staff members, and developed a culture of learning that involves learning from peers, especially from

those who were further along in implementing new ideas. These findings are important because they highlight the need for principals to nurture positive mindsets about continuous school improvement; and build dynamic, engaged learning communities (DuFour, DuFour, Eaker, & Many, 2010). The exemplary principals encouraged resilience, experimentation, and risk taking. They engaged in, and organised, teacher “walkthroughs” in classrooms as a basis for ongoing professional dialogue. They empowered teacher leaders to lead and undertake staff professional learning in the school and beyond. This is a critical finding because, as discussed in the Results Chapter 7, teachers who hold position of responsibility in GATE not only have positive attitudes towards giftedness but they are also supportive of differentiated practices for the gifted. The case-study principals *generated short-term wins* deliberately to keep the momentum going and to build a culture of success (see Kotter, 1996, for further discussion). They highlighted successes of their staff members that were a direct result of their work on differentiated learning. The principals ensured that short-term wins provide meaningful milestones to demonstrate the success of the staff team. These findings underscore the importance for principals to use the credibility of small wins for the pursuit of the big win (Kotter, 1996)—the organisational mindset of differentiated learning for gifted students *as a matter of daily routine*.

Significantly, when asked about enabling student voice in schools, the principals valued embedding gifted students’ perspectives in learning and teaching across the school. However, they reported that the students were consulted primarily to communicate ideas and opinions (e.g., at the end of a teaching unit). One principal reported initial efforts being made in creating a supportive learning climate to engage students in learning as partners rather than as subjects. They were candid that they had not attained these goals yet, but they were committed to engage with gifted students’ voices for improving learning

and teaching, generating greater student autonomy, and increasing student engagement. Given the paucity of research on enabling gifted students' voices in schools (Gentile, 2014; Mitra, 2007), these insights of exemplary principals are significant because they highlight the need for school principals to ensure that student voices not only inform differentiated practices, but they are also heard, valued, and enacted in school decisions.

Finally, *embedding changes into school culture* was regarded as essential by the principals to bring lasting change (Kotter, 1996). The case-study principals emphasised that cultural change always comes last, *after* teachers' actions have been successfully altered. They spoke about the need to connect the change with organisational success. They discussed that anchoring changes into the fabric of school culture requires a multifaceted approach, including the alignment of school systems and processes with the change. This insight from the exemplary principals is important because leading the way to building a broad-based mindset at systemic level is crucial for making changes a part of the school culture (Fullan, 2010, 2014, 2016; Kotter, 1996). The principals discussed the need for *setting sustainable future directions* in schools to create lasting, meaningful improvements in learning that engages students intellectually, socially, and emotionally. They discussed the need for learner-centred approaches to learning to build dynamic learning communities. The principals spoke about distributing leadership and responsibility throughout the school's professional learning community to create sustainable future directions. They discussed the need to promote and perpetuate diverse approaches to learning rather than standardised prescriptions for teaching. These insights are crucial because ongoing, sustainable leadership actions are needed to build dynamic systems transformation in schools. Although leadership research in the education of gifted learners is limited, these findings are consistent with previous research on educational leadership (DuFour & Fullan, 2013; Fullan, 2004; Hargreaves & Fink, 2004, 2006).

Summary. The principals shared practical insights into their own leadership actions for implementing school-wide differentiated learning of the gifted. They emphasised the need for developing a shared vision of the future, building collective capacity of staff members, and ensuring that changes are sustainable and anchored into the school culture. However, the principals noted that student voice was used more to seek their opinion or feedback rather than for leading school change. Further research could be conducted into how teachers and students perceive their principals' leadership actions in implementing school-wide differentiation for gifted learners.

Leading Differentiated Learning for the Gifted

As discussed earlier in this chapter, aligned perceptions and perspectives among principals, teachers, and gifted learners contribute to optimal learning and teaching processes, and are perceived as conducive to high learning outcomes for the gifted. Learner-centred principals create conditions for enacting differentiated practices and enabling student voices. They lead and motivate teachers in gaining knowledge of gifted students' needs, and pedagogical practices for educating the gifted. They encourage teachers to examine their beliefs about giftedness, strengthen their attitudes towards gifted learners, and facilitate behaviour change in teachers. Learner-centred principals ensure that teachers enable student voice and engage with gifted students as learning partners in schools. Gifted students in this study also reported that effective teachers of the gifted are learner-centred and adapt learning to suit individual needs. The findings of the study further revealed that teachers with knowledge and expertise in GATE are more effective in implementing differentiated pedagogical practices in the classroom, and are more supportive of gifted students' education than do their counterparts in non-selective settings or without expertise in GATE.

Thus, based on the discussion in this chapter about the relationship between teachers' attitudes and practices, gifted learners' voices, and the principals' understanding of differentiated learning and their leadership actions, a *representation of school-wide differentiated learning for the gifted* is illustrated in Figure 10.3. The unshaded arrow represents the directional influence of teacher background and expertise in GATE on teacher attitudes and differentiated practices in schools, discussed earlier in this chapter (also see Chapter 7). The shaded bidirectional arrows represent the *confluence of perceptions and perspectives* of principals, teachers, and gifted learners for leading differentiated learning of the gifted, as discussed in this thesis.

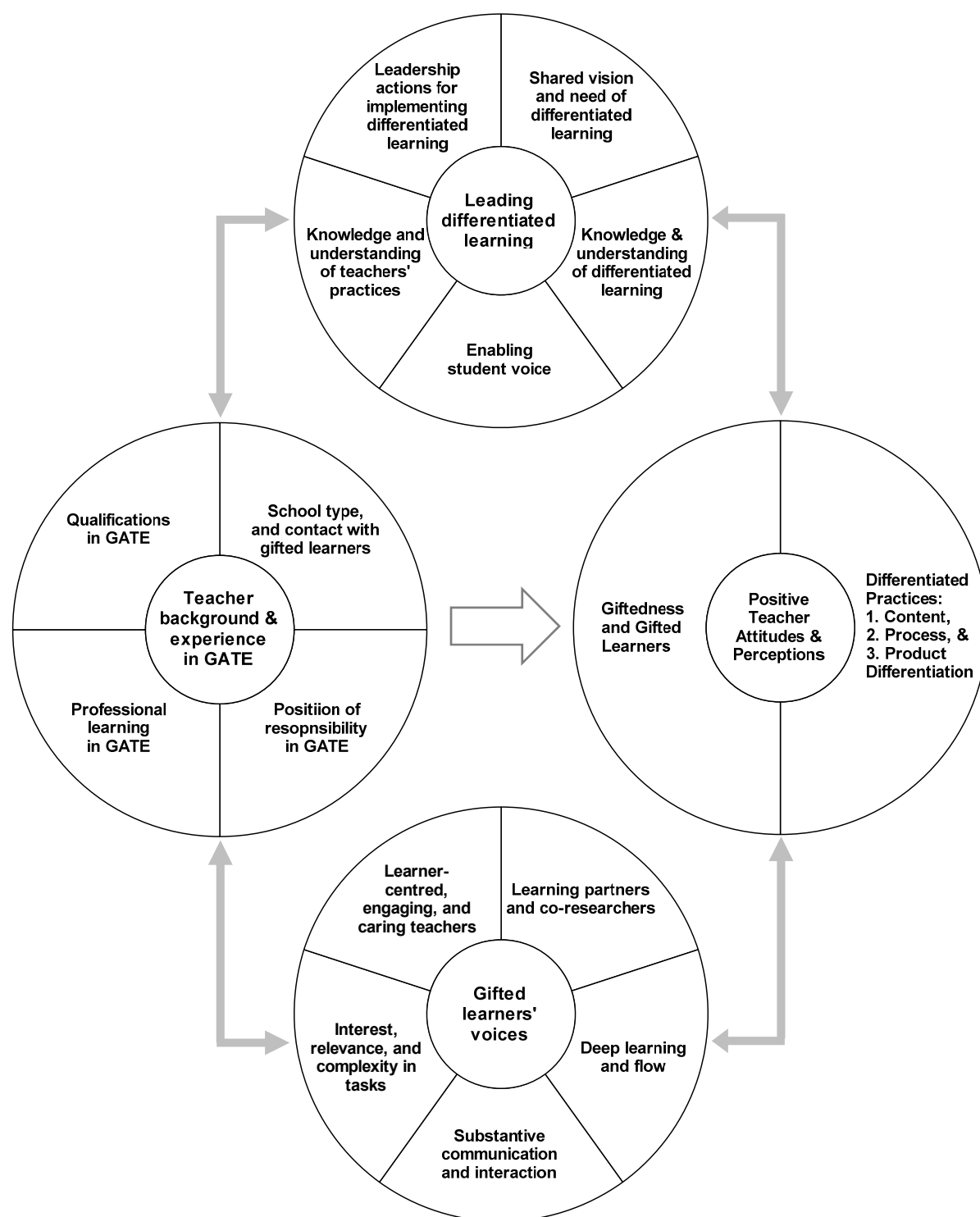


Figure 10.3. A Representation of School-wide Differentiated Learning for the Gifted.

Implications for Practice

This study has several implications from a practice perspective. I discuss implications for teachers, gifted students, and principals below.

Teachers' attitudes and differentiated practice. This study clearly highlights the importance of professional learning and experiences in GATE. Teachers with expertise in GATE reported positive attitudes towards giftedness, and were supportive of differentiated practices: both of which are critical for the education of gifted learners. From a practice perspective, school leaders play an important role in promoting school-wide differentiation for the gifted. Indeed, the four case-study principals in the current study report building and sharing knowledge of teachers, and providing ongoing support and educational resources for educating the gifted. However, schools, school systems, and universities could also do more in promoting professional learning in GATE. A systems approach to developing teachers' attitudes-practice nexus emphasises the need for an integrated system of attitudes and beliefs that will best support teachers in their practice and make them more resilient in the face of external pressures (Buehl & Beck, 2015). Within teacher education programs in universities, for example, it may be beneficial for faculties to identify and focus on a core set of beliefs and attitudes throughout the teacher education program and provide a coherent set of experiences to support their professional development (Ogan-Bekiroglu & Akkok, 2009).

The findings of the study suggest that teachers wishing to become learner-centred must be explicit about the pedagogical strategies they use with gifted learners.

Notwithstanding the importance of differentiation strategies to enhance the learning of gifted students (Maker & Schiever, 2010; Robinson et al., 2007; Tomlinson, 2014a), teachers in the current study believed they were using these strategies more so than did students themselves. This discordance in perceptions has two implications for students'

engagement. First, students report stronger engagement when they believe that their teacher understands their learning needs. For this belief to materialise, students and teachers must share similar perceptions of differentiated pedagogical practices. Second, students are more strongly engaged when they are offered choice and agency (Gentry et al., 2002; Gentry & Owen, 2004; Hill, 2013; Kanevsky & Keighley, 2003). If students are to contribute to their own learning and classroom environments, teachers should engage them in tasks that are of interest to them and incorporate their background experiences (Gentry & Springer, 2002; Siegle & McCoach, 2005), and promote complexity and challenge in their learning experiences (Gentry et al., 2001; Kanevsky, 2011; VanTassel-Baska & Little, 2011).

Multifaceted approaches are needed to ensure that teachers develop positive attitudes towards gifted learners. Changes in teachers' perceptions might be encouraged by the design of interventions which enable teachers to make regular contact with gifted students. The participant students in this study identified those teachers as effective who have positive attitudes, can relate to and understand gifted students well, are helpful and approachable, and have deep knowledge of their subject matter. As discussed earlier, the study demonstrated that teachers with background or experience in GATE exhibited more positive perceptions of giftedness and gifted learners. Supportive attitudes and practices might best be fostered by assisting teachers in gaining qualifications in GATE, undertaking targeted professional learning in GATE that is embedded in practice, encouraging teachers to take leadership opportunities to coordinate provisions for the gifted, maintaining regular contact with gifted learners, and engaging with student voices in learning and teaching.

Gifted students' voices. As noted above, a clear finding of the study was the importance of enabling gifted students' voices. Students shared several important insights regarding classroom engagement, differentiated practices, and the qualities of an effective

teacher with implications for enabling and enacting student voice in schools. Significant discrepancies between the perceptions of students and teachers can be addressed by including students as partners in an ongoing dialogue about instructional design and learning processes (Cook-Sather, 2001; Könings et al., 2014). Students are the expert witnesses of their own learning (Oldfather, 1995). Listening to gifted students' voices can help teachers understand what gifted students need, and value them as learners. Listening to students could enable teachers to see lessons through the perspectives of their students. The teachers would be able to assess the *impact* of their teaching by understanding how students interpret their lessons. Similarly, students who are asked to engage in peer and teacher evaluations become "more reflective and critical of received wisdom" (MacBeath, 2006, p. 205). Fielding's framework (see Chapter 4) is "rooted in a desire to foster authentic, intergenerational democracy" (Mockler & Groundwater-Smith, 2015, p. 48). This framework provides a practical means for fostering authentic, participative interactions between teachers and students (Fielding, 2012). By strengthening the use of student voice, there is a great potential to improve learning and teaching, generate greater student autonomy, and increase student engagement (Cook-Sather, 2010; Fielding, 2004, 2011; Levin, 2000; Mitra, 2004; Rudduck & Flutter, 2000; Rudduck, 2007).

To facilitate the use of gifted students' voices, existing research with non-gifted students indicates that training may be required for both adults and students (Cushman, 2005; Kenworthy, 2011; McIntyre et al., 2005; Mitra, 2007). Students, for instance, may need training in building leadership skills, interacting with adults, co-interviewing, engaging in curricular planning meetings, planning and co-constructing units of learning with the assistance of teachers, and participating in focus groups or joining with teachers in discussions on school planning days (Manefield et al., 2007). Teachers (and principals) may in turn need professional learning in how to engage with students as collaborative

learning partners (Mitra, 2007), modify current instructional approaches (Rudduck, 2007; Rudduck & McIntyre, 2007), develop receptivity to student feedback (Heshusius, 1995; McIntyre et al., 2005), and provide challenge and complexity to make lessons more engaging (McIntyre et al., 2005). Given the role teachers and principals play in enhancing gifted students' learning, such efforts are important.

Principals' understanding and leadership actions. Finally, the study demonstrated the importance for principals of having an understanding of differentiated learning for the gifted, and of leadership actions for enacting school-wide differentiation. School principals need to enhance their understanding of differentiated learning to coach teachers and implement it across the school and systems level (Brighton et al., 2005; Tomlinson & Allan, 2000). The principals should enable teachers to work collaboratively and evaluate the effectiveness of differentiated practices in schools. The principals can act as role-models by attending professional learning sessions along with teachers, as and when possible and relevant. Undertaking professional learning in partnership with teachers would also equip principals to accurately identify effective differentiated practices in classrooms, provide feedback, and plan professional learning opportunities for teachers accordingly.

The study also demonstrated how effective principals provide support to teachers as they enter and continue to develop within the profession. Thus, school principals can promote ongoing, high-quality professional learning that provides practical strategies for educating the gifted and helps teachers gain an understanding of the difference between a high achiever and a gifted learner. Principal Jessica (Chapter 9) makes this distinction in her response. While Szabos (1989) distinguishes between the two kinds of learners in conceptual terms, others (Peters, 2016; Ritchotte, Suhr, Alfurayh, & Graefe, 2016) assert that in the process of making such distinctions between high achievers and gifted learners,

caution needs to be exercised that students identified as high achievers are not denied access to appropriately differentiated services. In addition, the study demonstrated that school principals can provide continued support in the form of mentoring and coaching. They can provide opportunities for teachers' professional learning in differentiation at grade level or specific content area (Brighton et al., 2005; Tomlinson & Allan, 2000). The principals can foster the development of a *differentiated learning growth plan* for staff members (e.g., by drawing upon the Australian Professional Standards for Teachers to implement the Australian Curriculum). Targeting both teachers' attitudes and practices during professional learning, and ensuring that these are congruent may lead teachers to experience greater satisfaction with their work, and promote gifted students' learning outcomes.

Further, the study's findings indicated that principals can promote school-wide implementation of differentiated learning for gifted students through the development of lead teachers. These staff members are professionals who are provided with considerable professional development in differentiated learning (Tomlinson & Allan, 2000; Tomlinson & Imbeau, 2010). The lead teachers can serve as agents of change and provide coaching and assistance to their colleagues in the school. The principals can create a coalition of high-impact teacher leaders who can work together to build collective expertise of teachers in differentiated learning for gifted learners.

Finally, the exemplary principals highlighted the importance of anchoring differentiated learning as part of the school culture. The principals can build learner-centred approaches to learning by building responsive teaching programs for the gifted, embedding gifted students' voices into learning and teaching, and ensuring that the new practices are part of the school culture so that *all* teachers understand the rationale and significance of differentiated learning. The principals can ensure that there is no single

strategy for differentiation but instead there is a “narrative of impact” (Hattie, 2015, p. 26) of differentiation on gifted learners that can be shared, implemented, and evaluated within and across schools. The principals can promote the need for leading systemic change in schools for educating gifted students and fostering their talent, expertise, and wisdom development.

Limitations of the Study and Implications for Future Research

While the study provided a comprehensive overview of teachers’, students’, and principals’ perceptions in the public school system in NSW, Australia, not all findings will necessarily generalise to other jurisdictions. As discussed earlier, the importance of context in driving differentiated practices for gifted learners may be relevant in the interpretation of these study findings. In the case of Northern Sydney Region (where this study was conducted), for example, specific opportunities for professional learning of teachers for educating the gifted were made available by the school and system leaders. These specific professional learning experiences may have guided the findings regarding provisions such as acceleration, and may not be the case everywhere. To assist in the evaluation and generalisation of the study’s findings, it might be helpful to conduct further research about the impact of differentiated learning upon the learning outcomes of gifted students with teachers, students, and principals from other jurisdictions.

It is important to note that the study assessed the *self-reported* perceptions of principals, teachers, and gifted students. Principals, teachers and students were not directly observed in classrooms or in professional learning settings. There is, therefore, an important role for future research to examine the degree to which these various perceptions of giftedness influence day-to-day learning and teaching in the classroom.

The case-study principals were purposively selected to understand best practice in school-wide differentiation for gifted learners. The four school principals were

recommended on the basis of their successful implementation of differentiated learning of gifted students by the Regional Director and School Education Directors. Working with just four principals – particularly those who may not be representative – necessarily presents challenges to generalisability. This is a limitation of the current project. Nonetheless, this design also allowed greater depth of analysis than would have been feasible with a larger group of principals. Particularly, the design enables a focus on specific instances of success (albeit at the expense of comprehensibility). Future research might consider the inclusion of principals from schools where teachers were more resistant in implementing differentiated learning for gifted learners. Such a combination of participants would offer insights not only into the exemplary cases where differentiation is implemented well, but would also provide further understanding of the potential challenges for principals in enacting school-wide differentiated learning for gifted students.

Addressing teachers' and principals' attitudes towards gifted learners and to provisions for the gifted may not be sufficient for modifying traditional pedagogical practices for educating the gifted, that is, beliefs and attitudes may not correspond directly to behaviour. From a research perspective, the complex nature of the support systems and obstacles implies the need for researchers to consider a *variety of factors* when examining teachers', students', and principals' attitudes towards giftedness and gifted learners. Extending beyond the leadership of the principal, these factors could also include the influence of system leadership, teacher leadership, and the impact of school culture.

Enabling and enacting gifted students' voices has been employed at the methodological level in this study. Further research in educating the gifted could be done which includes engagement with gifted students as "co-researchers" in school reform (i.e., impact of engaging with gifted students' voices on student learning, teachers' pedagogy,

and school improvement). Such research initiatives could also build on the existing research in non-selective settings which indicates that students improve academically and socially when they participate in school change processes, that is, when students collaborate with teachers to improve curriculum, instruction, and school rules.

More research is also needed about the consequences of incongruence in perceptions and practice among principals, teachers, and gifted students. Dissonance of perceptions could lead to the needs of gifted learners being unaddressed, leading to potential boredom or alienation: but it is not yet clear why such dissonance occurs. Thus, researchers could explore the implications for perceptions-attitudes-practice incongruity and how it can be productively aligned to enhance leadership effectiveness, promote teachers' development and expertise in educating the gifted, and meet gifted students' learning needs. Further research into principals' leadership actions for school-wide differentiated learning is needed to support teachers' professional knowledge in the field of gifted education, and to address the learning needs of gifted students.

Notwithstanding the above limitations, this research makes several contributions to academic discourse. First, school principals can discern the value of enriching their own understanding about differentiated learning and in shaping a school-wide approach to meeting the needs of gifted and talented students. Teachers on their own cannot be very effective unless they are supported by school leaders. Second, the study's findings indicate that in school systems the perceived effectiveness in teaching gifted students is related to teachers' expertise and experience in GATE. These findings will have significant implications in the way schools and systems develop teachers' professional learning, and the extent to which the universities can incorporate GATE into their current teacher education programs. Third, the research findings indicate the need to modify learning outcomes while planning differentiated units of study for gifted learners. Fourth, the

study's findings also indicate that a greater congruence is needed between school principals' and teachers' perceptions and understanding about differentiated practices for gifted learners. Fifth, student voice should not be used just for communication of ideas and opinions, but it should also be embedded in educational planning, school improvement, and school innovation. The study involves gifted students' contribution to the investigation as "co-researchers" at methodological level. Prospective researchers can further examine the methodological innovation about engagement with gifted students' voices. Finally, the study advocates the confluence of perceptions and perspectives of teachers, gifted learners, and principals for optimal learning and teaching processes across the school, and high learning outcomes for the gifted.

General Summary

In this chapter, I have discussed teachers', students', and principals' perceptions of giftedness and education for gifted learners. The study has suggested that teacher expertise and experience in GATE foster positive attitudes towards gifted learners and lead to supportive differentiated practices for educating the gifted. The perceptions about the extent of the use of differentiated strategies were more aligned among the gifted learners and the principals than they were among the students and the teachers, or among the principals and the teachers. The study has further suggested that effective school principals aim to continually enhance their understanding of differentiated learning for gifted students, to build the collective efficacy of teachers for educating the gifted, and to enable gifted students' voices for enhancing teaching and increasing student engagement.

