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TEACHER EDUCATION & DEVELOPMENT | RESEARCH ARTICLE

Early career teachers' beliefs about their preparedness to teach: Implications for the professional development of teachers working with gifted and twice-exceptional students

Leonie Rowan[1] and Geraldine Townend[1*]

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*Corresponding author: Geraldine Townend, School of Education and Professional Studies, Griffith University, Queensland 4215, Australia
E-mail: g.townend@griffith.edu.au

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Additional information is available at the end of the article

Abstract: Teachers have a major impact upon the educational achievements and psychological well-being of gifted students. Interestingly, however, relatively little is known about how well-prepared early career teachers believe themselves to be to take up this challenge. This makes the development of appropriately targeted and specifically focused professional learning opportunities challenging; responding to this significant gap in the literature—and its implications for the support of early career teachers—this article reports on results from a large-scale, mixed-methods Australian research project that investigated 971 newly graduated teachers' beliefs about their preparedness to meet the needs of diverse students. Drawing upon this unique data-set, the paper identifies three key areas where beginning teachers felt less than prepared: teaching students with diverse abilities, supporting students with disability and communicating sensitively with parents. The paper then identifies implications of this research for the professional development of teachers.

Subjects: Education & Training; Education Studies; Educational Psychology; Inclusion and Special Educational Needs; Teacher Education & Training; Teaching & Learning-Education; Teaching Practice-Education

ABOUT THE AUTHORS

Leonie Rowan is an associate professor at Griffith Institute for Educational Research, Griffith University in Queensland, Australia. Leonie's research interests relate to the social context of schooling, educational technologies, transformative pedagogies (including the potential of games-based learning), teacher education and pedagogies for higher education. Within these contexts, she has a particular commitment to exploring issues relating to social justice, gender and student diversity. She has published widely on topics relating to educational innovations in schools and higher education.

Geraldine Townend is a research fellow at Griffith University in Queensland Australia, working with the Griffith Institute of Educational Research and the School of Education and Professional Studies. Her research interests are in the field of gifted education, particularly in the area of twice exceptionality, identification and support of students and the development of positive academic self-concept.

PUBLIC INTEREST STATEMENT

This article focuses on early career teachers' perceptions of how well equipped they believe themselves to be when addressing the learning needs of diverse students, particularly those who are gifted or twice-exceptional.

Keywords: gifted education; teacher beliefs; teacher education; teacher professional development; early career teachers; student diversity

1. Introduction

Diverse student learning needs across cognitive, psychosocial, communicative and motor domains has increased the challenges for teachers to enhance student outcomes (Coleman & Gallagher, 2015). Inclusive education is the process of providing all learners with equitable educational opportunities, this is one of the challenges faced by teachers (Navarro, Zervas, Gesa, & Sampson, 2016). How to best prepare teachers to meet the increasing classroom diversity is a quandary for educators across the world as "teachers are being asked to do more for less" (Lucas & Frazier, 2014, p. 91). Teachers need to be armed with the means necessary to address student diversity within their classrooms (Lucas & Frazier, 2014).

The trend over recent years towards inclusive educational practice has led to increasing numbers of students with diverse learning needs, including those who are gifted and highly able, and those with disabilities, in general education classes (Byrnes, 2008). Teachers need to be equipped with the appropriate competencies for supporting students with diverse needs within their classrooms (Navarro et al., 2016). Inclusion of students with diverse learning needs means that teachers have to adjust, alter or differentiate learning so that all students can fully participate in the classroom at their own ability level (Sharma & Nuttal, 2016). Sharma and Nuttal (2016) also suggest that there should be mandatory inclusive education training in teacher education degrees given that the benefits of inclusion and the evidence recommending improvements to teacher training will improve the attitudes, self-perceptions and self-efficacy of teachers. Whilst teacher attitudes or perceptions *towards* diverse students, including those who are gifted and twice-exceptional is well published (Bain, Bliss, Choate, & Brown, 2007; Carroll, Forlin, & Jobling, 2003; Cooper, 2011; Foley-Nicpon, Doobay, & Assouline, 2010; Kronborg & Plunkett, 2012; Lucas, 2011; Lucas & Frazier, 2014; Noble, 2010; Sharma & Nuttal, 2016), there is a paucity of research around the *self-perceptions* of early career teachers around student diversity, including gifted students. The focus of this paper is around gifted students (Gagné, 2005), and includes twice-exceptional students (students who are gifted with a co-existing disability that effects learning [Ronksley-Pavia, 2015]).

Research in the field of gifted education has consistently shown that teachers require a particular combination of knowledge, dispositions and skills in order to work effectively with gifted students (Assouline, Foley Nicpon, & Whiteman, 2010; Gagné, 2010; Gross, Vliet, & University of New South Wales. Gifted Education Research, Resource & Information Centre, 2003). Cheung and Hui (2011) summarise this literature by arguing that support for this cohort requires teachers who possess not only a detailed knowledge of what giftedness actually means (including the ways in which giftedness can co-exist with various learning disabilities [Foley-Nicpon, Assouline, & Colangelo, 2013), but also sophisticated understandings of how curriculum, assessment, pedagogy and various interpersonal relationships all need to be tailored to respond to this student group (VanTassel-Baska & Stambaugh, 2006).