The study's findings have implications for practice. There is the need for understanding the pedagogical incongruence between teachers and principals, for ongoing professional learning of teachers and principals in gifted education, and for enabling student voice to transform learning and teaching and foster school reform. The findings

also indicated the need for stronger pedagogical congruence between principals and teachers for unified approaches to leading and educating the gifted. To achieve stronger congruence, further research into teachers' attitudes and practices, gifted students' perspectives, and specific leadership actions for school-wide differentiation is needed.

Notwithstanding some limitations, this study makes several contributions to academic discourse, including the development of expertise in GATE for teacher effectiveness, the continued evidence of the value of preparing teachers to work with gifted students, the inclusion of gifted students' voices, the centrality of leadership for enacting school-wide differentiation for the gifted, and the need for confluence of perceptions and perspectives of differentiated practices among teachers, gifted learners, and principals for high learning outcomes.

In the final chapter, I briefly summarise and conclude the findings in relation to the four research questions of the study.

CHAPTER 11

CONCLUSION

Leaders are perpetual learners... Learning is the essential fuel for the leader, the source of high-octane energy that keeps up the momentum by continually sparking new understanding, new ideas and new challenges. (Bennis & Nanus, 2005, p. 176)

... a wise teacher... reflect[s] an orientation towards self, students, and teaching that highlights the *teacher as learner* in the act of constructing knowledge with her students. (Arlin, 1999, p. 12, emphasis added)

When invited into school change processes—when given power to work with their teachers to improve curriculum, instruction, and school rules—research reports students improving academically and socially (Brasof, 2015, p. 36)

The purpose of the study was to investigate teacher, student, and principal attitudes towards giftedness, and their perceptions of differentiated practices for gifted learners. The aims of the study were to analyse teachers' attitudes towards giftedness and gifted learners, and perceptions of their own teaching practices for the gifted; investigate students' perceptions of pedagogical strategies, classroom engagement, and the qualities of an effective teacher, and compare student perceptions with those of teachers; examine similarities and differences in the perceptions of principals and teachers about the use of differentiated strategies; and study the principals' perceived understanding of, and their self-reported leadership actions for, school-wide differentiation in GATE.

In this chapter, I present the conclusion in relation to the findings about the four research questions of the study as follows: teachers' attitudes and perceptions (research question 1); gifted students' perceptions (research question 2); principals' perceptions, understanding, and their self-reported leadership actions (research questions 3 and 4); and leading differentiated learning for the gifted (synthesis of findings).

Teachers' Attitudes and Perceptions

One of the aims of the study was to understand teachers' attitudes and perceptions of giftedness and gifted learners (research question 1). The study's findings indicated that teachers who work with gifted students in selective schools, hold qualifications or positions of responsibility in GATE, and/or engage in professional learning in GATE, are likely to possess more positive attitudes towards giftedness and gifted learners. These teachers are also likely to be more supportive of pedagogical strategies (i.e., content differentiation, process differentiation, and product differentiation) and the provision of acceleration for gifted students. On the other hand, the support from teachers with a number of years of teaching experience was mixed. These teachers did not hold positive attitudes towards giftedness and gifted learners. However, more experienced teachers were likely to be supportive of the provisions of acceleration and content differentiation for gifted learners. The study's findings demonstrated that learner-centred principals encourage teachers to examine their beliefs about giftedness, strengthen their attitudes towards gifted learners, and facilitate behaviour change in teachers. Effective principals lead and motivate teachers in gaining knowledge of gifted students' needs, and building pedagogical expertise in educating the gifted. They foster a school culture in which teachers collaborate with one another for achieving high performance outcomes for gifted learners.

Gifted Students' Perceptions

To further understand teachers' differentiated practices from gifted students' perspectives, I collaborated with gifted learners as "co-researchers" who interviewed their teachers and surveyed their peers in schools. The students provided insights into their perceptions of differentiated pedagogical strategies in classrooms, and into their perspectives of an effective teacher and classroom engagement (research question 2).

The findings revealed both similarities and differences in the perceptions of students and teachers about the qualities of an effective teacher. Both students and teachers identified personal-professional dispositions such as being kind, caring, and patient teachers as critical for being effective teachers. However, gifted students tended to emphasise qualities of effective teachers in *professional practice* domain more explicitly than *professional knowledge and skills*. The teachers, on the other hand, rated *professional knowledge and skills* of effective teachers higher than their *professional practices*. Thus, the students identified effective teachers to be those who are learner-centred, teach in an engaging and creative manner, use a variety of pedagogical strategies, explain concepts well, and clearly communicate their expectations and feedback. For the participating teachers, effective teachers are primarily passionate and motivating, know their subjects and students well, and create a positive learning environment. These disparities in perspectives raise concerns about the extent to which individual learner needs are addressed in classrooms.

Both students and teachers identified *focus and flow* as the top source of classroom engagement. Notwithstanding some of the underlying commonalities that existed in student and teacher perceptions about engagement, the students tended to identify deep understanding of complex concepts, and engagement with higher-level thinking and tasks that were relevant and challenging as stronger indicators of classroom engagement. On the other hand, for teachers, the gifted learners' engagement in classroom was primarily signified by the extent to which the students engaged in high level discussion, asked questions, and demonstrated enthusiasm and excitement in their learning. These differences in students' and teachers' perceptions once again highlight the importance of the need for teachers to develop experiences and expertise in GATE.

Gifted students' perceptions of pedagogical strategies were found to be significantly different from teachers' perceptions. The lack of alignment between the teachers' and students' perceptions could be due to a host of reasons such as teachers' lack of understanding of gifted students' perceptions and perspectives, their lack of qualifications and professional learning in GATE, and possibly infrequent use of differentiated strategies due to teachers' lack of experience in working with gifted learners. Gifted students could also not be aware of all differentiated strategies being enacted due to their lack of training in education. The study highlights the need for listening to student voices and engaging gifted learners in participatory learning processes so that students and teachers have more aligned perceptions and collaborate together as learning partners. Effective principals ensure that they enable gifted students' voices by repositioning young people from being passive recipients of knowledge to becoming active partners in learning and leadership.

Principals' Perceptions, Understanding, and Self-Reported Leadership Actions

School principals' and teachers' aligned perceptions of school-wide differentiation for gifted learners are each critical to ensure consistency of teacher practice across the school. While the perceptions of principals and gifted students were more aligned, the perceptions of principals were significantly different from those of teachers. The insights from exemplary principals in the study revealed that differences in perceptions could emerge for a number of reasons, including both teachers' and school principals' lack of knowledge, understanding, and experience in GATE. Effective principals ensure that teacher and leader perceptions and approaches to school-wide differentiation are aligned. Successful principals work with and through others to build a professional learning community that is focused on creating challenging learning opportunities for gifted students. They demonstrate deep understanding of school-wide differentiated learning

based on individual needs. They ensure that teachers have knowledge of gifted learners' readiness and needs. They understand that identification of gifted learners is the first significant step in ensuring that the students' cognitive and affective needs are met. Successful principals have knowledge of effective teacher practice and have high expectations from teachers. They ensure that teachers plan concept-based differentiated units; have flexible classroom routines; align differentiated outcomes, instruction, and assessment; accelerate gifted learners when needed; ensure programs are regularly evaluated; and create a culture of ongoing evaluation and reflection.

Effective principals employ strategic thinking. They provide direction for schools through shared vision and strategy. They establish the organisation's environment, culture, and structure to achieve the vision. They carefully plan to create a changed state, anticipate potential roadblocks, and find ways to minimise them. Learner-centred principals distribute leadership and encourage teachers to build consensus about how to promote high performance outcomes for gifted learners. They create conditions in the school for teachers to be successful in educating the gifted, enable gifted students' voices, and engage the school community in building the shared vision. Effective principals institute collaborative and creative practices in the school, and encourage teachers and students to collaboratively contribute to improvement and innovation in educating the gifted. As "lead learners" they build learner-centred approaches to differentiated learning for gifted students across the whole school.

Leading Differentiated Learning for the Gifted

Leading differentiated learning for the gifted is about creating a confluence of attitudes, perceptions and practices among principals, teachers, and students; building sustainable future directions for school-wide differentiation; enabling students and teachers to engage as learning partners; and transforming gifted learners not only into talented and

expert individuals but also holistic women and men of wisdom. The exemplary principals in this study indicated that aligned perceptions among school principals, teachers, and gifted learners contribute to optimal learning and teaching processes, and are perceived as conducive to high learning outcomes for the gifted and fostering their talent, expertise, and wisdom development.

In schools wishing to become learner-centred, the stakeholders—principals, teachers, and gifted students—must be the ones who collectively develop their own culture of learning and change, rather than be imposed from outside. School principals must create a culture in which teachers and students are free to share their basic beliefs and values, especially when they hold diverse and divergent attitudes, perceptions and perspectives. Teachers must engage in inquiry with gifted learners as learning partners to achieve shared learner-centred goals (McCombs & Miller, 2007, 2009).

School cultures which are focused on differentiated learning for individual learners use collaboration between teachers and students to develop meaningful learning activities (Keefe & Jenkins, 2002). Collaborative work is a key driver in shifting behaviour. It is the “social glue that moves the organisation towards coherence” (Fullan & Quinn, 2016, p. 73). When principals, teachers, and gifted students work together in achieving the vision of school-wide differentiated learning, their confluence leads to “collaborative expertise” (Hattie, 2015, p. 2), and the cultivation of collaborative cultures in schools (Fullan & Quinn, 2016).

Concluding Remarks

Differentiated learning for gifted students is about honouring each student’s learning needs, readiness, and interests for fostering talent, expertise, and wisdom development. Leading differentiated learning is about building a confluence of collaborative expertise in teaching the gifted, learner-centred leadership to support such

teacher expertise, positive attitudes towards gifted learners, and enabling gifted students' voices. Schools and classrooms that enact differentiated learning for the gifted as a regular, day-to-day experience become places of learning and wonder. They become places of curious delight.

References

- Adams, C. M., & Pierce, R. L. (2004). Attitudes of American and English preservice teachers. *Gifted and Talented International, 19*, 15-23.
- Adams-Byers, J., Whitsell, S. S., & Moon, S. (2004). Gifted students' perceptions of the academic and social/emotional effects of homogeneous and heterogeneous grouping. *Gifted Child Quarterly, 48*, 7-20. doi:10.1177/001698620404800102
- Affolder, L. P. (2003). *Differentiated instruction in inclusive elementary classrooms*. (Doctoral dissertation). Retrieved from ProQuest, UMI Dissertations Publishing. (3107298)
- Ainley, M., Hidi, S., & Berndoff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94*, 545-561. doi:10.1037/0022-0663
- Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). New York, NY: Open University Press.
- Ajzen, I. (2012). Martin Fishbein's legacy: the reasoned action approach. *ANNALS of the American Academy of Political and Social Science, 640*(1), 11-27. doi:10.1177/0002716211423363
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84*, 888-918. doi:10.1037/0033-2909.84.5.888
- Ajzen, I., & Fishbein, M. (2005). The influence of behavior on attitudes. In D. Albarraacin, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173-223). Mahwah, NJ: Erlbaum.
- Alexander, P. A., & Murphy, P. K. (2000). The research base for APA's learner-centred psychological principals. In N. M. Lambert & B. L. McCombs (Eds.), *How*

- students learn: Reforming schools through learner-centred education* (pp. 25-60). Washington, DC: American Psychological Association.
- Amabile, T. M. (1983). *The social psychology of creativity*. New York, NY: Springer-Verlag.
- Amabile, T. M. (1989). *Growing up creative: Nurturing a lifetime of creativity*. New York, NY: Crown.
- Archambault, F. X., Westberg, K. L., Brown, S. W., Hallmark, B. W., Emmons, C. L., & Zhang, W. (1993a). *Regular classroom practices with gifted students: Results of a national survey of classroom teachers* (Research Monograph No. 93102). Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.
- Archambault, F. X., Westberg, K. L., Brown, S. W., Hallmark, B. W., Zhang, W., & Emmons, C. L. (1993b). Classroom practices used with gifted third and fourth grade students. *Journal for the Education of the Gifted*, 16, 103-119.
- Arlin P. K. (1999). The wise teacher. A developmental model of teaching. *Theory into Practice*, 38, 12-17.
- Arot, M., & Reay, D. (2007). A sociology of pedagogic voice: Power, inequality, and pupil consultation. *Discourse: Studies in the Cultural Politics of Education*, 28, 311-325. doi:10.1080/01596300701458814
- Assouline, S. G., Colangelo, N., Heo, N., & Dockery, L. (2013). High-ability students' participation in specialized instructional delivery models: Variations by aptitude, grade, gender, and content area. *Gifted Child Quarterly*, 57, 135-147. doi:10.1177/0016986213479654
- Assouline, S. G., Marron, M., & Colangelo, N. (2014). Acceleration: The fair and equitable intervention for highly able students. In J. A. Plucker, & C. M.

- Callahan (Eds.), *Critical issues and practices in gifted education* (pp. 15-28). Waco, TX: Prufrock Press.
- Australian Government Department of Education and Training (n.d.). Gifted education professional resource package. Retrieved from <https://docs.education.gov.au/collections/gifted-education-professional-resource-package>
- Australian Institute for Teaching and School Leadership. (2011). *Australian Professional Standard for Principals*. Melbourne, Australia: Author. Retrieved from <http://www.aitsl.edu.au/australian-professional-standard-for-principals>
- Avery, L., & Little, C. (2003). Concept development and learning. In J. VanTassel-Baska & C. Little (Eds.), *Content-based curriculum for high-ability learners* (pp. 101-124). Waco, TX: Prufrock Press.
- Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Journal of Occupational and Organisational Psychology*, 72(4), 441-462. doi:10.1348/096317999166789
- Ayres, P., Sawyer, W., & Dinham, S. (2004). Effective teaching in the context of a grade 12 high stakes external examination in New South Wales, Australia. *British Educational Research Journal*, 30, 141-165. doi:10.1080/01411920310001630008
- Azano, A. (2013). The CLEAR curriculum model. In C. M. Callahan & H. L. Hertberg-Davis (Eds.), *Fundamentals of gifted education* (pp. 301-314). New York, NY: Routledge.
- Azano, A. P., Missett, T. C., Callahan, C. M., Oh, S., Brunner, M. M., Foster, L. F., & Moon, T. (2011). Exploring the relationship between fidelity of implementation

- and academic achievement in a third-grade gifted curriculum: A mixed-methods study. *Journal of Advanced Academics*, 22, 693-719.
doi:10.1177/1932202X11424878
- Bain, S., Bliss, S., Choate, S., & Brown, K. (2007). Serving children who are gifted: Perceptions of undergraduates planning to become teachers. *Journal for the Education of the Gifted*, 30, 450-481.
- Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A metaheuristic (pragmatic) to orchestrate mind and virtue towards excellence. *American Psychologist*, 55, 122-135. doi:10.1037/0003-066X.55.1.122
- Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioural change. *Psychological Review*, 84, 191-215.
- Bangel, N. J., Moon, S. M., & Capobianco, B. M. (2010). Preservice teachers' perceptions and experiences in a gifted education training model. *Gifted Child Quarterly*, 54, 209-221. doi:10.1177/0016986210369257
- Barfurth, M. A., Ritchie, K. C., Irving, J. A., & Shore, B. M. (2009). A metacognitive portrait of gifted learners. In L. V. Shavinina (Ed.), *International handbook on giftedness* (pp. 397-417). Québec, Canada: Springer.
- Barnett, B. G., Basom, M. R., Yerkes, D. M., & Norris, C. J. (2000). Cohorts in educational leadership preparation programs: Benefits, difficulties, and the potential for developing school leaders. *Educational Administration Quarterly*, 36, 255-282. doi:10.1177/0013161X00362005
- Bartley, V. (2014). Educators' attitudes towards gifted students and their education in a regional Queensland school. *TalentEd*, 28(1), 24-31.

- Baslanti, U., & McCoach, D. B. (2006). Factors related to the underachievement of university students in Turkey. *Roeper Review*, 28, 210-215.
doi:10.1080/02783190609554366
- Bass, B. M., & Riggio, J. (2006). *Transformational leadership* (2nd ed.). New York, NY: Free Press.
- Bateman, C., Beckett, L., Carlon, G., Cumming, J., Dileva, C., Kelly, M., ... Wade, J. (1997). *An evaluation of accelerated progression at Smith's Hill High School*. Wollongong, NSW: Smith's Hill High School.
- Bays, D.A., & Crockett, J. (2007). Investigating instructional leadership for special education. *Exceptionality*, 15(3), 143-161. doi:10.1080/09362830701503495
- Beaudoin, N. (2005). *Elevating student voice: How to enhance participation, citizenship, and leadership*. Larchmont, NY: Eye on Education.
- Beecher, M., & Sweeny, S. M. (2008). Closing the achievement gap with curriculum enrichment and differentiation: One school's story. *Journal of Advanced Academics*, 19, 502-530.
- Bégin, J., & Gagné, F. (1994a). Predictors of attitudes towards gifted education: A review of the literature and a blueprint for future research. *Journal for the Education of the Gifted*, 17, 161-179. doi:10.1177/016235329401700206
- Bégin, J., & Gagné, F. (1994b). Predictors of a general attitude towards gifted education. *Journal for the Education of the Gifted*, 18, 74-86.
doi:10.1177/016235329401800106
- Ben Ari, R., & Shafir, D. (1988). *Social integration in elementary school*. Ramat-Gan, Israel: Bar Ilan University, Institute for the Advancement of Social Integration in the Schools.

- Benito, Y. (2000). Metacognitive ability and cognitive strategies to solve maths and transformation problems. *Gifted Education International*, 14, 151-159.
- Bennis, W., & Nanus, B. (2005). *Leaders: Strategies for taking charge*. New York, NY: Collins Business Essentials.
- Berkowitz, E., & Cicchelli, T. (2004). Metacognitive strategy use in reading of gifted high achieving and gifted underachieving middle school students in New York. *Education and Urban Society*, 37, 37-57. doi:10.1177/0013124504268072
- Betts, G. T., & Neihart, M. (2004). Profiles of the gifted and talented. In R. J. Sternberg (Ed.), *Definitions and conceptions of giftedness* (pp. 97-106). Thousand Oaks, TX: Prufrock Press.
- Billingsley, B. (2005). *Cultivating and keeping committed special educators: What principals and district leaders can do*. Thousand Oaks, CA: Corwin.
- Bishop, W. E. (1968). Successful teachers of the gifted. *Exceptional Children*, 34, 317-325.
- Blum, R. W. (2005). A case for school connectedness. *Educational Leadership*, 62(7), 16-20.
- Borland, J. (1978). Teachers' identification of the gifted. *Journal for the Education of the Gifted*, 2, 22-32.
- Borland, J. H. (2009). Gifted education without gifted programs or gifted students: An anti-model. In J. S. Renzulli, E. J. Gubbins, K. S. McMillen, R. D. Eckert, & C. A. Little (Eds.), *Systems and models for developing programs for the gifted and talented* (pp. 105-118). Waco, TX: Prufrock Press.
- Braggett, E. J., & Moltzen, R. I. (2000). Programs and practices for identifying and nurturing giftedness and talent in Australian and New Zealand. In K. A. Heller,

- F. J. Mönks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (2nd ed., pp.779–798). Oxford, UK: Elsevier.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Research Council.
- Bransford, J. D., & Vye, N. J. (1989). A perspective on cognitive research and its implications for instruction. In L. Resnick & L. E. Klopfer (Eds.), *Toward the thinking curriculum: Current cognitive research* (pp. 173-205). Alexandria, VA: ASCD.
- Brasof, M. (2015). *Student voice and school governance*. New York, NY: Routledge.
- Brighton, C., Hertberg, H., Callahan, C., Tomlinson, C., & Moon, T. (2005). *The feasibility of high-end learning in a diverse middle school* (Research Monograph 05210). Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.
- Brighton, C. M., Moon, T. R., & Huang, H. L. (2015). Advanced readers in reading first classrooms: Who was really “left behind”? Considerations for the field of gifted education. *Journal for the Education of the Gifted*, 38(3), 257-293.
doi:10.1177/016235215592501
- Brown, S. W., Renzulli, J. S., Gubbins, E. J., Siegle, D., Zhang, W., & Chen, C. (2005). Assumptions underlying the identification of gifted and talented students. *Gifted Child Quarterly*, 49, 68-79. doi:10.1177/001698620504900107
- Brulles, D., Peters, S. J., & Saunders, R. (2012). Schoolwide mathematics achievement within the gifted cluster grouping model. *Journal of Advanced Academics*, 23, 200-216. doi:10.1177/1932202X12451439

- Brulles, D., Saunders, R., & Cohen, S. J. (2010). Improving performance for gifted students in a cluster grouping model. *Journal for the Education of the Gifted*, 34, 327-350.
- Bryk, A. S., & Schneider, B. (2002). *Trust in schools: A core resource for improvement*. New York, NY: Russell Sage Foundation.
- Buehl, M. M., & Beck, J. S. (2015). The relationship between teachers' beliefs and teachers' practices. In H. Fives & M. G. Gill (Eds.), *International handbook of research on teachers' beliefs* (pp. 66-84). New York, NY: Routledge.
- Butler-Por, N. (1993). Underachieving gifted children. In K. A. Heller, F. J. Mönks, & A. H. Passow (Eds.), *International handbook of research and development of giftedness and talent* (pp. 621-629). Dubuque, IA: Kendall/Hunt.
- Callahan, C., Tomlinson, C., Moon, T., Brighton, C., & Herbert, H. (2003). *Feasibility of high end learning in the middle grades*. The National Research Center on the Gifted and Talented. Retrieved from <http://files.eric.ed.gov/fulltext/ED505377.pdf>
- Capern, T., & Hammond, L. (2014). Establishing positive relationships with secondary gifted students and students with emotional/behavioural disorders: Giving these diverse learners what they need. *Australian Journal of Teacher Education*, 39(4), 46-67. doi:10.14221/ajte.2014v39n4.5
- Carr, M., Borkowski, J. G., & Maxwell, S. E. (1991). Motivational components of underachievement. *Developmental Psychology*, 27, 108-118. doi:10.1037/0012-1649.27.1.108
- Carrington, N.G., & Bailey, S.B. (2000). How do preservice teachers view gifted students? Evidence from a NSW study. *Australasian Journal of Gifted Education*, 9(1), 18-22.

- Cashion, M., & Sullenger, K. (2000). Contact us next year: Tracing teachers' use of gifted practices. *Roeper Review*, 23, 18-21. doi:10.1080/02783190009554056
- Chan, D. W. (2001a). Characteristics and competencies of teachers of gifted learners: The Hong Kong teacher perspective. *Roeper Review*, 23, 197-202. doi:10.1080/02783190109554098
- Chan, D. W. (2001b). Learning styles of gifted and nongifted secondary students in Hong Kong. *Gifted Child Quarterly*, 45, 35-44. doi:10.1177/001698620104500106
- Chan, D. W. (2011). Characteristics and competencies of teachers of gifted learners: The Hong Kong teacher perspective. *Roeper Review*, 33, 160-169. doi:10.1080/02783193.2011.580499
- Chan, L. K. S. (1996). Motivational orientations and metacognitive abilities of intellectually gifted students. *Gifted Child Quarterly*, 40, 184-193. doi:10.1177/001698629604000403
- Chart, H., Grigorenko, D. L., & Sternberg, R. J. (2008). Identification: The Aurora Battery. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: What the research says* (pp. 281-301). Waco, TX: Prufrock Press.
- Cheng, Y. C. (2010). A typology of 3-wave models of strategic leadership in education. *International Studies in Educational Administration*, 38(1), 35-54.
- Chessman, A. (2010). *Teacher attitudes and effective teaching practices for gifted students at Stage 6* (Doctoral dissertation). Retrieved from <http://unsworks.unsw.edu.au/>
- Chessor, D., & Whitton, D. (2008). The impact of grouping gifted primary school students on self concept and achievement. *TalentEd*, 25(2), 7-19.

- Christensen, J., Siegel Robertson, J., Williamson, R., & Hunter, W. C. (2013). Preparing educational leaders for special education success: Principals' perspective. *The Researcher*, 25(1), 94-107.
- Clark, B. (2008). *Growing up gifted* (7th ed.). Upper Saddle River, NJ: Pearson.
- Clark, B. (2013). *Growing up gifted: Developing the potential of children at home and at school* (8th ed.). Upper Saddle River, NJ: Pearson.
- Clinkenbeard, P. R. (1994). Motivation and highly able students: resolving paradoxes. In J. B. Hansen & S. M. Hoover (Eds.), *Talent development: Theories and practice* (pp. 187-202). Dubuque, IA: Kendall/Hunt.
- Clinkenbeard, P. R. (2014). Motivation and goals. In J. A. Plucker, & C. M. Callahan (Eds.), *Critical issues and practices in gifted education* (pp. 427-437). Waco, TX: Prufrock Press.
- Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Colangelo, N., Assouline, S. G., & Gross, M. U. M. (2004). *A Nation deceived: How schools hold back America's brightest students*. Iowa City, IA: Belin-Blank Center.
- Colangelo, N., Assouline, S. G., & Marron, M. A. (2013). Evidence trumps beliefs: Academic acceleration is an effective intervention for high-ability students. In C. M. Callahan & H. Hertberg-Davis (Eds.), *Fundamentals of gifted education: Considering multiple perspectives* (pp. 164-175). New York, NY: Routledge.
- Colangelo, N., Assouline, S. G., Marron, M. A., Castellano, J. A., Clinkenbeard, P. R., Rogers, K., ... Smith, D. (2010). Guidelines for developing an academic acceleration policy, *Journal of Advanced Academics*, 21, 180-203.

- Coleman, E. B., & Shore, B. (1991). Problem-solving processes of high and average performers in physics. *Journal for the Education of the Gifted*, 14, 366-379.
- Cook-Sather, A. (2001). Unrolling roles in techno-pedagogy: Towards new forms of collaboration in traditional college settings. *Innovative Higher Education*, 26, 121-139.
- Cook-Sather, A. (2002). Authorizing student perspectives: Towards trust, dialogue, and change in education. *Educational Researcher*, 31(4), 3-14.
doi:10.3102/0013189X031004003
- Cook-Sather, A. (2003). Movements of mind: *The matrix*, metaphors, and re-imagining education. *Teachers College Record*, 105, 946-977.
- Cook-Sather, A. (2006). 'Change based on what students say': Preparing teachers for a paradoxical model of leadership. *International Journal of Leadership in Education: Theory and Practice*, 9, 345-358. doi:10.1080/13603120600895437
- Cook-Sather, A. (2010). Through students' eyes. *Journal of Staff Development*, 31(4), 42-45.
- Copenhaver, R. W., & McIntyre, D. J. (1992). Teachers' perception of gifted students. *Roeper Review*, 14, 151-153. doi:10.1080/02783199209553411
- Cotton, K. (2003). *Principals and student achievement: What the research says*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Cramer, R. H. (1991). The education of gifted children in the United States: A Delphi study. *Gifted Child Quarterly*, 35, 84-91. doi:10.1177/001698629103500207
- Cramond, B., & Martin, C. E. (1987). Inservice and preservice teachers' attitudes towards the academically brilliant. *Gifted Child Quarterly*, 31, 15-19.
doi:10.1177/001698628703100103

- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed method approaches*. Thousand Oaks, CA: Sage.
- Creswell, J. W. (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Cropley, A. (1994). *More ways than one: Fostering creativity*. Norwood NJ: Ablex.
- Cross, J. R., Cross, T., & Frazier, A. D. (2013). Student and teacher attitudes towards giftedness in a two laboratory school environment: A case for conducting a needs assessment. *NALS Journal*, 5(1), Article 1. Retrieved from <http://digitalcommons.ric.edu/nals/vol5/iss1/1>
- Cross, J. A., & Dobbs, C. (1987). Goals of a teacher training program for teachers of the gifted. *Roeper Review*, 9, 170-171. doi:10.1080/02783198709553040
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. Cambridge, UK: Cambridge University Press.
- Cullen, R., Harris, M., & Hill, R. R. (2012). *The learner-centred curriculum: Design and implementation*. San Francisco, CA: Jossey-Bass.
- Cushman, K. (2005). *Sent to the principal: Students talk about making high schools better*. Providence, RI: Next Generation Press.
- Danielson, C. (2006). *Teacher leadership*. Alexandria, VA: ASCD.
- Davies, B., Davies, B. J., & Ellison, J. (2005). *Success and sustainability: Developing the strategically focused school*. Nottingham, UK: National College for School Leadership.

- Davis, G. A. (1992). *Creativity is forever* (3rd ed.). Dubuque, IA: Kendall Hunt.
- Davis, G. A., Rimm, S., & Siegle, D. (2011). *Education of the gifted and talented*. New York, NY: Pearson.
- Day, C., Sammons, P., Hopkins, D., Harris, A., Leithwood, K., Gu, Q., & Brown, E. (2010). *Ten strong claims about successful school leadership*. Nottingham, UK: National College for School Leadership.
- Delisle, J. R. (2012). Reaching those we teach: The five Cs of student engagement. *Gifted Child Today*, 35, 62-67. doi:10.1177/1076217511427513
- Dettmer, P. A., & Landrum, M. S. (Eds.). (1998). *Staff development: The key to effective gifted education programs*. Waco, TX: Prufrock Press.
- Diezmann, C. M., & Watters, J. J. (2002) The importance of challenging tasks for mathematically gifted students. *Gifted and Talented International*, 17, 76-84.
- Dinham, S. (2008). *How to get your school moving and improving*. Melbourne, Australia: ACER.
- Dixon, F. A., Yssel, N., McConnell, J. M., & Hardin, T. (2014). Differentiated instruction, professional development, and teacher efficacy. *Journal for the Education of the Gifted*, 37, 111-127. doi:10.1177/0162353214529042
- DuFour, R. (2002). The learning-centred principal. *Educational Leadership*, 58(8), 12-15.
- DuFour, R., DuFour, R., Eaker, R., & Many, T. (2010). *Learning by doing* (2nd ed.). Bloomington, IN: Solution Tree Press.
- DuFour, R., & Fullan, M. (2013). *Cultures built to last: Systemic PLCs at work*. Bloomington, IN: Solution Tree Press.
- Duke, D. (2004). *The challenges of educational change*. Boston, MA: Pearson.
- Duke TIP (n.d.). *Gifted characteristics*. Retrieved from <https://tip.duke.edu/node/99>

- Dweck, C. S. (1989). Motivation. In A. Lesgold & R. Glaser (Eds.), *Foundation for a psychology of education* (pp. 87-136). Hillsdale, NJ: Erlbaum.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Dweck, C. S. (2012). Mindsets and malleable minds: Implications for giftedness and talent. In R. F. Subotnik, A. Robinson, C. M. Callahan, & E. J. Gubbins (Eds.), *Malleable minds: Translating insights from psychology and neuroscience to gifted education* (pp. 7-18). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.
- Eagly, A. H., & Chaiken, S. (2005). Attitude research in the 21st century: The current state of knowledge. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 743-768). Mahwah, NJ: Erlbaum.
- Eccles, J., & Gootman, J. A. (Eds.). (2002). *Community programs to promote youth development*. Washington, DC: National Academies Press.
- Eilam, B., & Vidergor, H. E. (2011). Gifted Israeli students' perceptions of teachers' desired characteristics: A case of cultural orientation. *Roeper Review*, 33, 86-96. doi:10.1080/02783193.2011.554156
- Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52-72). New York, NY: Guilford Press.
- Ericsson, K. A. (2002). Attaining excellence through deliberate practice: Insights from the study of expert performance. In M. Ferrari (Ed.), *The pursuit of excellence through education* (pp. 21-56). Mahwah, NJ: Erlbaum.
- Erickson, H. L. (2007). *Concept-Based curriculum and instruction for the thinking classroom*. Thousand Oaks, CA: Corwin Press.

- Evans, R. (1996). *The human side of school change: Reform, resistance, and the real-life problems of innovation*. San Francisco, CA: Jossey-Bass.
- Feldhusen, J. F. (1986). A conception of giftedness. In R. J. Sternberg and J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 112-127). New York, NY: Cambridge University Press.
- Feldhusen, J. F. (1997). Educating teachers for work with talented youth. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (2nd ed., pp. 547-552). Boston, MA: Allyn & Bacon.
- Feldhusen, J. F. (1998). Programs for the gifted few or talent development for the many? *Phi Delta Kappan*, 79, 735-738.
- Feldhusen, J. F., Dai, D. Y., & Clinkenbeard, P. R. (2000). Dimensions of competitive and cooperative learning among gifted learners. *Journal for the Education of the Gifted*, 23, 328-342.
- Feldhusen, J. F., Haeger, W., Pellegrino, A. (1989). A model training program in gifted education for school administrators. *Roeper Review*, 11, 209-214.
doi:10.1080/02783198909553213
- Feldhusen, J. F., Hansen, J., & Kennedy, D. (1989). Curriculum development for GCT Teachers. *Gifted Child Today*, 12(6), 12-19.
- Feldhusen, J. F., & Kolloff, M. B. (1986). The Purdue three-stage model for gifted education. In J. S. Renzulli (Ed.), *Systems and models for developing programs for the gifted and talented* (pp. 126-152). Mansfield Center, CT: Creative Learning Press.
- Feldhusen, J. F., VanTassel-Baska, J., & Seeley, K. (1989). *Excellence in educating the gifted*. Denver, Colorado: Love.

- Feng, A. X., VanTassel-Baska, J., Quek, C., Bai, W., & O'Neill, B. (2005). A longitudinal assessment of gifted students' learning using the Integrated Curriculum Model (ICM): Impacts and perceptions of the William and Mary language arts and science curriculum. *Roeper Review*, 27, 78-83.
- Ferrari, M. (2002). *The pursuit of excellence through education*. Mahwah, NJ: Erlbaum.
- Fielding, M. (2001). Beyond the rhetoric of student voice: New departures or new constraints in the transformation of 21st century schooling? *Forum*, 43(2), 100-109.
- Fielding, M. (2004). Transformative approaches to student voice: Theoretical underpinnings, recalcitrant realities. *British Educational Research Journal*, 30, 295-310. doi:10.1080/0141192042000195236
- Fielding, M. (2011). Patterns of partnerships: Student voice, intergenerational learning and democratic fellowship. In N. Mockler & J. Sachs (Eds.), *Rethinking educational practice through reflexive inquiry: Essays in honour of Susan Groundwater-Smith* (pp. 61-75). Dordrecht, The Netherlands: Springer.
- Fielding, M. (2012). Student voice: patterns of partnership and the demands of deep democracy. *Connect*, 197, 10-15.
- Finn, C. E., & Hockett, J. A. (2012). *Exam schools: Inside America's most selective public high schools*. Princeton, NJ: Princeton University Press.
- Flutter, J., & Rudduck, J. (2004). *Consulting pupils: What's in it for schools?* London, UK: Routledge.
- Ford, D. Y., & Trotman, M. F. (2001). Teachers of gifted students: Suggested multicultural characteristics and competencies. *Roeper Review*, 23, 235-239. doi:10.1080/02783190109554111

- Forster, J. (1991). Policy and practice in gifted education. *Australian Educational Researcher*, 18(3), 21-36.
- Forster, J. (2005). Policy and practice—A twenty year retrospective on gifted education in the Australian State of New South Wales. *Gifted Education International*, 19(2), 182-196.
- Fraser-Seeto, K. (2013). Pre-service teacher training in gifted and talented education: An Australian perspective. *Journal of Student Engagement: Education Matters*, 3(1), 29-38.
- Fraser-Seeto, K., Howard, S. J., & Woodcock, S. (2015). An investigation of teachers' awareness and willingness to engage with a self-directed professional development package on gifted and talented education. *Australian Journal of Teacher Education*, 40(1), 1-14.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59–109.
- Freeman, J. (2000). Families: The essential context for gifts and talents. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (pp. 573-586). Oxford, UK: Elsevier Science.
- French, L. R., Walker, C. L., & Shore, B. M. (2011). Do gifted students really prefer to work alone? *Roeper Review*, 33, 145-159. doi:10.1080/02783193.2011.580497
- Fullan, M. (1991). *The new meaning of educational change* (2nd ed.). New York, NY: Teachers College Press.
- Fullan, M. (2001). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.
- Fullan, M. (2004). *Leadership and sustainability: System thinkers in action*. Thousand Oaks, CA: Corwin Press.

- Fullan, M. (2006). *Learning to lead change: Building system capacity*. Partnerships in learning: International workshop series with Michael Fullan. Retrieved from http://www.is-toolkit.com/workshop/fullanworkshops/Short_Course.pdf
- Fullan, M. (2007). *The new meaning of educational change* (4th ed.). New York, NY: Teachers College Press.
- Fullan, M. (2010). *All systems go: The change imperative for whole system reform*. Victoria, Australia: Hawker Brownlow.
- Fullan, M. (2011). *Change leader: Learning to do what matters most*. San Francisco, CA: Jossey-Bass.
- Fullan, M. (2013). *Motion leadership in action: More skinny on becoming change savvy*. Thousand Oaks, CA: Corwin.
- Fullan, M. (2014). *The principal: Three keys to maximising impact*. San Francisco, CA: Jossey-Bass.
- Fullan, M. (2016). *The new meaning of educational change* (5th ed.). New York, NY: Teachers College Press.
- Fullan, M., Cuttress, C. & Kilcher, A. (2005). Eight forces for leaders of change. *Journal of Staff Development*, 26(4), 54-64.
- Fullan, M., & Quinn, J. (2016). *Coherence: The right drivers in action for schools, districts, and systems*. Thousand Oaks, CA: Corwin.
- Gagné, F. (1983). Perceptions of programs for gifted children: Agreement of principles, but disagreements over modalities. *B. C. Journal of Special Education*, 7(2), 113-127.
- Gagné, F. (1991). *Brief presentation of Gagné and Nadeau's attitude scale: Opinions about the gifted and their education*. Québec, Canada: Université du Québec à Montréal.

- Gagné, F. (2003). Transforming gifts into talents: The DMGT as a developmental model. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 60-74). Boston, MA: Allyn & Bacon.
- Gagné, F. (2009). Building gifts into talents: Detailed overview of the DMGT 2.0. In B. MacFarlane & T. Stambaugh (Eds.), *Leading change in gifted education: The festschrift of Dr. Joyce VanTassel-Baska* (pp. 61-80). Waco, TX: Prufrock Press.
- Gagné, F. (2011). Academic talent development and equity issue in gifted education. *Talent Development and Excellence*, 3, 3-22.
- Gagné, F., & Nadeau, L. (1985). Dimensions of attitudes towards giftedness. In L. Mass & A.H. Roldan (Eds.), *Gifted and talented children, youth, and adults: Their social perspectives and culture* (pp. 148-170). Monroe, LA: Trillium Press.
- Gagné, F., & Nadeau, L. (1991). *Opinions about the gifted and their education*. Unpublished instrument.
- Gallagher, J. J. (2000). Unthinkable thoughts: Education of gifted students. *Gifted Child Quarterly*, 10, 5-12. doi:10.1177/001698620004400102
- Gallagher, S. A. (2001). But does it work? Testing the efficacy of problem-based learning: A review of the literature and research agenda for educators of the gifted. In S. G. Assouline & N. Colangelo (Eds.), *Talent development IV: Proceedings from the 1998 Henry B. and Jocelyn Wallace national research symposium on talent development* (pp. 179-204). Scottsdale, AZ: Great Potential Press.
- Gallagher, S. A. (2015). Adapting problem-based learning for gifted students. In F. A. Karnes & S. M. Bean (Eds.), *Methods and materials for teaching the gifted* (4th edition, pp. 413-443). Waco, TX: Prufrock Press.

- Gallagher, J., & Gallagher, S. (1994). *Teaching the gifted child* (4th ed.). Boston, MA: Allyn & Bacon.
- Gallagher, J., Harradine, C., & Coleman, M. (1997). Challenge or boredom? Gifted students' views on their schooling. *Roeper Review*, 19, 132- 136.
doi:10.1080/02783199709553808
- Gavin, M. K., Casa, T. M., Firmender, J. M., & Carroll, S. R. (2013). The impact of advanced geometry and measurement curriculum units on the mathematics achievement of first-grade students. *Gifted Child Quarterly*, 57, 71-84.
doi:10.1177/0016986213479564
- Geake, J. G., & Gross, M. U. M. (2008). Teachers' negative affect towards academically gifted students: An evolutionary psychological study. *Gifted Child Quarterly*, 52, 217-231. doi:10.1177/0016986208319704
- Gentile, S. K. (2014). *From listening to empowering: A study of high school principals' perceptions of student voice in classroom instruction* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3690754)
- Gentry, M. (2014). Cluster grouping. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: Considering multiple perspectives* (pp. 212-225). Waco, TX: Prufrock Press.
- Gentry, M., & Fugate, C. M. (2013). Cluster grouping programs and the total school cluster grouping model. In C. M. Callahan & H. Hertberg-Davis (Eds.), *Fundamentals of gifted education: Considering multiple perspectives* (pp. 212-225). New York, NY: Routledge.
- Gentry, M., Hu, S., Peters, S., & Rizza, M. (2008). Talented students in an exemplary career and technical education school: A qualitative inquiry. *Gifted Child Quarterly*, 52, 183-198. doi:10.1177/0016986208319300

- Gentry, M., & Keilty, W. (2004). Rural and suburban cluster grouping: Reflections on staff development as a component of program success. *Roeper Review*, 26, 148-156.
doi:10.1080/02783190409554260
- Gentry, M., & Owen, S. V. (2004). Secondary student perceptions of classroom quality: Instrumentation and differences between advanced/honors and nonhonors classes. *The Journal of Secondary Gifted Education*, 16, 20-29.
- Gentry, M., Rizza, M. G., & Gable, R. K. (2001). Gifted students' perceptions of their class activities: Differences among rural, urban, and suburban student activities. *Gifted Child Quarterly*, 45, 115-129. doi:10.1177/001698620104500205
- Gentry, M., Rizza, M.G., & Owen, S.V. (2002). Examining perceptions of challenge and choice in classrooms: The relationship between teachers and their students and comparison between gifted students and other students. *Gifted Child Quarterly*, 46, 145-155. doi:10.1177/001698620204600207
- Gentry, M., & Springer, P. M. (2002). Secondary student perceptions of their class activities regarding meaningfulness, challenge, choice, and appeal: An initial validation study. *Journal of Secondary Gifted Education*, 13, 192-204.
- Gentry, M., Steenbergen-Hu, S., & Choi, B. (2011). Student-identified exemplary teachers: Insights from talented teachers. *Gifted Child Quarterly*, 55, 111-125.
doi:10.1177/0016986210397830
- Goodnough, K. (2001). Changing teacher beliefs about giftedness and differentiation practices. *Gifted and Talented International*, 16, 115-121.
- Gottfried, A. E., & Gottfried, A. W. (1996). A longitudinal study of academic intrinsic motivation in intellectually gifted children: Childhood through early adolescence. *Gifted Child Quarterly*, 40, 179-183. doi:10.1177/001698629604000402

- Graffam, B. (2006). A case study of teachers of gifted learners: Moving from prescribed practice to described practitioners. *Gifted Child Quarterly*, 50, 119-131.
doi:10.1177/001698620605000204
- Grigorenko, E. L., Jarvin, L., & Sternberg, R. J. (2002). School-based tests of the triarchic theory of intelligence: Three settings, three samples, three syllabi. *Contemporary Educational Psychology*, 27(2), 167-208. doi:10.1006/ceps.2001.1087
- Grigorenko, E. L., & Sternberg, R. J. (1997). Styles of thinking, abilities, and academic performance. *Exceptional Children*, 63, 295-312.
- Gross, M. U. M. (1994). Changing teacher attitudes towards gifted students through inservice training. *Gifted and Talented International*, 8(2), 15-21.
- Gross, M. U. M. (1997a). Changing teacher attitudes towards gifted children: An early but essential step. In J. Chan, R. Li, & J. Spinks (Eds.), *Maximising potential: Lengthening and strengthening our stride* (pp. 3-22). Hong Kong: World Council for Gifted and Talented Children.
- Gross, M. U. M. (1997b). How ability grouping turns big fish into small fish – or does it? Of optical illusions and optimal environments. *Australasian Journal of Gifted Education*, 6(2), 18-30.
- Gross, M. U. M. (2006). To group or not to group: Is *that* the question? In C. Smith (Ed.), *Including the gifted and talented: Making inclusion work for more gifted and able learners* (pp. 119-137). Abingdon, UK: Routledge.
- Gross, M. U. M., Urquhart, R., Doyle, J., Juratowitch, M., & Matheson, G. (2011). *Releasing the brakes for high-ability learners: Administrator, teacher and parent attitudes and beliefs that block or assist the implantation of school policies on academic acceleration*. GERRIC, Australia: University of New South Wales.

- Gubbins, E. J. (2008). Professional development. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: What the research says* (pp. 515-540). Waco, TX: Prufrock Press.
- Gubbins, E. J. (2014). Professional development for novice and experienced teachers. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: What the research says* (pp. 505-517). Waco, TX: Prufrock Press.
- Gubbins, E. J., Westberg, K. L., Resi, S. M., Dinnocenti, S. T., Tieso, C. L., Muller, L. M., ... Guilford, J. P. (2002). *Implementing a professional development model using gifted education strategies with all students*. Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.
- Guskey, T. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and practice*, 8, 381-91. doi:10.1080/135406002100000512
- Guskey, T. (2014). Measuring the effectiveness of educators' professional development. In L. E. Martin, S. Kragler, D. J. Quatroche, & K. L. Bauserman (Eds.), *Handbook of professional development in education: Successful models and practices, PreK-12* (447-466). New York, NY: Guilford.
- Hallinger, P. (2011). Leadership for learning: lessons from 40 years of empirical research. *Journal of Educational Administration*, 49, 125-142. doi:10.1108/09578231111116699
- Hallinger, P., & Heck, R. (1996). The principal's role in school effectiveness: A review of the empirical research, 1980-1995. *Educational Administration Quarterly*, 32, 5-44. doi:10.1177/0013161X96032001002
- Hallinger, P., & Murphy, J. (1985). What's effective for whom? School context and student achievement. *Planning and Changing*, 16, 152-160.

- Hansen, J., & Feldhusen, J. F. (1994). Comparison of trained and untrained teachers of gifted students. *Gifted Child Quarterly*, 38, 115-121.
doi:10.1177/001698629403800304
- Harackiewicz, J. M., Durik, A. M., Barron, K. E., Linnenbrink-Garcia, L., & Tauer, J. M. (2008). Academic emotions from a social-cognitive perspective: Antecedents and domain specificity of students' affect in the context of Latin instruction. *British Journal of Educational Psychology*, 76, 289-308.
- Hargreaves, A., & Fink, D. (2004). The seven principles of sustainable leadership. *Educational Leadership*, 61(7), 9-13.
- Hargreaves, A., & Fink, D. (2006). *Sustainable leadership*. San Francisco, CA: Jossey-Bass.
- Hargreaves, A., & Fullan, M. (2013). The power of professional capital. *JSD – The Learning Forward Journal*, 34(3), 36-39.
- Hargreaves, A., & Goodson, I. (2004). *Change over time? A report of educational change over 30 years in eight U. S. and Canadian schools*. Chicago, IL: Spencer Foundation.
- Harris, A. N., & Hemmings, B. C. (2008). Preservice teachers' understanding of preparedness for gifted and talented education. *Australasian Journal of Gifted Education*, 17(1), 5-8.
- Hart, R. (1992). *Children's participation: From tokenism to citizenship*. Florence, Italy: UNICEF/International Child Development Centre.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.
- Hattie, J. (2012). *Visible learning for teachers*. New York, NY: Routledge.

- Hattie, J. (2015). *What works best in education: The politics of collaborative expertise*. London, UK: Pearson.
- Hattie, J., & Gan, M. (2011). Instruction based on feedback. In R. E. Mayer & P. A. Alexander (Eds.), *Handbook of research on learning and instruction* (pp. 249-271). New York, NY: Routledge.
- Hawkins, V. J. (2009). Barriers to implementing differentiation: Lack of confidence, efficacy and perseverance. *New England Reading Association Journal*, 44(2), 11-16.
- Hay, I. (1993). Motivation, self-perception and gifted students. *Gifted Education International*, 9, 16-21. doi:10.1177/026142949300900104
- Heacox, D. (2002). *Differentiating instruction in the regular classroom*. Minneapolis, MN: Free Spirit.
- Heacox, D. (2009). *Making differentiation a habit*. Minneapolis, MN: Free Spirit.
- Heath, W. J. (1997). *What are the most effective characteristics of teachers of the gifted?* (ERIC Document Reproduction Service No. 411-665)
- Heinze, A. (2005). Differences in problem solving strategies of mathematically gifted and non-gifted elementary students. *International Education Journal*, 6, 175-183.
- Heller, K. A., Mönks, F. J., Sternberg, R. J., & Subotnik, R. F. (Eds.) (2000). *International handbook of giftedness and talent* (2nd ed.). Oxford, UK: Pergamon.
- Hertberg-Davis, H. L., & Brighton, C. M. (2006). Support and sabotage: Principals' influence on middle school teachers' responses to differentiation. *Journal of Secondary Gifted Education*, 17, 90-102.

- Hertberg-Davis, H. L., & Callahan, C. M. (2013). Defensible curriculum for gifted students: An introduction. In C. M. Callahan & H. L. Hertberg-Davis (Eds.), *Fundamentals of gifted education* (pp. 259-262). New York, NY: Routledge.
- Hertzog, N. B. (2003). Impact of gifted programs from the students' perspectives. *Gifted Child Quarterly*, 47, 131-143. doi:10.1177/001698620304700204
- Heshusius, L. (1995). Listening to children: "What could we possibly have in common?" From concerns with self to participatory consciousness. *Theory into Practice*, 34, 117-123. doi:10.1080/00405849509543668
- Hiebert, M., & Klatt, B. (2001). *The encyclopedia of leadership*. New York, NY: McGraw Hill.
- Higham, R., Hopkins, D., & Matthews, P. (2009). *System leadership in practice*. Berkshire, UK: Open University Press.
- Hill, K. D. (2013). Reclaiming students' voices: Fourth graders' discussion of the great migration in a climate of paced curriculum. *Journal of Advanced Academics*, 24, 141-163.
- Hillman, J. (1996). *The soul's code*. New York, NY: Grand Central.
- Hmelo-Silver, C. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16, 235-266.
doi:10.1023/B:EDPR.0000034022.16470.f3
- Holloway, J. (2000). Preparing teachers for differentiated instruction. *Educational Leadership*, 58(1), 82-83.
- Holman, P., Devan, T., & Cady, S. (2007). *The change handbook*. San Francisco, CA: Berret-Koehler.

- Hoogeveen, L., van Hell, J. G., & Verhoeven, L. (2005). Teacher attitudes towards academic acceleration and accelerated students in the Netherlands. *Journal for the Education of the Gifted*, 29, 30-59. doi:10.1177/016235320502900103
- Howe, M. (1982). Biographical evidence and the development of outstanding individuals. *American Psychologist*, 37, 1071-1081. doi:10.1037/0003-066X.37.10.1071
- Hudson, P., Hudson, S., Lewis, K., & Watters, J. J. (2010). Embedding gifted education in preservice teacher education: A collaborative school-university approach. *Australasian Journal of Gifted Education*, 19(2), 5-15.
- Jackson, D. (2005). Why pupil voice? *Nexus*, Spring, 6-7.
- Jarvis, J. M., & Henderson, L. (2014). Current practices in the education of gifted and advanced learners in South Australian schools. *Australasian Journal of Gifted Education*, 24(2), 70-86.
- Jenkins, J. M., & Keefe, J. W. (2002). Two schools: Two approaches to personalized learning. *Phi Delta Kappan*, 83, 449-456.
- Jensen, B., Hunter, A., Lambert, T., & Clark, A. (2015). *Aspiring principal preparation*. Melbourne, Australia: Australian Institute for Teaching and School Leadership.
- Johnsen, S. K., & Goree, K. K. (2015). Teaching gifted students through independent study. In Karnes, F. A. & Bean, S. A. (Eds.), *Methods and materials for teaching the gifted* (4th ed., pp. 445-478). Waco, TX: Prufrock Press.
- Jung, J. Y. (2014). Predictors of attitudes to gifted programs/provisions: Evidence from preservice educators. *Gifted Child Quarterly*, 58, 247-258. doi:10.1177/0016986214547636

Kaiser, H.F. (1960). The application of electronic computers to factor analysis.

Educational and Psychological Measurement, 20, 141-151.

Kanevsky, L. S. (1992). The learning game. In P. Klein & A. J. Tannenbaum (Eds.). *To be young and gifted* (pp. 204-241). Norwood, NJ: Ablex.

Kanevsky, L. (2011). Deferential differentiation: What types of differentiation do students want? *Gifted Child Quarterly*, 55, 279-299. doi:10.1177/0016986211422098

Kanevsky, L. (2013). *The toolkit for high end curriculum differentiation*. Burnaby, Canada: Simon Fraser University. Retrieved from

<http://www.sfu.ca/~kanevsky/PFL2/Tool%20Kit%202013%20complete.pdf>

Kanevsky, L., & Keighley, T. (2003). To produce or not to produce? Understanding boredom and honor in underachievement. *Roeper Review*, 26, 20-28.

doi:10.1080/02783190309554235

Kanevsky, L., Maker, C. J., Nielsen, A., & Rogers, K. B. (1994). A guide to selecting curriculum modifications based on a student's characteristics. In C. J. Maker & A. Nielsen, *Principles and curriculum development for the gifted* (pp. 26-27). Austin, TX: Pro-ed.

Kaplan, S. N. (2009). Layering differentiated curricula for the gifted and talented. In F. A. Karnes & S. M. Bean (Eds.), *Methods and materials of teaching the gifted* (3rd ed., pp. 107-136). Waco, TX: Prufrock Press.

Karnes, F. A., & Bean, S. M. (2010). *Leadership for students: A guide for young leaders* (2nd ed.). Waco, TX: Prufrock Press.

Karnes, F. A., & Chauvin, J. C. (1986). The leadership skills: Fostering the forgotten dimension of giftedness. *Gifted Child Today*, 9, 22-23.

Karnes, F. A., & Chauvin, J. C. (2000). *Leadership development program*. Scottsdale, AZ: Gifted Psychology Press.

- Kaufman, S. B., & Sternberg, R. J. (2008). Conceptions of giftedness. In S. J. Pfeiffer (Ed.), *Handbook of giftedness in children: Psychoeducational theory, research, and best practices* (pp. 71-91). New York, NY: Springer.
- Keefe, J. W., & Jenkins, J. M. (2002). Personalized instruction. *Phi Delta Kappan*, 83, 440-448. doi:10.1177/003172170208300609
- Kenworthy, J. (2011). 'We're the ones who are going to live here': Children's voices in the regeneration of their local area. In G. Czerniawski & W. Kidd (Eds.), *The student voice handbook: Bridging the academic/practitioner divide* (pp. 89-96). Bingley, WA: Emerald.
- Kershner, R., & Pointon, P. (2000). Children's views of the primary classroom as an environment for working and learning. *Research in Education*, 64, 64-77.
- Kitano, M. K. (1995). Language diversity and giftedness: Working with gifted English language learners. *Journal for the Education of the Gifted*, 26, 292-303. doi:10.1177/016235329501800302
- Klem, A., & Connell, J. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health*, 74, 262-273. doi:10.1111/j.1746-1561.2004.tb08283.x
- Könings, K. D., Brand-Gruwel, S., & van Merriënboer, J. J. G. (2011). Participatory instructional redesign by students and teachers in secondary education: Effects on perceptions of instruction. *Instructional Science*, 39, 737-762. doi:10.1007/s11251-010-9152-3
- Könings, K. D., Seidel, T., Brand-Gruwel, S., & van Merriënboer, J. J. G. (2014). Differences between students' and teachers' perceptions of education: profiles to describe congruence and friction. *Instructional Science*, 42, 11-30.

- Kotter, J. P. (1995). Leading change: Why transformational efforts fail. *Harvard Business Review*, March/April, 1-3.
- Kotter, J. P. (1996). *Leading change*. Boston, MA: Harvard Business School Press.
- Kotter, J. P. (1998). Winning at change. *Leader to Leader*, 10, 27-33.
- Kronborg, L., & Plunkett, M. (2012). Examining teacher attitudes and perceptions of teacher competencies required in a new selective high school. *The Australasian Journal of Gifted Education*, 21(2), 33-46.
- Kulik, J. A., & Kulik, C. C. (1992). *An analysis of the research on ability grouping: Historical and contemporary perspectives* (Research Monograph No. 9204). Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.
- Lambert, L., Walker, D., Zimmerman, D. P., Cooper, J. E., Lambert, M. D., Gardner, M. E., Slack, P. J. F. (2002). *The constructivist leader* (2nd ed.). New York, NY: Teachers College Press.
- Landis, R. N., & Reschly, A. L. (2013). Reexamining gifted underachievement and dropout through the lens of student engagement. *Journal for the Education of the Gifted*, 36, 220-249. doi:10.1177/0162353213480864
- Landvogt, J. (2001). Affecting eternity: Teaching for talent development. *Roeper Review*, 23, 190-196. doi:10.1080/02783190109554097
- Lang, Q. C., Wong, A. F. L., & Fraser, B. J. (2005). Teacher-student interaction and gifted students' attitudes towards chemistry in laboratory classrooms in Singapore. *Journal of Classroom Interaction*, 40(1), 18-28.
- Lassig, C. J. (2009). Teachers' attitudes towards the gifted: The importance of professional development and school culture. *Australasian Journal of Gifted Education*, 18(2), 32-42.

- Lee, S-Y, Cramond, B., & Lee, J. (2004). Korean teachers' attitudes towards academic brilliance. *Gifted Child Quarterly*, 48, 42-53.
doi:10.1177/001698620404800105
- Leithwood, K. (1994). Leadership for school restructuring. *Educational Administration Quarterly*, 30(4), 498-518.
- Leithwood, K., Begley, P., & Cousins, B. (1990). The nature, causes and consequences of principals' practices: An agenda for future research. *Journal of Educational Administration*, 28, 5-31. doi:10.1108/09578239010001014
- Leithwood, K., Day, C., Sammons, P., Harris, A., & Hopkins, D. (2006). Seven strong claims about successful school leadership. *School Leadership and Management*, 28, 27-42. doi:10.1080/13632430701800060
- Leithwood, K., Patten, S., & Jantzi, D. (2010). Testing a conception of how school leadership influences student learning. *Educational Administration Quarterly*, 46, 671-706. doi:10.1177/0013161X10377347
- Leithwood, K., & Riehl, C. (2003). *What do we already know about successful school leadership?* Washington, DC: AERA Division A Task Force on Developing Research in Educational Leadership.
- Leithwood, K., & Seashore Louis, K. (2012). *Linking leadership to student learning*. San Francisco, CA: Jossey-Bass.
- Leithwood, K., Seashore Louis, K., Anderson, S., & Wahlstrom, K. (2004). *Review of research: How leadership influences student learning*. The Wallace Foundation.
Retrieved from <http://www.wallacefoundation.org/knowledge-center/school-leadership/key-research/documents/how-leadership-influences-student-learning.pdf>

- Lens, W., & Rand, P. (2000). Motivation and cognition: Their role in the development of giftedness. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (pp. 193-202). Oxford, UK: Elsevier Science.
- Levin, B. (2000). Putting students at the centre in education reform. *Journal of Educational Change*, 1, 155-172. doi:10.1023/A:1010024225888
- Lewis, J. D., Cruzeiro, P. A., & Hall, C. A. (2007). Impact of two elementary school principals' leadership on gifted education in their buildings. *Gifted Child Today*, 30(2), 56-62.
- Lewis, E., & Milton, M. (2005). Attitudes of teachers before and after professional development. *Australasian Journal of Gifted Education*, 14(1), 5-14.
- Li, A. K. F., & Adamson, G. (1992). Gifted secondary students' preferred learning style: Cooperative, competitive, or individualistic? *Journal for the Education of the Gifted*, 16, 46-54. doi:10.1177/016235329201600106
- Lick, D. W., Clauzet, K. H., & Murphy, C. U. (2013). *Schools can change: A step-by-step change creation system for building innovative schools and increasing student learning*. Thousand Oaks, CA: Corwin.
- Lundy, L. (2007). 'Voice' is not enough: Conceptualising Article 12 of the United Nations Convention on the Rights of the Child. *British Educational Research Journal*, 33, 927-942.
- MacBeath, J. (2006). Finding a voice, finding self. *Educational Review*, 58, 195-207.
- MacLeod, B. (2004). *GERRIC Module 5: Professional development package for teachers*. University of New South Wales. Retrieved from https://education.arts.unsw.edu.au/media/EDUCFile/Module5_SECONDARY.pdf

- Maddux, C. D., Samples-Lachmann, I., & Cummings, R. E. (1985). Preferences of gifted students for selected teacher characteristics. *Gifted Child Quarterly*, 29, 160-163. doi:10.1177/001698628502900404
- Maker, C. J. (1982). *Curriculum development for the gifted*. Rockville, MD: Aspen.
- Maker, C. J. (1986). Developing scope and sequence for the gifted. *Gifted Child Quarterly*, 4, 151-158. doi:10.1177/001698628603000402
- Maker, C. J., & Nielson, A. (1996). *Curriculum development and teaching strategies for gifted learners* (2nd ed.). Austin, TX: Pro-Ed.
- Maker, C. J., & Schiever, S.W. (2010). *Curriculum development and teaching strategies for gifted learners* (3rd ed.). Austin, TX: Pro-Ed.
- Maker, C. J., Zimmerman, R., Alhusaini, A., & Pease, R. (2015). Real engagement in Active Problem Solving (REAPS): An evidence based model that meets content, process, product, and learning environment principles recommended for gifted students. *APEX: The New Zealand Journal of Gifted Education*, 19(1). Retrieved from www.giftedchildren.org.nz/apex
- Manefield, J., Collins, R., Mahar, S., Moore, J., & Warne, C. (2007). *Student voice: A historical perspective and new directions*. Paper No. 10, Melbourne, Australia: Research and Innovation Division, DET. Retrieved from https://www.eduweb.vic.gov.au/edulibrary/public/publ/research/publ/student_voice_report.pdf
- Marks, H.M., & Printy, S. M. (2003). Principal leadership and school performance: Integrating transformational and instructional leadership. *Educational Administration Quarterly*, 39(3), 370-397. doi:10.1177/0013161X03253412
- Marzano, R. J., Waters, T., & McNulty, B. A. (2005). *School leadership that works*. Alexandria, VA: ASCD.

- Matsko, V., & Thomas, J. (2014). The problem is the solution: Creating original problems in gifted mathematics classes. *Journal for the Education of the Gifted*, 37, 153-170. doi:10.1177/0162353214529043
- Matthews, D., & Kitchen, J. (2007). School-within-a-school gifted programs: Perceptions of students and teachers in public secondary schools. *Gifted Child Quarterly*, 51, 256-271. doi:10.1177/0016986207302720
- Matthews, D. J., & Foster, J. F. (2005). A dynamic scaffolding model of teacher development: The gifted teacher consultant as catalyst for change. *Gifted Child Quarterly*, 49, 222-230. doi:10.1177/001698620504900304
- Matthews, M. S., & McBee, M. T. (2007). School factors and the underachievement of gifted students in a talented summer program. *Gifted Child Quarterly*, 51, 167-181. doi:10.1177/0016986207299473
- McCluskey, K. W., Treffinger, D. J., & Baker, P. A. (1995). Talent recognition and development: Challenges for schools of tomorrow. *Illinois Association for Gifted Children Journal/Portfolio*, Article 10, 1-5.
- McCluskey, K. W., Treffinger, D. J., & Baker, P. A. (1998). The amphitheater model: An approach to talent recognition and development. In D. J. Treffinger & K. W. McCluskey (Eds.), *Teaching for talent development: Current and expanding perspectives* (pp. 7-17). Sarasota, FL: Center for Creative Learning.
- McCoach, D. B., & Siegle, D. (2003a). The structure and function of academic self-concept in gifted and general education samples. *Roeper Review*, 25, 61-65. doi:10.1080/02783190309554200
- McCoach, D. B., & Siegle, D. (2003b). Factors that differentiate underachieving gifted students from high-achieving gifted students. *Gifted Child Quarterly*, 47, 144-154. doi:10.1177/001698620304700205

- McCoach, D. B., & Siegle, D. (2007). What predicts teachers' attitude towards the gifted? *Gifted Child Quarterly*, 51, 246-254. doi:10.1177/0016986207302719
- McCombs, B. L. (2000). *Assessing the role of educational technology in the teaching and learning process: A learner-centred perspective*. Paper presented at the Secretary's Conference on Educational technology: Measuring Impacts and Shaping the Future. Washington, DC. Retrieved from <http://files.eric.ed.gov/fulltext/ED452830.pdf>
- McCombs, B. L. (2003). Providing a framework for the redesign of K-12 education in the context of current educational reform issues. *Theory into Practice*, 42, 93-101. doi:10.1207/s15430421tip4202_2
- McCombs, B. L., & Miller, L. (2007). *Learner-centred classroom practices and assessments: Maximizing student motivation, learning, and achievement*. Thousand Oaks, CA: Corwin Press.
- McCombs, B. L., & Miller, L. (2009). *The school leader's guide to learner-centred education: From complexity to simplicity*. Thousand Oaks, CA: Corwin Press.
- McCormick, K. M., & Plucker, J. A. (2013). Connecting student engagement to the academic and social needs of gifted and talented students. In K. H. Kim, J. C. Kaufman, J. Baer, & B. Sriraman (Eds.), *Creatively gifted students are not like other gifted students: Research, theory, and practice* (pp. 121-136). Rotterdam, The Netherlands: Sense.
- McHatton, P. A., Boyer, N. R., Shaunessy, E., Terry, P. M., & Farmer, J. L. (2010). Principals' perceptions of preparation and practice in gifted and special education content: Are we doing enough? *Journal of Research on Leadership Education*, 5, 1-20.

- McIntyre, D., Pedder, D., & Rudduck, J. (2005). Pupil voice: Comfortable and uncomfortable learnings for teachers. *Research Papers in Education*, 20, 149-168. doi:10.1080/02671520500077970
- McNeely, C. A., Nonnemaker, J. M., & Blum, R. W. (2002). Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. *Journal of School Health*, 72(4), 138-146. doi:10.1111/j.1746-1561.2002.tb06533.x
- Megay-Nespoli, K. (2001). Beliefs and attitudes of novice teachers regarding instruction of academically talented teachers. *Roeper Review*, 23, 178-182. doi:10.1080/02783190109554092
- Mehan, H., Datnow, A., & Hubbard, L. (2003). Why educational reforms sustain or fail: Lessons for educational leaders. In B. Davies & J. West-Burnham (Eds.), *Handbook of educational leadership and management* (pp. 460-477). London, UK: Pearson Longman.
- Merriam, S. B. (1988). *Case study research in education: A qualitative approach*. San Francisco, CA: Jossey-Bass.
- Milgram, R. M. (1979). Perception of teacher behaviour in gifted and nongifted children. *Journal of Educational Psychology*, 71, 125-128. doi:10.1037/0022-0663.71.1.125
- Miller, E. M. (2009). The effect of training in gifted education on elementary classroom teachers' theory-based reasoning about the concept of giftedness. *Journal for the Education of the Gifted*, 33, 65-105.
- Miller, A. L., Latz, A. O., Jenkins, S. C. W., & Adams, C. M. (2011). A pastiche of outcomes for a teacher-student pair: Experiences within a reading cluster group. *Creative Education*, 3, 61-66.

- Mills, C. J. (2003). Characteristics of effective teachers of gifted students: Teacher background and personality styles of students. *Gifted Child Quarterly*, 47, 272-281. doi:10.1177/001698620304700404
- Ministerial Council on Education, Employment, Training and Youth Affairs. (2008). *Melbourne Declaration on Educational Goals for Young Australians*. Melbourne, Australia: MCEETYA. Retrieved from http://www.curriculum.edu.au/verve/_resources/national_declaration_on_the_educational_goals_for_young_australians.pdf
- Missett, T. C., Brunner, M. M., Callahan, C. M., Moon, T. R., & Azano, A. P. (2014). Exploring teacher beliefs and use of acceleration, ability, grouping, and formative assessment. *Journal for the Education of the Gifted*, 37, 245-268. doi:10.1177/0162353214541326
- Missett, T., & McCormick, K. (2014). Conceptions of giftedness. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: What the research says* (2nd ed., pp. 143-158). Waco, TX: Prufrock Press.
- Mitra, D. (2001). Opening the floodgates: Giving students a voice in school reform. *Forum*, 43(2), 91-94.
- Mitra, D. L. (2003). Student voice in school reform: Reframing student-teacher relationships. *McGill Journal of Education*, 38, 289-304.
- Mitra, D. L. (2004). The significance of students: Can increasing “student voice” in schools lead to gains in youth development? *Teachers College Record*, 106, 651-688.
- Mitra, D. L. (2005). Adults advising youth: Leading while getting out of the way. *Educational Administration Quarterly*, 41, 520-553. doi:10.1177/0013161X04269620

- Mitra, D. L. (2006). Youth as a bridge between home and school. *Education and urban society*, 38, 455-480. doi:10.1177/0013124506287911
- Mitra, D. L. (2007). The role of administrators in enabling youth-adult partnerships in schools. *NASSP Bulletin*, 91, 237-256. doi:10.1177/0192636507305964
- Mitra, D., Serriere, S., & Stoicovy, D. (2012). The role of leaders in enabling student voice. *Management in Education*, 26(3), 104-112.
doi:10.1177/0892020612445678
- Mockler, N., & Groundwater-Smith, S. (2015). *Engaging with student voice in research education and community: Beyond legitimation and guardianship*. Switzerland: Springer International.
- Montgomery, D. (Ed.). (2000). *Able underachievers*. London: Whurr.
- Montgomery, D. (2001). Teaching the more able: An update. *Gifted Education International*, 15, 262-280.
- Moon, S. M. (1995). The effects of an enrichment program on the families of participants: A multiple-case study. *Gifted Child Quarterly*, 39, 198-208.
doi:10.1177/001698629503900403
- Moon, S. M. (1996). Using the Purdue three-stage model to facilitate local program evaluations. *Gifted Child Quarterly*, 40, 121-128.
doi:10.1177/001698629604000302
- Moon, T. R., & Brighton, C. M. (2008). Primary teachers' conceptions of giftedness. *Journal for the Education of the Gifted*, 31, 447-480.
- Moon, T. R., Brighton, C. M., Callahan, C. M., & Robinson, A. (2005). Development of authentic assessments for the middle school classroom. *The Journal of Secondary Gifted Education*, 26, 119-133.

- Moon, S. M., Kolloff, P., Robinson, A., Dixon, F., & Feldhusen, J. F. (2009). The Purdue Three-Stage Model. In J. S. Renzulli, E. J. Gubbins, K. S. McMillen, R. D. Eckert, & C. A. Little (Eds.), *Systems and models for developing programs for the gifted and talented* (2nd ed., pp. 289-321). Mansfield Center, CT: Creative Learning Press.
- Morris, S. K. (1987). Student teachers' attitudes towards gifted students. *Creative Child and Adult Quarterly*, 12(2), 112-114.
- Mumford, M. D. (1998). Creative thought: Structure, components, and educational implications. *Roeper Review*, 21, 14-19. doi:10.1080/02783199809553920
- Nelson, K. C., & Prindle, N. (1992). Gifted teacher competencies: Ratings by rural principals and teachers compared. *Journal for the Education of the Gifted*, 15, 357-369. doi:10.1177/016235329201500405
- Newman, J. L., Dantzler, J., & Coleman, A. N. (2015). Science in action: How middle school students are changing their world through STEM service-learning projects. *Theory into Practice*, 54, 47-54. doi:10.1080/00405841.2015.977661
- Nielson, M. E. (2002). Gifted students with learning disabilities: Recommendations for identification and programming. *Exceptionality*, 10, 93-111.
- Nieto, S. (2003). *What keeps teachers going?* New York, NY: Teachers College Press.
- Norman, G. R., & Streiner, D. L. (2008). *Biostatistics: The bare essentials* (3rd ed.). New York, NY: Pearson.
- NSW Department of Education and Training. (2004a). *Guidelines for the use of strategies to support gifted and talented students*. Retrieved from <http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/polgdl.pdf>

NSW Department of Education and Training. (2004b). *Policy and implementation strategies for education of the gifted and talented students*. Retrieved from <http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/polimp.pdf>

NSW Department of Education and Training. (2004c). *Policy and implementation strategies for education of the gifted and talented students: Acceleration*. Sydney, Retrieved from <http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/polsuppacc.pdf>

NSW Department of Education and Training. (2004d). *Policy and implementation strategies for the education of the gifted and talented students: Identification*. Retrieved from <http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/polsuppid.pdf>

NSW Department of Education and Training. (2004e). *Policy for the education of the gifted and talented students*. Retrieved from <http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/polimp.pdf>

NSW Department of Education and Training. (2006). *Gifted and Talented Policy*. NSWDET. Retrieved from <https://www.det.nsw.edu.au/policies/curriculum/schools/gats/PD20040051.shtml>

NSW Department of Education and Communities. (2012). *Gifted and talented education (GATE) review: Unleash the power of collective inquiry*. Sydney, Australia: Author.

- Oakes, J. (1985). *Keeping track: How schools structure inequality*. New Haven, CT: Yale University Press.
- Oakes, J., & Lipton, M. (2002). *Teaching to change the world*. New York, NY: McGraw-Hill.
- Ogan-Bekiroglu, F., & Akkok, H. (2009). Pre-service teachers' instructional beliefs and examination of consistency between beliefs and practices. *International Journal of Science and Mathematics Education*, 7, 1173-1199.
- Oldfather, P. (1995). Learning from student voices. *Theory into Practice*, 34, 86-87.
doi:10.1080/00405849509543662
- Olszewski-Kubilius, P., & Dixon, F. A. (2008). Talent search programs for gifted adolescents. In F. A. Dixon (Ed.), *Programs and services for gifted secondary students* (pp. 133-141). Waco, TX: Prufrock Press.
- Olszewski-Kubilius, P. M., Kulieke, M. J., & Krasney, N. (1988). Personality dimensions of gifted adolescents: A review of the empirical literature. *Gifted Child Quarterly*, 32, 347-52. doi:10.1177/001698628803200403
- Parke, B. N. (1989). Educating the gifted and talented: An agenda for the future. *Educational Leadership*, 46(1), 4-5.
- Parliament of the Commonwealth of Australia. (2001). *The education of gifted children*. Retrieved from <http://trove.nla.gov.au/work/31974215>
- Patrick, H., Bangel, N. J., Keon, K-N, Townsend, M. A. R. (2005). Reconsidering the issue of cooperative learning with gifted students. *Journal for the Education of the Gifted*, 29, 90-108. doi:10.1177/016235320502900105
- Patrick, H., Gentry, M., Moss, J. D., & McIntosh, J. S. (2015). Understanding gifted and talented adolescents' motivation. In F. A. Dixon & S. M. Moon (Eds.), *The*

- handbook of secondary gifted education* (pp. 185-209). Waco, TX: Prufrock Press.
- Patrick, H., Gentry, M., & Owen, S. V. (2006). Motivation and gifted adolescents. In F. A. Dixon & S. M. Moon (Eds.), *The handbook of secondary gifted education* (pp. 165-189). Waco, TX: Prufrock Press.
- Patrick, H., & Ryan, A. (2008). What do students think about when evaluating their classroom's mastery goal structure? An examination of young adolescents' explanations. *Journal of Experimental Education*, 77, 99-123.
doi:10.3200/JEXE.77.2.99-124
- Patton, M. Q. (2002). *Qualitative evaluation and research methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Perković Krijan, I., & Borić, E. (2015). Teachers' attitudes towards gifted students and differences in attitudes regarding the years of teaching. *Croatian Journal of Education*, 17(1), 165-178.
- Perkul, S., & Levin, B. (2007). Building student voice for school improvement. In D. Thiessen and A. Cook-Sather (Eds.), *International handbook of student experience in elementary and secondary school* (pp. 711-726). Dordrecht, The Netherlands: Springer.
- Peters, S. J. (2016). The bright versus gifted comparison: A distraction from what matters. *Gifted Child Today*, 39(2), 125-127.
- Peters, W. A. M., Grager-Loidl, H., & Supplee, P. (2000). Underachievement in gifted children and adolescents: Theory and practice. In K. A. Heller, F. J. Möns, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (pp. 609-620). Oxford, UK: Elsevier Science.

- Phillips, N., & Lindsay, G. (2006). Motivation in gifted students. *High Ability Studies*, 17, 57-73. doi:10.1080/13598130600947119
- Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: Conceptualizing, measuring, and improving the capacity of classroom interactions. In S. L. Christenson, A. L. Reschly, & C. Wiley (Eds.), *Handbook of Research on Student Engagement* (pp. 365-386). New York, NY: Springer.
- Pierce, R., Cassady, J., Adams, C., Neumeister, K., Dixon, F., & Cross, T. (2011). The effects of clustering and curriculum on the development of gifted learners' math achievement. *Journal for the Education of the Gifted*, 34, 569-596. doi:10.1177/016235321103400403
- Piirto, J. (1994). *Talented children and adults: Their development and education*. New York, NY: Merrill.
- Plunkett, M. (2000a). Impacting on teacher attitudes towards gifted students. *Australasian Journal of Gifted Education*, 9(2), 33-42.
- Plunkett, M. (2000b). Educating teachers to meet the needs of gifted students: An option or a necessity? *TalentEd*, 18(1 & 2), 9-13.
- Pont, B., Nusche, D., & Hopkins, D. (Eds.). (2008). *Improving school leadership. Volume 2: Case studies on system leadership*. OECD. Retrieved from <http://www.oecd.org/edu/school/44375122.pdf>
- Porath, M. (2009). What makes a gifted educator? A design for development. In L. V. Shavinina (Ed.), *International handbook on giftedness* (pp. 825-837). Québec, Canada: Springer.

- Portin, B., Schneider, P., DeArmond, M., & Gundlach, L. (2003). *Making sense of leading schools: A study of the school principalship*. Seattle, WA: Center on Reinventing Public Education.
- Powers, E. A. (2008). The use of independent study as a viable differentiation technique for gifted learners in the regular classroom. *Gifted Child Today*, 31(3), 57-65.
- Pyryt, M., Sandals, L. H., & Begoray, J. (1998). Learning style preferences of gifted, average-ability, and special needs students: A multivariate perspective. *Journal of Research in Childhood Education*, 13, 71-76.
doi:10.1080/02568549809594728
- Rambo, K. E., & McCoach, D. B. (2012). Teacher attitudes towards subject-specific acceleration: Instrument development and validation. *Journal for the Education of the Gifted*, 35, 129-152. doi:10.1177/0162353212440591
- Rayneri, L. J., Gerber, B. L., & Wiley, L. P. (2006). The relationship between classroom environment and the learning style preferences of gifted middle school students and the impact on levels of performance. *Gifted Child Quarterly*, 50, 104-118. doi:10.1177/001698620605000203
- Reeves, D. B. (2009). *Leading change in your school: How to conquer myths, build commitment, and get results*. Alexandria, VA: ASCD.
- Reis, S. M., Gubbins, E. J., Briggs, C., Schreiber, F., Richards, S., Jacobs, J., Eckert, R. D., & Renzulli, J. S. (2004). Reading instruction for talented readers: Few opportunities for continuous progress. *Gifted Child Quarterly*, 48, 315-338.
doi:10.1177/001698620404800406
- Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly*, 44, 152-170.
doi:10.1177/001698620004400302

- Reis, S. M., & Purcell, J. (1993). An analysis of content elimination and strategies used by elementary classroom teachers in the curriculum compacting process. *Journal for the Education of the Gifted*, 16, 147-170. doi:10.1177/016235329301600205
- Reis, S. M., & Renzulli, J. S. (2011). Intellectual giftedness. In R. J. Sternberg & S. B. Kaufman (Eds.), *The Cambridge handbook of intelligence* (pp. 235-252). Cambridge, UK: Cambridge University Press.
- Reis, S. M., Sullivan, E. E., & Renzulli, S. J. (2015). Characteristics of gifted learners. In F. A. Karnes & S. M. Bean (Eds.), *Methods and materials for teaching the gifted* (4th ed., 69-103). Waco, TX: Prufrock Press.
- Reis, S. M., & Westberg, K. L. (1994). The impact of staff development on teachers' ability to modify curriculum for gifted and talented students. *Gifted Child Quarterly*, 38, 127-135. doi:10.1177/001698629403800306
- Reis, S. M., Westberg, K. L., Kulikowich, J. M., & Purcell, J. H. (1998). Curriculum compacting and achievement test scores: What does the research say? *Gifted Child Quarterly*, 42, 123-129. doi:10.1177/001698629804200206
- Renzulli, J. S. (1986). The three ring conception of giftedness: A developmental model of creative productivity. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 53-92). New York, NY: Cambridge University Press.
- Renzulli, J. S. (1992). A general theory for the development of creative productivity in young people. In F. J. Mönks & W. A. M. Peters (Eds.), *Proceedings of the ninth world conference on gifted and talented children: Talent for the future* (pp. 51-72). Maastricht, The Netherlands: Van Gorcum.
- Renzulli, J. S., Gubbins, E. J., McMillen, K. S., Eckert, R. D., & Little, C. A. (2009). *Systems and models for developing programs for the gifted and talented* (2nd ed.). CT: Creative Learning Press.

- Renzulli, J. S., & Park, S. (2000). Gifted dropouts: The who and why. *Gifted Child Quarterly*, 44, 261-271. doi:10.1177/001698620004400407
- Renzulli, J. S., Smith, L. H., White, A. J., Callahan, C. M., Hartman, R. K., Westberg, K. L., ... Sytsma Reed, R. E. (2002). *Scales for rating the behavioural characteristics of superior students*. Mansfield Center, CT: Creative Learning Press.
- Reynolds, F. C., & Piirto, J. (2007). Honoring and suffering the thorn: Marking, naming, and eldering depth psychology II. *Roeper Review*, 29(5), 48-53.
- Ricca, J. (1984). Learning styles and preferred instructional strategies of gifted students. *Gifted Child Quarterly*, 28, 121-126. doi:10.1177/001698628402800305
- Riley, T. L. (2015). Differentiating the learning environment. In F. A. Karnes, & S. M. Bean (Eds.) *Methods and materials for teaching the gifted*. (pp. 201-220). Waco, TX: Prufrock Press.
- Ristow, R. S., Edeburn C. E., & Ristow, G. L. (1985). Learning preferences: A comparison of gifted and above-average middle grades students in small schools. *Roeper Review*, 8, 119-124. doi:10.1080/02783198509552951
- Ritchotte, J. A., Suhr, D., Alfurayh, N. F., & Graefe, A. K. (2016). An exploration of the psychosocial characteristics of high achieving students and identified gifted students: Implications for practice. *Journal of Advanced Academics*, 27(1), 23-38. doi:10.1177/1932202X15615316
- Robinson, A., Shore, B. M., & Enersen, D. L. (2007). *Best practices in gifted education: An evidence-based guide*. Waco, TX: Prufrock Press.
- Robinson, V. (2011). *Student-centred leadership*. San Francisco, CA: Jossey-Bass.
- Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types.

Educational Administration Quarterly, 44, 635-674.

doi:10.1177/0013161X08321509

- Robson, C. (2002). *Real world research: A resource for social scientists and practitioner-researchers* (2nd ed.). Oxford, UK: Blackwell.
- Roeper, A. (1988). Should educators of the gifted and talented be more concerned with world issues? *Roeper Review*, 11, 12-13. doi:10.1080/02783198809553151
- Rogers, K. B. (1993). Grouping the gifted and talented: Question and answers. *Roeper Review*, 16, 8-12. doi:10.1080/02783199309553526
- Rogers, K. B. (2002). *Re-forming gifted education: Matching the program to the child*. Scottsdale, AZ: Great Potential Press.
- Rogers, K. B. (2004). The academic effects of acceleration. In N. Colangelo, S. G. Assouline, & M. U. M. Gross (Eds.), *A nation deceived* (pp. 47-58, Vol. ii). Washington, DC: NAGC.
- Rogers, K. B. (2007). Lessons learned about educating the gifted and talented: A synthesis of the research on educational practice. *Gifted Child Quarterly*, 51, 382-396. doi:10.1177/0016986207306324
- Rogers, K. B. (2009). What we know about appropriate curriculum and instruction for gifted learners. In B. MacFarlane & T. Stambaugh (Eds.), *Leading change in gifted education: The festschrift of Dr. Joyce VanTassel-Baska* (pp. 263-270). Waco, TX: Prufrock Press.
- Rossman, G. B., & Rallis, S. F. (2011). *Learning in the field: an introduction to qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.
- Rotigel, J. V. (2003). Understanding the young gifted child: Guidelines for parents, families, and educators. *Early Childhood Education Journal*, 30, 209-214. doi:10.1023/A:1023331422963

- Rowe, K. (2007). *The imperative of evidence based instructional leadership: Building capacity within professional learning communities via a focus on effective teaching practice*. Background paper to keynote address presented at the Sixth International Conference on Educational Leadership. Wollongong, Australia.
- Rowley, J. L. (2012). Professional development needs of teachers to identify and cater for gifted students. *Australasian Journal of Gifted Education*, 21(2), 75-80.
- Rudduck, J. (2002). The transformative potential of consulting young people about teaching, learning and schooling. *Scottish Educational Review*, 34(2), 123-137.
- Rudduck, J. (2007). Student voice, student engagement, and school reform. In D. Thiessen & A. Cook-Sather (Eds.), *International handbook of student experience in elementary and secondary school* (pp. 711-726). Dordrecht, The Netherlands: Springer.
- Rudduck, J., & Demetriou, H. (2003). Student perspectives and teacher practices: The transformative potential. *McGill Journal of Education*, 38(2), 274-288.
- Rudduck, J., & Flutter, J. (2000). Pupil participation and perspective: 'craving a new order of experience'. *Cambridge Journal of Education*, 30, 75-89.
doi:10.1080/03057640050005780
- Rudduck, J., & McIntyre, D. (2007). *Improving learning through consulting pupils*. New York, NY: Routledge.
- Runco, M. A. (1986). Maximal performance on divergent thinking tests by gifted, talented and nongifted children. *Psychology in the Schools*, 23, 308-315.
doi:10.1002/1520-6807
- Runco, M.A., & Nemiro, J. (1994). Problem finding, creativity, and giftedness. *Roeper Review*, 16, 235-241. doi:10.1080/02783199409553588

- Sadowski, A. J. (1987). A case study of the experiences of and influences upon gifted high school dropouts. *Dissertation Abstracts International*, 48, 893. (University Microfilms International No. AAC87-16185)
- Samson, G. E., Grane, M. E., Weinstein, T., & Walberg, H. J. (1984). Academic and occupational performance: A quantitative synthesis. *American Educational Research Journal*, 21, 311-321. doi:10.3102/00028312021002311
- Saphier, J., King, M., & D'Auria, J. (2006). Three strands form strong school leadership. *Journal of Staff Development*, 27(2), 51-57.
- Schlechty, P. (1997). *Inventing better schools: An action plan for educational reform*. San Francisco, CA: Jossey-Bass.
- Schlichte-Hiersemenzel, B. (2001). The psychodynamics of psychological and behavioural difficulties of highly able children: Experiences from a psychotherapeutic practice. In D. Montgomery (Ed.), *Able underachievers* (pp. 52-61). London, UK: Whurr.
- Schlichter, C. L., & Palmer, W. R. (Eds.) (1993). *Thinking smart: A premiere of the talents unlimited model*. Mansfield Center, CT: Creative Learning Press.
- Schmoker, M. (2006). *Results now: How we can achieve unprecedented improvements in teaching and learning*. Alexandria, VA: ASCD.
- Schneider, W. (2000). Giftedness, expertise, and (exceptional) performance: A developmental perspective. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. J. Subotnik (Eds.), *International handbook of giftedness and talent* (pp. 165-177). Oxford, UK: Elsevier Science. doi:10.1177/1932202X0902000302
- Schroth, S. T., & Helfer, J. A. (2009). Practitioners' conceptions of academic talent and giftedness: Essential factors in deciding classroom and school composition.

Journal of Advanced Academics, 20, 384-503.

doi:10.1177/1932202X0902000302

Schunk, D. H., Pintrich, P. R., & Meece, J., L. (2008). *Motivation in education* (3rd ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Schwartz, D. L., Lin, X., Brophy, S., & Bransford, J. D. (1999). Towards the development of flexibly adaptive instructional designs. In C. M. Reigeluth (Ed.), *Instructional design theories and models* (pp. 183-213, Vol. II). Hillsdale, NJ: Erlbaum.

Selby, E. C., Shaw, E. J., & Houtz, J. C. (2005). The creative personality. *Gifted Child Quarterly*, 49, 300-315. doi:10.1177/001698620504900404

Shaunessy-Dedrick, E., Evans, L., Ferron, J., & Lindo, M. (2015). Effects of differentiated reading on elementary students' reading comprehension and attitudes towards reading. *Gifted Child Quarterly*, 59(2), 91-107. doi:10.1177/0016986214568718

Shernoff, D. J., Csikszentmihalyi, M., Schneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, 18, 158-176. doi:10.1521/scpq.18.2.158.21860

Shields, C. M. (2002). A comparison study of students' attitudes and perceptions in homogeneous and heterogeneous classrooms. *Roeper Review*, 46, 407-441.

Shier, H. (2001). Pathways to participation: Openings, opportunities and obligations. *Children & Society*, 15(2), 107-117. doi:10.1002/chi.617

Shore, B. M. (2000). Metacognition and flexibility: Qualitative differences in how gifted children think. In R. C. Friedman & B. M. Shore (Eds.), *Talents unfolding: Cognition and development* (pp. 167-187). Washington, DC: American Psychological Association.

- Shore, B. M., Rejskind, F. G., & Kanevsky, L. S. (2003). Cognitive research on giftedness: A window on creativity. In D. C. Ambrose, L. Cohen, & A. J. Tannenbaum (Eds.), *Creative intelligence: Towards theoretic integration* (pp. 181-210). New York, NY: Hampton Press.
- Siegle, D. (2013). *The underachieving gifted child: Recognizing, understanding, and reversing underachievement*. Waco, TX: Prufrock Press.
- Siegle, D., & McCoach, D. B. (2005). *Motivating gifted students*. Waco, TX: Prufrock Press.
- Siegle, D., Rubenstein, L. D., & Mitchell, M. S. (2014). Honors students' perceptions of their high school experiences: The influence of teachers on student motivation. *Gifted Child Quarterly*, 58, 35-50. doi:10.1177/0016986213513496
- Siegle, D., & Schuler, P. A. (2000). Perfectionism: Differences in Gifted Middle School Students. *Roeper Review*, 23, 39-44. doi:10.1080/02783190009554060
- Siegle, D., Wilson, H. E., & Little, C. (2013). A sample of gifted and talented educators' attitudes about academic acceleration. *Journal of Advanced Academics*, 24, 27-51. doi:10.1177/1932202X12472491
- Silva, P. (2001). Squeaky wheels and flat tires: A case of students as reform participants. *Forum*, 43(2), 95-99.
- Silverman, L. K. (2013). *Giftedness 101*. New York, NY: Springer.
- Silverman, L. K., & Ellsworth, B. (1980). The theory of positive disintegration and its implications for giftedness. In N. Duda (Ed.), *Theory of positive disintegration: Proceedings of the third international conference* (pp. 179-194). Miami, FL: University of Miami School of Medicine.
- Sisk, D. (1989). *Creative teaching of the gifted*. New York, NY: McGraw-Hill.
- Slater, L. (2008). Pathways to building leadership capacity. *Educational Management*

- Administration & Leadership*, 36, 55–69. doi:10.1177/1741143207084060
- Smyth, J. (2006). Educational leadership that fosters ‘student voice’. *International Journal of Leadership in Education*, 9, 279-284.
doi:10.1080/13603120600894216
- Smyth, J. (2012). When students “speak back”: Student engagement towards a socially just society. In B. McMahon & J. Portelli (Eds.), *Student engagement in urban schools: Beyond neoliberal discourses*. Charlotte, NC: Information Age.
- Sousa, D., & Tomlinson, C. (2010). *Differentiation and the brain: How neuroscience supports the learner-friendly classroom*. Bloomington, IN: Solution Tree.
- Southworth, G. (2005). Learning-centred leadership. In B. Davies (Ed.), *The essentials of school leadership* (pp. 75-92). London, UK: Paul Chapman.
- Sparks, D. (2007). *Leading for results*. Thousand Oaks, CA: Corwin.
- Spillane, J. P., Halverson, R., & Diamond, J. B. (2001). Investigating school leadership practice: A distributed perspective. *Educational Researcher*, 30(3), 23-28.
doi:10.3102/0013189X030003023
- Spillane, J. P., Halverson, R., & Diamond, J. B. (2004). Toward a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies*, 36, 3-34.
doi:10.1080/0022027032000106726
- Stanley, J. C. (2005). A quiet revolution: Finding boys and girls who reason exceptionally well mathematically and/or verbally and helping them get the supplemental educational opportunities they need. *High Ability Studies*, 16, 5-14. doi:10.1080/13598130500115114
- Starko, A. J. (2010). *Creativity in the classroom: Schools of curious delight* (4th ed.). New York, NY: Routledge.

- Starko, A. J., & Schack, G. D. (1989). Perceived need, teacher efficacy, and teaching strategies for the gifted and talented. *Gifted Child Quarterly*, 33, 118-122.
doi:10.1177/001698628903300305
- Stephens, K. R. (2009). Can empathy for gifted students be nurtured in teachers? *Gifted Children*, 3(1), 1-4. Retrieved from
<http://docs.lib.purdue.edu/giftedchildren/vol3/iss1/2/>
- Sternberg, R. J. (1998). A balance theory of wisdom. *Review of General Psychology*, 2, 347-365. doi:10.1037/1089-2680.2.4.347
- Sternberg, R. J. (2000). Giftedness as developing expertise. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. J. Subotnik (Eds.), *International handbook of giftedness and talent* (pp. 55-66). Oxford, UK: Elsevier Science.
- Sternberg, R. J. (2001). Giftedness as developing expertise: A theory of the interface between high abilities and achieved excellence. *High Ability Studies*, 12, 159-179. doi:10.1080/13598130120084311
- Sternberg, R. J. (2003). A broad view of intelligence: The theory of successful intelligence. *Consulting Psychology Journal: Practice and Research*, 55, 139-154. doi:10.1037/1061-4087.55.3.139
- Sternberg, R. J. (2006). The nature of creativity. *Creativity Research Journal*, 18, 87-98. doi:10.1207/s15326934crj1801_10
- Sternberg, R. J. (2009). Wisdom, intelligence, creativity, synthesised: A model of giftedness. In T. Balchin, B. Hymer, & D. J. Matthews (Eds.), *The Routledge international companion to gifted education* (pp. 255-264), New York, NY: Routledge.
- Sternberg, R. J., & Davidson, J. E. (Eds.). (2005). *Conceptions of giftedness*. New York, NY: Cambridge University Press.

- Sternberg, R. J., Jarvin, L., & Grigorenko, E. L. (2011). *Explorations in giftedness*. Cambridge, UK: Cambridge University Press.
- Sternberg, R. J., Torff, B., & Grigorenko, E. L. (1998). Teaching triarchically improves school achievement. *Journal of Educational Psychology*, 90, 374-384.
doi:10.1037/0022-0663.90.3.374
- Stoeger, H. (2009). The history of giftedness research. In L. V. Shavinina (Ed.), *International handbook on giftedness* (pp. 17-38). Québec, Canada: Springer.
- Strebel, P., & Keys, T. (Eds.). (2005). *Mastering executive education: How to combine content with context and emotion, The IMD guide*. Harlow, UK: Pearson.
- Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking giftedness and gifted children: A proposed direction forward based on psychological science. *Psychological Science in the Public Interest*, 12, 3-54.
doi:10.1177/1529100611418056
- Sungur, S., Tekkaya, C., & Geban, O. (2006). Improving achievement through problem-based learning. *Journal of Biological Education*, 40, 155-160.
doi:10.1080/00219266.2006.9656037
- Sykes, G. (1999). Teacher and student learning: Strengthening their connection. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook on policy and practice* (pp. 151-179). San Francisco, CA: Jossey-Bass.
- Szabos, J. (1989). Bright child, gifted learner. *Challenge*, 34. Carthage, IL: Good Apple.
- Tabachnick, B.G., & Fidell, L.S. (2013). *Using Multivariate Statistics* (6th ed.). New York: NY: Allyn & Bacon.
- Tang, E. L., Lee, J. C., & Chun, C. K. (2012). Development of teaching beliefs and the focus of change in the process of pre-service ESL teacher education.

Australian Journal of Teacher Education, 37(5), 90-107.

doi:10.14221/ajte.2012v37n5.8

Tannenbaum, A. J. (1962). *Adolescent attitude towards academic brilliance*. New York, NY: Bureau of Publications, Teachers College, Columbia University.

Taylor, R., Baskerville, S., Bruder, S., Bennett, E., & Schulte, F. (2006). Six challenges are key for high-performance schools that aim to achieve more. *JSD – The Learning Forward Journal*, 27(2), 22-27.

Taylor, T., & Milton, M. (2006). Preparation for teaching gifted students: An investigation into university courses in Australia. *Australasian Journal of Gifted Education*, 15(1), 25-31.

Terman, L. M. (1925). *Genetic study of genius. Volume I: Mental and physical traits of a thousand gifted children*. Palo Alto, CA: Stanford University Press.

Terman, L. M., & Oden, M. H. (1947). *Genetic studies of genius. Vol. IV: The gifted child grows up. Twenty-five years follow up of a superior group*. Stanford, CA: Stanford University Press.

Terman, L. M., & Oden, M. H. (1959). *Genetic studies of genius. Vol. V: The gifted group at mid-life, thirty-five years follow up of the superior child*. Stanford, CA: Stanford University Press.

Thomson, P., & Gunter, H. (2007). The methodology of students-as-researchers: Valuing and using experience and expertise to develop methods. *Discourse: studies in the cultural politics of education*, 28, 327-342. doi:10.1080/01596300701458863

Thornton, B., Shepperson, T., & Canavero, S. (2007). A systems approach to school improvement: Program evaluation and organisational learning. *Education*, 128, 48-55.

- Tieso, C. L. (2005). The effects of grouping practices and curricular adjustments on achievement. *Journal for the Education of the Gifted*, 29, 60-89.
doi:10.1177/016235320502900104
- Toll, M. F. (2000). The importance of teacher preparation programs to appropriately serve students who are gifted. *Understanding Our Gifted*, 12, 14-16.
- Tomlinson, C. A. (1995). *Differentiating instruction for advanced learners in the mixed ability middle school classroom*. (ERIC Document Reproduction Service No. ED 389141)
- Tomlinson, C.A. (1998). For integration and differentiation choose concepts over topics. *Middle School Journal*, 30(2), 3-8.
- Tomlinson, C.A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: ASCD.
- Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.) Alexandria, VA: ASCD.
- Tomlinson, C. A. (2003). *Fulfilling the promise of the differentiated classroom: Strategies and tools for responsive teaching*. Alexandria, VA: ASCD.
- Tomlinson, C. A. (2005). Quality curriculum and instruction for highly able students. *Theory into Practice*, 44, 160-166. doi:10.1207/s15430421tip4402_10
- Tomlinson, C. A. (2012). Administrative decision-making for changing times. In R. E. Subotnik, A. Robinson, C. M. Callahan, & E. J. Gubbins (Eds.), *Malleable minds: Translating insights from psychology and neuroscience to gifted education* (pp. 245-256). Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.
- Tomlinson, C.A. (2014a). *The differentiated classroom: Responding to the needs of all learners* (2nd ed.). Alexandria, VA: ASCD.

- Tomlinson, C. A. (2014b). Differentiated instruction. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education* (pp. 197- 210). Waco, TX: Prufrock Press.
- Tomlinson, C.A., & Allan, S.D. (2000). *Leadership for differentiating schools and classrooms*. Alexandria, VA: ASCD.
- Tomlinson, C.A., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimjoin, K., ...Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal of the Education of the Gifted*, 27, 119-145.
doi:10.1177/016235320302700203
- Tomlinson, C.A., Brimjoin, K., & Narvaez, L. (2008). *The differentiated school*. Alexandria, VA: ASCD.
- Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M., Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse learners*. (National Research Center on the Gifted and Talented, R. M. 95134)
- Tomlinson, C. A., Callahan, C. M., Tomchin, E. M., Eiss, N., Imbeau, M., & Landrum, M. (1997). Becoming architects of communities of learning: Addressing academic diversity in contemporary classrooms. *Exceptional Children*, 63(2), 269-282.
- Tomlinson, C. A., & Imbeau, M.B. (2010). *Leading and managing a differentiated classroom*. Alexandria, VA: ASCD.
- Tomlinson, C. A., & McTighe, J. (2006). *Integrating differentiated instruction and understanding by design*. Alexandria, VA: ASCD.

- Tomlinson, C. A., & Murphy, M. (2015). *Leading for differentiation: Growing teachers who grow kids*. Alexandria, VA: ASCD.
- Tomlinson, C. A., Tomchin, E. M., Callahan, C. M., Adams, C. M., Pizzat-Tinnin, P., Cunningham, C. M., ... Imbeau, M. (1994). Practices of preservice teachers related to gifted and other academically diverse learners. *Gifted Child Quarterly*, 38, 106-114. doi:10.1177/001698629403800303
- Torrance, E. P. (1995). Insights about creativity: Questioned, rejected, ridiculed, ignored. *Educational Psychology Review*, 7, 313-322. doi:10.1007/BF02213376
- Townsend, M. A. R., & Patrick, H. (1993). Academic and psychosocial apprehensions of teachers and teacher trainees towards the educational acceleration of gifted children. *New Zealand Journal of Educational Studies*, 28, 29-41.
- Troxclair, D. A. (2013). Preservice teacher attitudes towards giftedness. *Roeper Review*, 35, 58-64. doi:10.1080/02783193.2013.740603
- United Nations. (1989). *Convention on the rights of the child*. New York, NY: UN.
- Urhahne, D. (2011). Teachers' judgments of elementary students' ability, creativity and task commitment. *Talent Development & Excellence*, 3, 229-237.
- VanTassel-Baska, J. (1986). Effective curriculum and instructional models for talented students. *Gifted Child Quarterly*, 30, 164-169.
doi:10.1177/001698628603000404
- VanTassel-Baska, J. (1998a). *Excellence in educating gifted and talented learners* (3rd ed.). Denver, CO: Love.
- VanTassel-Baska, J. (1998b). Creativity and the gifted. In J. Van Tassel-Baska (Ed.), *Excellence in educating gifted and talented learners* (pp. 381-398). Denver, CO: Love.

- VanTassel-Baska, J. (2003). *Curriculum planning and instructional design for gifted learners*. Denver, CO: Love.
- VanTassel-Baska, J. (2004). Assessing classroom practice: The use of a structured observation form. In J. Van Tassel-Baska & A. X. Feng (Eds.), *Designing and utilizing evaluation for gifted program improvement* (pp. 87-107). Waco, TX: Prufrock Press.
- VanTassel-Baska, J. (2010). The efficacy of academic acceleration for gifted minority students. *Gifted Child Quarterly*, 54, 189-208. doi:10.1177/0016986210369256
- VanTassel-Baska, J. (2014). Artful inquiry: The use of questions in working with the gifted. *Gifted Child Today*, 37, 48-50.
- VanTassel-Baska, J., Avery, L. D., Little, C., & Hughes, C. (2000). An evaluation of the implementation of curriculum innovation: The impact of the William and Mary Units on Schools. *Journal for the Education of the Gifted*, 23, 244-272.
- VanTassel-Baska, J., Bass, G. M., Reis, R. R., Poland, D. D., & Avery, L. D. (1998). A national study of science curriculum effectiveness with high ability students. *Gifted Child Quarterly*, 42, 200-211. doi:10.1177/001698629804200404
- VanTassel-Baska, J., Bracken, B., & Drummond, D. (2003). *The William and Mary Classroom Observation Scales, Revised (Part 3) Student Observation*. The College of William and Mary Center for Gifted Education. Retrieved from https://education.wm.edu/centers/cfge/_documents/research/athena/cosrform.pdf
- VanTassel-Baska, J., & Brown, E. F. (2007). Toward best practice: An analysis of the efficacy of curriculum models in gifted education. *Gifted Child Quarterly*, 51, 342-358. doi:10.1177/0016986207306323

- VanTassel-Baska, J., & Brown, E. F. (2009). An analysis of gifted education curriculum models. In F. A. Karnes & S. M. Bean (Eds.), *Methods and materials of teaching the gifted* (pp. 75-106). Waco, TX: Prufrock Press.
- VanTassel-Baska, J., Feng, A. X., Brown, E., Bracken, B., Stambaugh, T., French, H., & Bai, W. (2008). A study of differentiated instructional change over three years. *Gifted Child Quarterly*, 52, 297-312. doi:10.1177/0016986208321809
- VanTassel-Baska, J., & Little, C. (Eds.). (2003). *Content-based curriculum for high-ability learners*. Waco, TX: Prufrock Press.
- VanTassel-Baska, J., & Little, C. A. (Eds.). (2011). *Content-based curriculum for high-ability learners* (2nd ed.). Waco, TX: Prufrock Press.
- VanTassel-Baska, J., Quek, C., & Feng, A. X. (2006). The development and use of a structured teacher observation scale to assess differentiated best practice. *Roeper Review*, 29(2), 84-92.
- VanTassel-Baska, J., & Stambaugh, T. (2005). Challenges and possibilities for serving gifted learners. *Theory into Practice*, 44, 211-217.
doi:10.1207/s15430421tip4403_5
- VanTassel-Baska, J., & Stambaugh, T. (2006). *Comprehensive curriculum for gifted learners*. New York, NY: Pearson.
- VanTassel-Baska, J., Zuo, L., Avery, L. D., & Little, C. A. (2002). A curriculum study of gifted student learning in the language arts. *Gifted Child Quarterly*, 46, 30-44. doi:10.1177/001698620204600104
- Vialle, W., Ashton, T., A., Carlon, G., & Rankin, F. (2001). Acceleration: A coat of many colours. *Roeper Review*, 24, 14-19. doi:10.1080/02783190109554119
- Vialle, W. J., & Rogers, K. B. (2009). *Educating the gifted learner*. Tuggerah, Australia: David Barlow.

- Vialle, W. J., & Rogers, K. B. (2012). Gifted, talented or educationally disadvantaged? The case for including 'giftedness' in teacher education programs. In C. Forlin (Ed.), *Future directions for inclusive teacher education: An international perspective* (pp. 114-122). New York, NY: Routledge.
- Vialle, W. J., & Tischler, K. (2009). Gifted students' perceptions of the characteristics of effective teachers. In D. Wood (Ed.), *The gifted challenge: Challenging the gifted* (pp. 115-124). Merrylands, Australia: NSWAGTC.
- Vogl, K., & Preckel, F. (2014). Full-time ability grouping of gifted students: Impacts on social self-concept and school-related attitudes. *Gifted Child Quarterly*, 58, 51-68. doi:10.1177/0016986213513795
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. (1986). *Thought and language* (A. Kozulin, Trans. & Ed.). Cambridge, MA: MIT Press.
- Wakeman, S., Browder, D., Flowers, C., & Ahlgrim-Delzell, L. (2006). Principals' knowledge of fundamental and current issues in special education. *NASSP Bulletin*, 90, 153-174. doi:10.1177/0192636506288858
- Walker, B., Hafenstein, N. L., & Crow-Enslow, L. (1999). Meeting the needs of gifted learners in the early childhood classroom. *Young Children*, 54(1), 32-36.
- Wallace, B. (2000). *Teaching the very able child: Developing a policy and adopting strategies for provision*. London, UK: David Fulton.
- Watkins, C. (2009). Learners in the driving seat. *Leading Learning Pedagogy*, 1(2), 28-31.
- Watters, J. J., Hudson, S., & Hudson, P. (2013). Orienting preservice teachers towards gifted education: School-university partnerships. *Australasian Journal of Gifted*

Education, 22(2), 32-44.

Watts, G. (2006). Teacher attitudes to the acceleration of the gifted: A case study from New Zealand. *Gifted and Talented*, 10(1), 11-19.

Webb, J. T., Meckstroth, E. A., & Tolan, S. S. (1982). *Guiding the gifted child: A practical source for parents and teachers*. Columbus, OH: Ohio Psychology.

Weimer, M. (2013). *Learner-centred Teaching*. San Francisco, CA: Jossey-Bass.

Weinstein, R. S. (2002). *Reaching higher: The power of expectations in schooling*. Cambridge, MA: Harvard University Press.

West, L. (2004). "The Learner's Voice. Making Space? Challenging Space?" From the keynote address, 2004, Canterbury Action Research Network (CANTARNET) Conference, reported in *The Enquirer*, Spring 2005.

Westberg, K., Archambault, F., Dobyns, S., & Salvin, T. (1993). *An observational study of instructional and curricular practices used with gifted and talented students in regular classrooms* (Research Monograph 93104). Storrs, CT: University of Connecticut.

Westberg, K. L., & Daoust, M. E. (2004). *The results of the replication of the classroom practices survey replication in two states*. Storrs, CT: National Research Center on the Gifted and Talented, University of Connecticut.

Whitlock, M. S., & DuCette, J. P. (1989). Outstanding and average teachers of the gifted: A comparative study. *Gifted Child Quarterly*, 33, 15-21.

doi:10.1177/001698628903300103

Whitmore, J. R. (1980). *Giftedness, conflict, and underachievement*. Boston, MA: Allyn & Bacon.

- Whitton, D. (1997). Regular classroom practices with gifted students in grades 3 and 4 in New South Wales. *Gifted Education International*, 12, 34-38.
doi:10.1177/026142949701200107
- Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). Victoria, Australia: Hawker Brownlow.
- Williams, F.E. (1993). The cognitive-affective interaction model for enriching gifted programs. In J.S. Renzulli (Ed.), *Systems and models for developing programs for the gifted and talented* (pp. 461-484). Victoria, Australia: Hawker Brownlow.
- Wood, S. M., & Peterson, J. S. (2015). Superintendents, principals, and counsellors: Facilitating secondary gifted education. In F. A. Dixon & S. M. Moon (Eds.), *The handbook of secondary gifted education* (pp. 627-652). Waco, TX: Prufrock Press.
- Wood, S., Portman, T. A. A., Cigrand, D. L., & Colangelo, N. (2010). School Counselors' perceptions and experience with acceleration as a program option for gifted and talented students. *Gifted Child Quarterly*, 54, 168-178.
doi:10.1177/0016986210367940
- Yuen, M., & Westwood, P. (2004). Expected competencies of teachers of gifted learners: Perspectives from Chinese teachers and students. *Gifted and Talented International*, 19, 7-14.
- Zeldin, S. (2004). Youth as agents of adult and community development: Mapping the processes and outcomes of youth engaged in organizational governance. *Applied Developmental Science*, 8, 75-90. doi:10.1207/s1532480xads0802_2
- Zepeda, S. J. (2013). *The principal as instructional leader*. Larchmont, NY: Eye on Education.

- Ziegler, A. (2005). The actiotope model of giftedness. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 411-436), New York, NY: Cambridge University Press.
- Ziegler, A., & Heller, K.A. (2000). Conceptions of giftedness: A meta-theoretical perspective. In K.A. Heller, F.J. Mönks, R. Sternberg, & R. Subotnik (Eds.), *International handbook of research and development of giftedness and talent* (2nd ed., pp. 3-22). Oxford, UK: Pergamon.
- Ziegler, A., & Phillipson, S. (2012). Towards a systemic theory of giftedness. *High Ability Studies*, 23, 3-30. doi:10.1080/13598139.2012.679085
- Zimmerman, B. J. (2002). Achieving academic excellence: A self-regulatory perspective. In M. Ferrari (Ed.), *The pursuit of excellence through education* (pp. 85-110). Mahwah, NJ: Erlbaum.
- Zmuda, A., Kuklis, R., & Kline, E. (2004). *Transforming schools: Creating a culture of continuous improvement*. Alexandria, VA: ASCD.

Appendix A

Ethics Approval

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MANOJ CHANDRA HANDA <manoj.chandra-handa@students.mq.edu.au>

Approved- Ethics application- Van Bergen (Ref No: 5201300354)

2 messages

Ethics Secretariat <ethics.secretariat@mq.edu.au>

Wed, Jul 31, 2013 at 10:11 AM

To: Dr Penny Van Bergen <penny.vanbergen@mq.edu.au>

Cc: Mr Manoj Chandra Handa <manoj.chandra-handa@students.mq.edu.au>

Dear Dr Van Bergen

Re: "Leading differentiated learning for the gifted" (Ethics Ref: 5201300354)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Human Research Ethics Committee (Human Sciences and Humanities), effective 31-Jul-13. This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Dr Penny Van Bergen
Mr Manoj Chandra Handa
Professor June Maker

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 31 July 2014
Progress Report 2 Due: 31 July 2015
Progress Report 3 Due: 31 July 2016
Progress Report 4 Due: 31 July 2017
Final Report Due: 31 July 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final

Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely

Dr Karolyn White
Director of Research Ethics
Chair, Human Research Ethics Committees

Office of the Deputy Vice Chancellor (Research)

Ethics Secretariat
Research Office
Level 3, Research Hub, Building C5C East
Macquarie University
NSW 2109 Australia
T: +61 2 9850 6848
F: +61 2 9850 4465
<http://www.mq.edu.au/research>

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MANOJ CHANDRA HANDA <manoj.chandra-handa@students.mq.edu.au>
To: manoj.chandrahanda@det.nsw.edu.au

Wed, Jul 31, 2013 at 11:43 AM

[Quoted text hidden]

Appendix B

Teacher Survey

Instructions

This survey is anonymous and your participation is voluntary. Its purpose is to investigate the current educational practices for gifted and talented students in Northern Sydney Region's schools and classrooms.

The Region's intention is to develop a G&T Toolkit containing practical, evidence-based strategies for effective and routine differentiation in all classrooms to add on to the valuable strategies that are already in place.

For the purpose of this survey, the definition of gifted and talented is the one adopted by the Department of Education and Communities as outlined in the *Policy and implementation strategies for the education of gifted and talented students* (revised 2004). It is based on Gagné's *Differentiated Model of Giftedness and Talent* (DMGT):

Gifted students are those whose potential is distinctly above average in one or more of the following domains of human ability: intellectual, creative, social and physical.

Talented students are those whose skills are distinctly above average in one or more areas of human performance.

Section A: General Information

Please provide background information by completing questions 1-5.

1. Name of School: _____

2. Place a cross (X) in the box for the type of school that you teach in:

Selective High School ☐ Comprehensive High School ☐

Primary School ☐ Primary School with Opportunity Classes ☐

3. Place a cross (X) in the box(es) next to any qualification that you hold:

Teaching diploma (2 to 3 years) ☐

Bachelor's degree [e.g., B.A., B.Sc., B.Ed., B.A.(Honours)] ☐

Postgraduate certificate/Diploma in Education ☐

Master's degree [e.g., M.A., M.S., M.Ed., M.A. (Honours)] ☐

Ed.D or Ph.D. ☐

4. How many years have you been teaching:

(a) in total? _____

(b) at your present school? _____

5. Have you undertaken any of the professional learning in the education of gifted and talented students? If so, please indicate it below.

A pre-service component of a degree ☐

Graduate Certificate ☐

Graduate Diploma ☐

Ongoing/extended professional learning in the school ☐

Action learning project ☐

Conference(s) ☐

Component(s) of a Master's Degree ☐

Other qualification. Please indicated type: _____ ☐

6. Do you hold or have you ever held any position of specific responsibility for gifted and talented students in your school or at another school? Please describe your role below.

7. Do you currently teach gifted and talented students in your school? Please put a cross (X) in the appropriate box.

Yes ☐ No ☐

Section B

In this section, please place a cross (X) in the appropriate box to indicate the extent to which you agree with each statement about teacher attitudes towards the education of the gifted and talented students.

	Strongly disagree	Disagree	Not Sure/Do not Know	Agree	Strongly Agree
9 Our schools should offer special provisions for the gifted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 The best way to meet the needs of the gifted is to put them in special classes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Special programs for gifted students have the drawback of creating elitism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Gifted students are often bored in the school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13 Gifted students waste their time in regular classes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14 Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15 Gifted students might become elitist if they are given special attention.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16 When skipping a grade, gifted students miss key concepts and ideas leading to gaps in their knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17 A greater number of gifted students should be allowed to skip a grade.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18 A student who has been identified as gifted has more difficulty in making friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19 Ability grouping provides an effective method to provide instruction to students of different ability or skills levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20 The gifted students need special attention in order to fully develop their talents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section C

In this section, please place a cross (X) in the appropriate box to indicate the extent to which you agree with each statement.

	In my classes, I:	Never	Rarely	Sometimes	Often	Almost always
21	extend and/or modify syllabus outcomes to meet the learning needs of gifted students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	teach by using examples and illustrations of <i>concepts</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	show how parts of the subject are interrelated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	eliminate curriculum content for students who have already mastered it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	incorporate students' background understandings including cultural knowledge in teaching and learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	adjust the amount of individual practice that students need to master content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	set challenging tasks for all learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	plan curriculum to provide a variety of learning experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	link new material to students' existing knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	bring experts/specialists to the classroom to share their knowledge with the students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	vary the pace of my lesson to cater for individual learning needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32	use flexible within-class ability grouping to maximise student learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	use questions including analysis, synthesis and evaluation to stimulate whole-class discussion as well as individual reflection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	incorporate higher-order thinking into learning tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In my classes, I:		Never	Rarely	Sometimes	Often	Almost always
35	provide opportunities for students to select, implement and evaluate solutions to problems or issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	encourage students to explore diverse points of view to think about ideas in a different manner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	encourage students to offer imaginative solutions to problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	provide students freedom of choice in a range of ways such as selection of topics & products, opportunities for self-directed learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	get students to evaluate their own work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40	encourage students to evaluate each other's work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	embed learning technologies into learning and teaching activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	encourage students to find solutions to real-life and authentic problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	have students to reflect on what they have learnt and how they think	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	provide meaningful, positive feedback linked to explicit criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	make use of exemplars/model answers for analysis in whole-class discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	encourage students to pose their own problems or questions on a topic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	encourage student-student collaboration and discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48	encourage students to learn methods of inquiry, investigation, and research used by experts in different disciplines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

49	encourage students to gather evidence from multiple sources through research-based techniques (e.g., print, surveys, interviews)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	make use of project-based learning approach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51	encourage students to undertake independent extended research project(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52	actively teach study skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53	directly teach creative thinking skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54	foster a challenging thinking climate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55	motivate and promote wellbeing of my students by building their self-confidence and publicly recognising their achievements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56	liaise with parents/caregivers in order to foster home-school partnerships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D

57 How do you know when you are effectively differentiating for gifted and talented students? What indicators are there?

58 Is there any other strategy that you like to use to differentiate for gifted and talented students in your classroom(s)? Please briefly explain.

59 What support do you have in implementing provisions for gifted and talented students in your classroom?

60 What other support would you like to help implement appropriate provisions for gifted and talented students in your classroom and/or school?

Thank you for your effort and valuable time to complete this survey.

Appendix C

Scree Plot

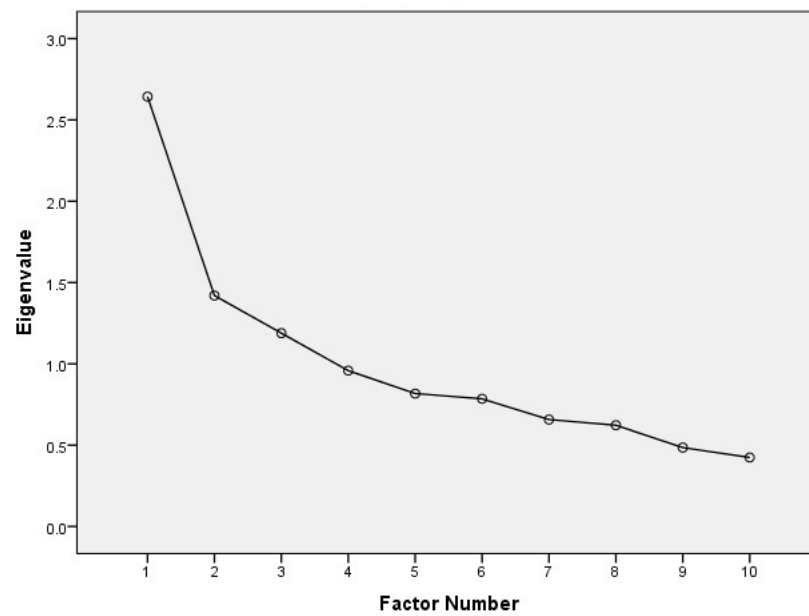


Figure A1. Scree plot of the three factor solution for teachers' attitudes to and perceptions of giftedness and the education of the gifted.

Appendix D

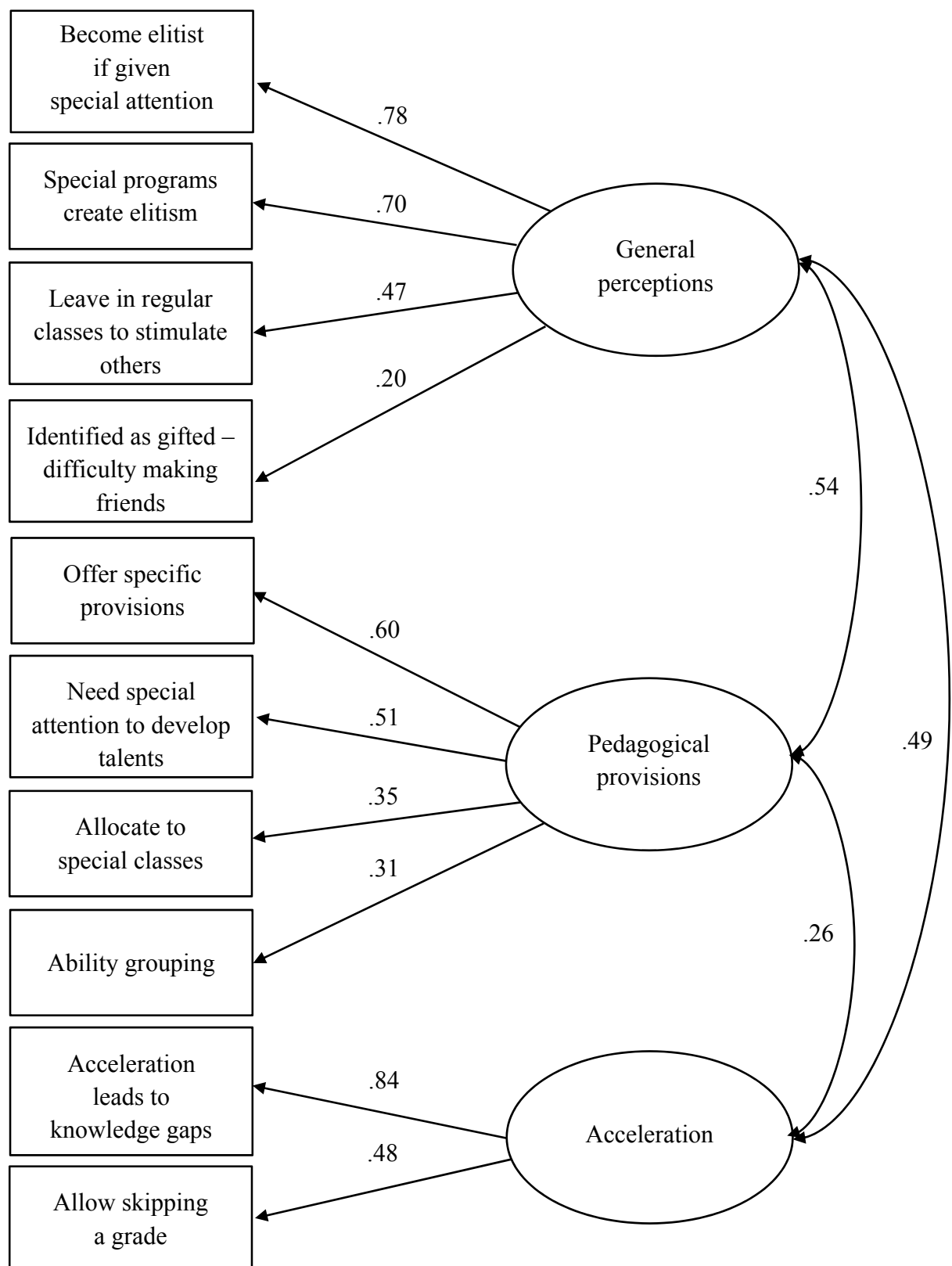


Figure A2. Standardised coefficients for CFA model of teachers' attitudes to and perceptions of giftedness and the education of the gifted.

Appendix E

Scree Plot

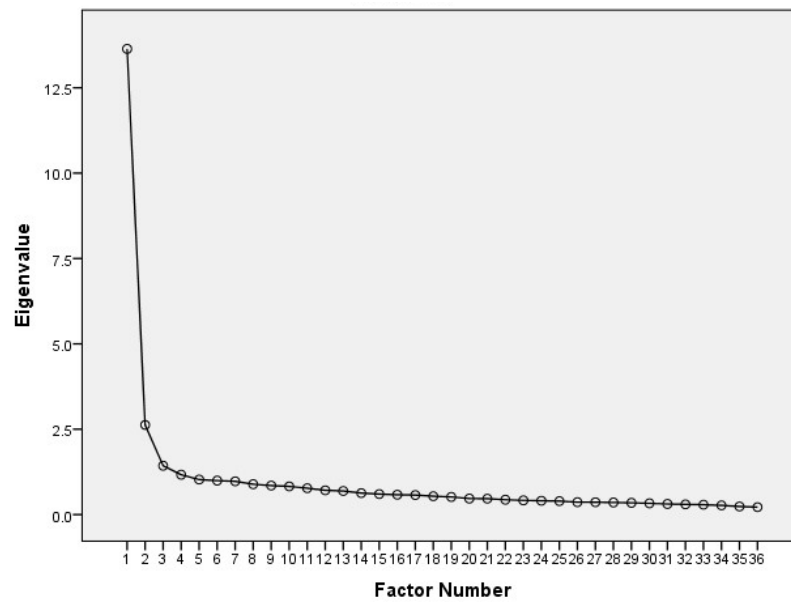


Figure A3. Scree plot of the three factor solution for teachers' perceptions of differentiated pedagogical strategies for educating the gifted.

Appendix F

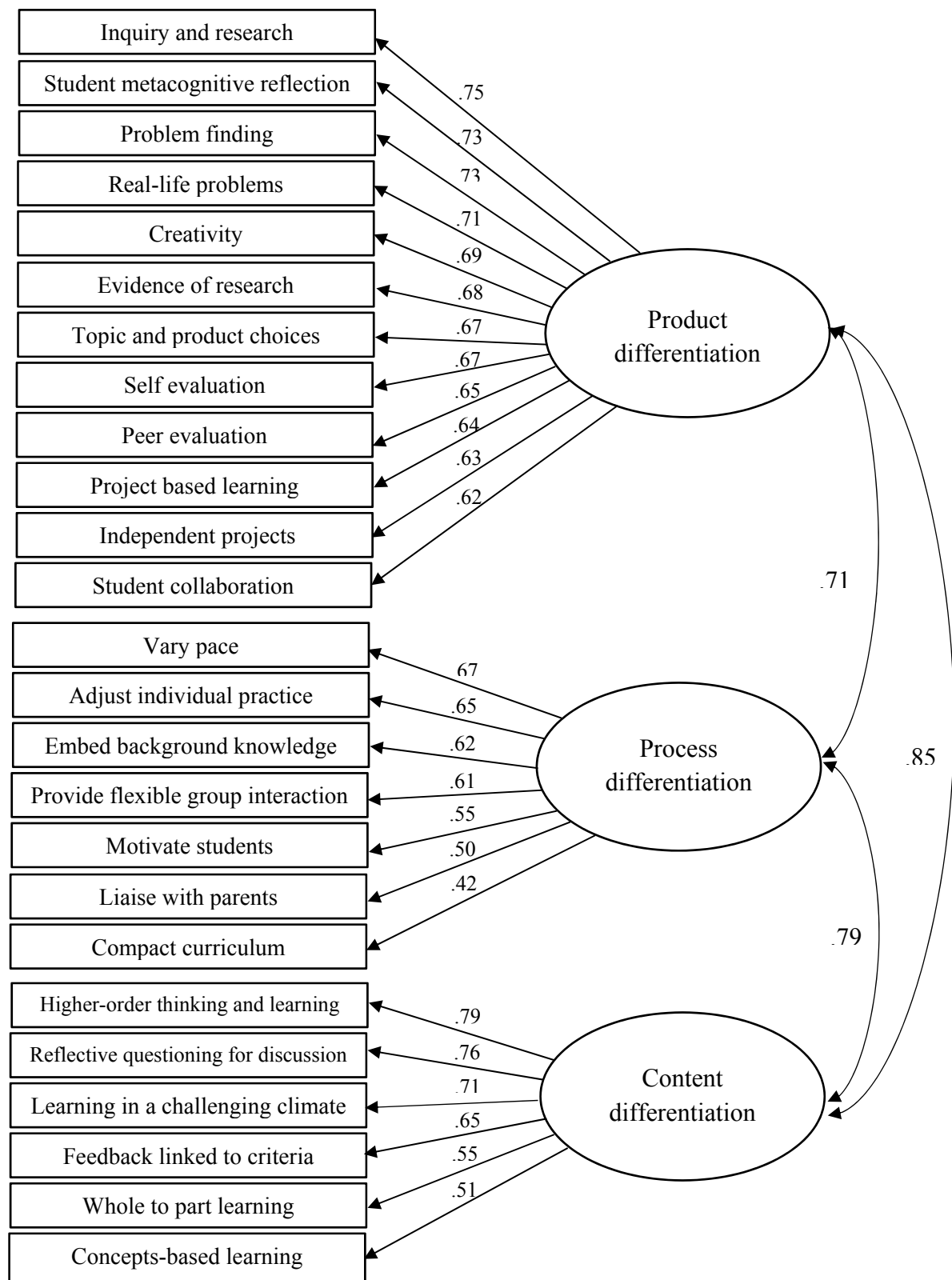


Figure A4. Standardised coefficients for CFA model of teachers' perceptions of differentiated pedagogical strategies for educating the gifted.

Appendix G

Principal Survey

The purpose of the survey is to investigate the current educational practices for gifted and talented students in the Northern Sydney Region's schools and classrooms.

The Region's intention is to develop a G&T Toolkit containing practical, evidence-based strategies for effective and routine differentiation in all classrooms to add on to the valuable strategies that are already in place.

For the purpose of this survey, the definition of gifted and talented is the one adopted by the Department of Education and Communities outlined in the *Policy and Implementation Strategies for the Education of Gifted and Talented Students* (revised 2004). It is based on Gagné's *Differentiated Model of Giftedness and Talent* (DMGT):

Gifted students are those whose potential is distinctly above average in one or more of the following domains of human ability: intellectual, creative, social and physical.

Talented students are those whose skills are distinctly above average in one or more areas of human performance.

Section A: General Information

Please provide background information by completing questions 1-6.

1. Name of School: _____

2. Place a cross (X) in the box for the type of school that you lead:

Selective High School	<input type="checkbox"/>	Comprehensive High School	<input type="checkbox"/>
Primary School	<input type="checkbox"/>	Primary School with Opportunity Classes	<input type="checkbox"/>

3. Place a cross (X) in the box(es) next to any qualification that you hold:

Teaching diploma (2 to 3 years)	<input type="checkbox"/>
Bachelor's degree (e.g., B.A., B.Sc., B.Ed.)	<input type="checkbox"/>
Honours	<input type="checkbox"/>
Postgraduate Certificate/Diploma in an area of education	<input type="checkbox"/>
Master's degree [e.g., M.A., M.S., M.Ed., M.A. (Honours)]	<input type="checkbox"/>
Ed.D or Ph.D.	<input type="checkbox"/>

4. To what extent have you participated in your professional development in the area of gifted and talented education, either at university level as part of a degree, or in other professional learning activities?

Not at all

To some extent

Substantially

☐
☐
☐

5. How many years have you been the school Principal:

(c) in total? _____

(d) at your present school? _____

6. Please tick the following boxes if accurate for your school. To identify and keep track of students' exceptional abilities, the school uses:

Formal and informal school assessment tools

☐

External assessments/testing

☐

Liaison with feeder schools for background information

☐

Counsellor involvement

☐

Peer nominations

☐

Parent nominations

☐

Teacher nominations based on a formal checklist of characteristics

☐

Teacher nominations based on their perceptions

☐

An in-school gifted education committee/team to target gifted students' needs

☐

A data base specifically for tracking gifted students' performance

☐

Other: please give brief details: _____

☐

7. To what extent do you believe it is true to say that provisions at your school to cater for your needs of gifted students is a matter of daily routine?

Not at all

☐

For some teachers

☐

For about half the teachers

☐

For the majority of teachers

☐

For all teachers

☐

Section B

In this section, please place a cross (X) in the appropriate box to indicate the extent to which you agree with each statement about the education of the gifted and talented students.

	Strongly disagree	Disagree	Not Sure/Do not Know	Agree	Strongly Agree
8 Our schools should offer special provisions for the gifted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 The best way to meet the needs of the gifted is to put them in special classes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Special programs for gifted students have the drawback of creating elitism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Gifted students are often bored in the school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Gifted students waste their time in regular classes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13 Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14 Gifted students might become elitist if they are given special attention.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15 When skipping a grade, gifted students miss key concepts and ideas leading to gaps in their knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16 A greater number of gifted students should be allowed to skip a grade.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17 A student who has been identified as gifted has more difficulty in making friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18 Ability grouping provides an effective method to provide instruction to students of different ability or skills levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19 The gifted students need special attention in order to fully develop their talents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section C

In this section, please place a cross (X) in the appropriate box to indicate the extent to which you agree with each statement.

In my school, my teachers:		Never	Rarely	Sometimes	Often	Almost always
20	extend and/or modify syllabus outcomes to meet the learning needs of gifted students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	teach by using examples and illustrations of <i>concepts</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	show how parts of the subject are interrelated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	eliminate curriculum content for students who have already mastered it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	incorporate students' background understandings including cultural knowledge in teaching and learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	adjust the amount of individual practice that students need to master content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	set challenging tasks for all learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	plan curriculum to provide a variety of learning experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	link new material to students' existing knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	bring experts/specialists to the classroom to share their knowledge with the students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	vary the pace of their lesson to cater for individual learning needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	use flexible within-class ability grouping to maximise student learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32	use questions including analysis, synthesis and evaluation to stimulate whole-class discussion as well as individual reflection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	incorporate higher-order thinking into learning tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	In my school, teachers:	Never	Rarely	Sometimes	Often	Almost always
34	provide opportunities for students to select, implement and evaluate solutions to problems or issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	encourage students to explore diverse points of view to think about ideas in a different manner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	encourage students to offer imaginative solutions to problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	provide students freedom of choice in a range of ways such as selection of topics & products, opportunities for self-directed learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	ask students to evaluate their own work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	encourage students to evaluate each other's work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40	embed learning technologies into learning and teaching activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	encourage students to find solutions to real-life and authentic problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	have students to reflect on what they have learnt and how they think	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	provide meaningful, positive feedback linked to explicit criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	make use of exemplars/model answers for analysis in whole-class discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	encourage students to pose their own problems or questions on a topic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	encourage student-student collaboration and discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	encourage students to learn methods of inquiry, investigation, and research used by experts in different disciplines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

48	encourage students to gather evidence from multiple sources through research-based techniques (e.g., print, surveys, interviews)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49	make use of project-based learning approach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	encourage students to undertake independent extended research project(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51	actively teach study skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52	directly teach creative thinking skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53	foster a challenging thinking climate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54	motivate and promote wellbeing of students by building their self-confidence and publicly recognising their achievements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55	liaise with parents/caregivers in order to foster home-school partnerships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D

56 How do you know when a teacher is effectively differentiating students in the classroom?

57 Are there other strategies for differentiation that you would like to see used in your school?

58 How does your school cater for the emotional/social needs of gifted students?

59 How does your school foster the leadership skills of gifted students?

- 60 What other whole school initiatives does the school use to ensure appropriate provisions for all gifted students?

	In every grade	Some grades	Only one grade
a Clubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Accelerated grades or classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Counselling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Enrichment activities beyond the class lessons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Working with like-minded students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f External competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g Linking with Welfare initiatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h Mentoring for students – senior students/teachers or outside experts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i Other: Please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 61 Please specify any other whole school initiatives your school uses to ensure appropriate provisions for all gifted students.

- 62 To what extent is quality teaching for gifted students different from quality teaching for other students?

63 Which of these professional learning strategies have most teachers experienced in your school?

- | | | |
|---|--|--------------------------|
| a | Regional professional development courses | <input type="checkbox"/> |
| b | Whole scale professional development day | <input type="checkbox"/> |
| c | Ongoing professional learning of a team of teachers | <input type="checkbox"/> |
| d | Ongoing mentoring/coaching from an outside expert | <input type="checkbox"/> |
| e | Action learning within the school | <input type="checkbox"/> |
| f | Readings and resources disseminated | <input type="checkbox"/> |
| g | Teachers training each other | <input type="checkbox"/> |
| h | Teachers sharing helpful examples of teaching/learning strategies with the whole staff | <input type="checkbox"/> |
| i | Other, please give brief details: | <input type="checkbox"/> |

64 What other regional support would you like to help your school implement appropriate provisions for gifted and talented schools in your school?

Thank you for your effort and valuable time to complete this survey.

Appendix H

Student Survey

<i>Curriculum Planning and Delivery</i>	Never	Rarely	Sometimes	Often	Almost Always
1. I work on tasks of my choice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I work on tasks/projects in pairs or groups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I learn key ideas through structured activities or teacher/student developed questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I work on challenging tasks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I am encouraged to evaluate my own work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I am expected to demonstrate my best effort in all learning areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Problem Solving</i>					
7. I brainstorm ideas and define problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I find solutions to problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Critical Thinking Strategies</i>					
9. I evaluate situations, problems, or issues in my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I gain a deep understanding of ideas and concepts from the study of texts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Creative Thinking Strategies</i>					
11. I explore different ways to think about a situation/object/event.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. I offer imaginative and creative solutions to problems. ☐ ☐ ☐ ☐ ☐

Research Strategies

13. I gather information from multiple research sources (e.g., print, surveys, interviews and internet). ☐ ☐ ☐ ☐ ☐
14. I draw conclusions from a range of data. ☐ ☐ ☐ ☐ ☐
15. I communicate independent research study findings (e.g., written report, oral presentation). ☐ ☐ ☐ ☐ ☐

16. How do you know when you are engaged in classroom?

17. What are the three (3) most important qualities of an effective teacher?

18. Any other comments.

Appendix I

Supplementary Student-Teacher Interview Questions

1. How do you know when you are effectively meeting the different learning needs of every student in your classroom? What indications are there?
2. How do you find out background knowledge of students for teaching purposes?
3. How do you plan lessons to provide a variety of learning experiences to students?
4. How do you encourage creative thinking skills among your students?
5. How do you provide students freedom of choice in classroom?
6. How do you encourage independent learning among students?
7. How do you make learning fun in your classroom?
8. How do you create a thinking learning environment in your classroom?
9. How do you know that you have engaged students in your classroom?
10. What are the three most important things you value in teaching and learning?
11. What are three most important qualities of an effective teacher?

Appendix J

Principals – Interview Questions

Part A: The principals' understanding of the characteristics and elements of differentiated learning for gifted and talented students, and their perceptions of teacher practice

1. Please describe your understanding of how teachers differentiate learning for gifted and talented students in your school.
2. When planning for gifted learners, what do you expect teachers to know, understand and do?
3. How do you know when a teacher is effectively differentiating for gifted learners in the classroom?
4. How are syllabus outcomes, instruction and assessment aligned and differentiated for gifted learners? Please describe the relationship between differentiated learning and assessment.
5. The survey responses have shown that the principals' and teachers' perceptions about differentiated practices are significantly different. Why do you think is this the case? What strategies do you suggest for developing greater alignment between the principals' and teachers' perceptions?

Part B: The principals' leadership actions in supporting, implementing and sustaining differentiated learning for gifted and talented students

1. What is your vision for differentiated learning for gifted and talented students in your school? What role do you see teachers playing in creating this vision? How do you communicate that vision to the school community?
2. How do you convey to the teachers the necessity to differentiate curriculum for gifted and talented students in your school?
3. How do you continue to enrich your understanding of differentiated learning for gifted learners? How has this understanding been beneficial to you as a school leader?
4. How do you enhance professional learning of your staff in meeting the needs of gifted and talented students? What resources have you allocated? How often do teachers

collaboratively discuss differentiated learning provisions with each other? What does professional learning look like for your teachers?

5. How are teachers engaged in implementing, evaluating and sustaining differentiated learning for gifted and talented students?
6. How do you incorporate gifted students' voices into planning and evaluating teaching practices to ensure that their needs are being met?
7. What do you think have been the most successful strategies in implementing school-wide differentiated high performance learning?
8. How do you acknowledge those teachers who demonstrate effective differentiated learning practices for gifted students? How do you share these success stories with the entire school community?
9. How do you know and ensure that your expectations of differentiated learning for gifted and talented students are understood and implemented by every teacher in your school to ensure high student achievement outcomes?
10. What are the future directions that need to be undertaken to support and sustain differentiated learning for gifted and talented students in your school?

Appendix K

Table A5

Teachers' Attitudes to and Perceptions of Giftedness and Gifted Learners According to Mean Value of Responses

Item	Survey Item	Mean†	SD
1	Our schools should offer special provisions for the gifted.	4.40	0.75
9	Ability grouping provides an effective method to provide instruction to students of different ability or skills levels.	4.04	0.92
10	The gifted students need special attention in order to fully develop their talents.	3.96	1.00
*8	A student who has been identified as gifted has more difficulty in making friends.	3.66	1.01
*5	Gifted students might become elitist if they are given special attention.	3.49	1.22
*6	When skipping a grade, gifted students miss key concepts and ideas leading to gaps in their knowledge.	3.16	1.19
*3	Special programs for gifted students have the drawback of creating elitism.	3.04	1.31
*4	Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	3.03	1.19
2	The best way to meet the needs of the gifted is to put them in special classes.	2.77	1.24
7	A greater number of gifted students should be allowed to skip a grade.	2.48	1.04

Note. The survey items 1-12 of the attitude scale, PAT_GATS—adapted from Gagné and Nadeau's scale (1991)—are arranged in descending order of mean score for the statements.

† Means calculated from the survey item scores: Minimum value = 1, Maximum value = 5.

* These statements were reversed prior to analysis.

Appendix L

Table A6

Teachers' Perceptions of Differentiated Pedagogical Strategies According to Mean Value of Responses

No.	Item	Mean [†]	SD
35	Motivation	4.56	0.59
9	Link to existing knowledge	4.52	0.59
8	Variety of experiences	4.51	0.61
7	Challenging tasks	4.41	0.63
3	Part to whole learning	4.37	0.64
2	Concepts	4.34	0.66
14	Higher order thinking	4.32	0.69
26	Feedback	4.30	0.68
13	Questioning	4.26	0.73
28	Student collaboration	4.24	0.69
11	Vary pace	4.22	0.68
1	Modify outcomes	4.21	0.76
18	Imaginative solutions	4.20	0.72
6	Adjust individual practice	4.20	0.71
5	Background knowledge	4.18	0.75
34	Challenging environment	4.17	0.74
12	Flexible group interactions	4.16	0.79
22	Learning technologies	4.14	0.76
17	Diverse views	4.12	0.75
36	Liaise with parents	4.07	0.91
25	Student metacognitive reflection	4.04	0.76
24	Exemplars	4.03	0.82
23	Real-life problems	4.01	0.76
15	Evaluate solutions	4.01	0.75
20	Self evaluation	3.85	0.81
30	Gather evidence	3.81	0.96
19	Creative thinking skills	3.73	0.97
27	Problem finding	3.73	0.84
33	Study skills	3.69	0.97
29	Inquiry and research	3.69	0.95
16	Topic choices	3.68	0.89
21	Peer evaluation	3.65	0.86
31	Project based learning	3.65	0.93
32	Independent projects	3.64	0.98
4	Compacting	3.60	0.94
10	Use experts/specialists	3.10	1.02

Note. [†] Means calculated from the survey item scores: Minimum value = 1, Maximum value = 5.

Appendix M

Table A7

Percentile Scores for Principals' and Teachers' Perceptions of Teachers' Differentiated Pedagogical Strategies

Item	Pedagogical Strategies	% Never		% Rarely		% Sometimes		% Often		% Almost always	
		T	P	T	P	T	P	T	P	T	P
1	Modify outcomes	0.1	1.7	1.4	0.0	15.3	30.8	43.3	46.7	39.9	20.8
2	Concepts	0.2	0.8	0.6	0.0	7.6	15.0	47.7	59.2	43.9	25.0
3	Part to whole learning	0.1	0.0	0.6	2.5	6.7	21.7	47.7	57.5	44.9	18.3
4	Compacting	1.9	0.0	8.9	9.2	34.6	45.8	37.1	34.2	17.5	10.8
5	Background knowledge	0.0	0.0	1.4	5.0	16.6	30.0	44.8	50.0	37.2	15.0
6	Adjust individual practice	0.0	0.0	1.8	4.2	12.2	30.8	50.8	48.3	35.2	16.7
7	Challenging tasks	0.0	0.8	0.4	0.0	6.7	24.2	44.8	57.5	48.1	17.5
8	Variety of experiences	0.0	0.8	0.5	1.7	5.0	13.3	38.1	42.5	56.5	41.7
9	Link to existing knowledge	0.0	0.8	0.2	2.5	4.0	17.5	39.7	53.3	56.0	25.8
10	Use experts/specialists	5.0	2.5	21.7	19.2	42.4	43.3	20.4	31.7	10.4	3.3
11	Vary pace	0.0	0.0	0.5	2.5	12.8	24.2	51.0	55.0	35.8	18.3
12	Flexible grouping	0.4	1.7	1.8	5.0	16.8	19.2	43.7	44.2	37.4	30.0
13	Questioning	0.4	0.0	1.2	1.7	11.4	25.8	46.4	57.5	40.7	15.0
14	Higher order thinking	0.2	0.0	0.5	0.8	10.1	29.2	45.7	50.0	43.5	20.0

Item	Pedagogical Strategies	% Never		% Rarely		% Sometimes		% Often		% Almost always	
		T	P	T	P	T	P	T	P	T	P
16	Task choices	1.1	0.8	7.5	9.2	32.2	60.8	40.9	21.7	18.3	7.5
17	Diverse views	0.1	1.7	1.9	2.5	16.6	32.5	48.2	51.7	33.2	11.7
18	Imaginative solutions	0.0	0.8	1.1	1.7	14.9	39.2	46.7	48.3	37.4	10.0
19	Creative thinking skills	1.6	0.8	8.7	12.5	27.4	45.0	39.1	35.0	23.1	6.7
20	Self evaluation	0.0	0.8	4.6	7.5	27.2	45.8	46.8	37.5	21.5	8.3
21	Peer evaluation	0.5	1.7	8.5	11.7	31.8	51.7	43.7	30.8	15.6	4.2
22	Learning technologies	0.4	0.8	1.6	0.8	15.9	20.0	48.4	45.0	33.8	33.3
23	Real-life problems	0.0	1.7	2.6	0.8	20.7	37.5	49.8	45.0	27.0	15.0
24	Exemplars	0.5	1.7	2.4	0.8	22.1	40.0	43.9	46.7	31.2	10.8
25	Student reflection	0.1	0.8	1.9	0.0	20.5	40.0	48.6	45.0	28.9	14.2
26	Feedback	0.1	1.7	0.5	3.3	10.4	32.5	47.1	46.7	41.9	15.8
27	Problem finding	0.2	0.8	5.8	5.8	33.1	56.7	42.4	29.2	18.5	7.5
28	Student collaboration	0.1	0.8	0.8	0.0	11.2	24.2	50.9	53.3	36.9	21.7
29	Inquiry and research	0.9	0.8	9.1	7.5	32.3	45.8	35.5	32.5	22.1	13.3
30	Gather evidence	1.7	0.8	7.4	9.2	25.3	41.7	39.8	35.0	25.9	13.3
31	Project-based learning	1.4	0.8	9.1	4.2	30.9	37.5	40.0	47.5	18.5	10.0
32	Independent Projects	2.6	0.8	9.2	7.5	29.9	43.3	38.6	41.7	19.7	6.7

Item	Pedagogical Strategies	% Never		% Rarely		% Sometimes		% Often		% Almost always	
		T	P	T	P	T	P	T	P	T	P
33	Study skills	2.1	1.7	8.7	10.0	29.0	41.7	38.6	39.2	21.6	7.5
34	Challenging environment	0.4	0.0	1.1	4.2	15.1	35.0	47.9	45.8	35.5	15.0
35	Motivation	0.0	1.7	0.4	0.8	4.2	10.8	34.7	36.7	60.7	50.0
36	Liaise with parents	0.6	0.8	5.0	2.5	19.4	15.0	37.3	44.2	37.7	37.5

Note. T = Teachers ($n = 867$); P = Principals ($n = 120$). The teachers and principals were given identical survey.

Appendix N

Northern Sydney Region 2012-2014 Plan



Northern Sydney Region

2012 – 2014 Plan

LEADING LEARNING

The *Northern Sydney Region 2012-2014 Plan* aims to build on our achievements of the past three years and acknowledge the challenges which lie ahead. In maintaining the *Strategic Directions* formulated collaboratively with our schools for the 2011 Plan, we have deliberately maintained our focus to ensure continuity and continuous improvement for our students and our school communities.

Our schools continue to provide outstanding learning opportunities for all of our students. We are proud of the high levels of academic achievement, student leadership initiatives and outstanding achievements in sport and the creative arts. Each day our teachers, school leaders and school administration staff demonstrate their dedication and commitment to providing the very best in education.



This plan highlights our strategic directions, which align with the *Public School NSW Strategic Directions 2012-2014*, and details the strategies through which schools will be supported by the Region.

The plan will be delivered to schools electronically and be available on the intranet to take advantage of links to professional learning opportunities, newsletters and resources provided to support schools in their work.

Kind Regards,

Jane Simmons
Regional Director, Northern Sydney Region

ACKNOWLEDGMENT OF COUNTRY

We acknowledge the traditional custodians of the land within our region and pay respects to the Elders, both past and present, and extend that respect to all other Aboriginal people across and beyond the Northern Sydney Region.

LEADING LEARNING**Regional Priorities**

To foster and lead differentiated learning

To build leadership capacity across Northern Sydney Region

To be recognised as providing a quality service

To develop authentic international relationships



Regional priority

1. To foster and lead differentiated learning

	State Priority Areas	Regional Strategic Directions
	Leadership and Management	<ul style="list-style-type: none"> School executive teams actively lead learning. School plans use evidence-based practices to improve student learning. Principals ensure all teachers implement the <i>Quality Teaching Framework</i> in all teaching and learning. Schools and communities of schools use a range of strategies to optimise learning and support.
	Curriculum and Assessment	<ul style="list-style-type: none"> Teachers embed the <i>Quality Teaching Framework</i> in all learning and teaching practices. Schools provide differentiated curriculum provisions and options for all students. Schools implement the Australian Curriculum and meet national and state deadlines. Schools implement a range of strategies to enhance achievement outcomes and optimise learning for gifted and talented students. Schools engage all students in environmental and sustainability education.
	Engagement and Attainment	<ul style="list-style-type: none"> Schools tailor learning to suit the needs of their students. Schools implement a range of strategies to increase student engagement. Schools increase the percentage of students who demonstrate proficiency in state and national testing. Schools implement a range of strategies to support students starting school and transitioning from Years 6 to 7 and Stage 5 to 6. Schools implement specific strategies to support students impacted by changes to the school leaving age.
	Literacy and Numeracy	<ul style="list-style-type: none"> Schools have explicit targets and strategies to ensure a focus on individual student growth. Schools increase the percentage of students who demonstrate proficiency in reading, writing and numeracy in state and national testing. Schools increase the percentage of ESL students who demonstrate proficiency in reading and writing in national and state testing.
	Aboriginal Education	<ul style="list-style-type: none"> Schools implement a range of strategies to increase the percentage of Aboriginal students who demonstrate proficiency in reading, writing and numeracy. Schools employ a range of effective retention strategies to support all Aboriginal students.
	Organisational Effectiveness	<ul style="list-style-type: none"> Schools provide access to a differentiated curriculum. Schools use state-of-the-art technologies to engage learners and to enrich learning and support innovation. Secondary schools review and refocus structures and systems to meet the needs of all students.