Unfortunately, however, explorations of gifted students' school experiences have repeatedly shown that many teachers—including those in the early years of their career—do not appear to have the requisite knowledge and skills. This has significant and diverse consequences for the students involved, ranging from boredom, disengagement and academic underperformance through to social isolation, anxiety and depression (for discussion of related research see: Colangelo, Assouline, & Gross, 2004; Coleman, Micko, & Cross, 2015; Foley-Nicpon, 2015; Geake & Gross, 2008; Jarvis & Henderson, 2012; Long, Barnett, & Rogers, 2015; McCoach & Siegle, 2007; Reis & Renzulli, 2009; Rogers, 2007).

Not surprisingly, a growing understanding of the varied experiences of gifted students in formal schooling contexts has informed regular calls for teachers to receive more pre-service or in-service training that focuses explicitly on diverse issues associated with gifted education (Bianco & Leech, 2010; Fraser-Seeto, Howard, & Woodcock, 2015; Neihart, 2008). A study found that, for those teachers who wish to commence professional development in gifted education, "ongoing lack of support,

knowledge of existence and resourcing can significantly impact the uptake and completions of such professional learning" (Fraser-Seeto et al., 2015, p. 10).

Professional development can positively influence the practices of teachers in the classroom, and there are positive effects for gifted students (Cheung & Hui, 2011; Geake & Gross, 2008; Siegle, Rubenstein, & Mitchell, 2014). However, the facilitation of professional development programmes focused on gifted education is complicated by a number of factors. Firstly, it is widely recognised that many teachers struggle in the first year of their careers to cope with demands relating to various aspects of their teaching, particular in areas relating to planning, assessment and behaviour management. With all these areas competing for attention, it is sometimes difficult for school administrators to justify focusing professional development on the needs of particular groups of students—that is, gifted learners—who are often considered to be academically self-sufficient and thus not in urgent need of attention or support, or those twice-exceptional learners who are typically inconsistent in performance and often misunderstood (Assouline, Foley Nicpon, & Huber, 2006; Colangelo et al., 2004; Fraser-Seeto et al., 2015; Geake & Gross, 2008; Neumeister, Yssel, & Burney, 2013; Plunkett, 2002; Valle, 2011).

When professional development *is* targeted at teachers of gifted learners, further issues relating to the focus of these activities quickly arise. There is a strong relationship between self-efficacy and effectiveness (Skaalvik & Skaalvik, 2010). Questions remain, however, about what professional development should focus on, and what data need to inform opportunities provided to teachers to learn more about gifted education. Many claims about what education or training related to gifted education should specifically involve are often based upon a mix of anecdotal data and informal feedback received from parents/carers, or on research that involves evaluations of teacher performance by gifted students (Gentry, Steenbergen-Hu, & Choi, 2011; Siegle et al., 2014), or their caregivers (Neumeister et al., 2013; Schultz, 2012; Valle, 2011), or other teachers (Cheung & Hui, 2011; Geake & Gross, 2008; Hong, Greene, & Hartzell, 2011; Matthews & Kitchen, 2007). While all this research has clearly made a valuable contribution to literature, and dramatically improved understanding of the diverse range of challenges faced by gifted students in schooling contexts, it is possible to argue that attempts to improve the educational experiences of gifted students need to consider not only the voices of students, parents and caregivers but also the beliefs of teachers themselves. Interestingly, very little is actually known about how *teachers* evaluate their own level of skill or preparedness when it comes to the challenges of meeting the needs of an increasingly diverse student population, particularly when they first enter the profession.

This gap in knowledge is particularly significant when we consider one further issue: that the multiple pressures negotiated by early career teachers can be exacerbated when they are in environments that offer forms of professional development that are not sufficiently targeted, focused or responsive to the specific challenges that they are encountering. Thus, in an education system that is crisis-rich and time-poor, every minute (and every dollar) invested in the support of early career teachers needs to be as effective as possible.

In recognition of the need to ensure that early career teachers receive the kinds of practical support required to allow them to work effectively with gifted students in diverse classrooms, this paper reports on a unique, longitudinal and mixed-methods research project which collected graduating teachers' beliefs about how well-prepared they were to meet a range of challenges, including those directly related to the education of diverse students.

Drawing upon data collected from a large-scale Australian research project called *Studying the Effectiveness of Teacher Education (SETE)* (Rowan, Mayer, Kline, Kostogriz, & Walker-Gibbs, 2015), this paper outlines 971 newly graduated teachers' beliefs about their preparedness within two of the Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2014b). Acknowledging the importance of ongoing professional development for early career teachers, and with reference to the current Australian Professional Standards for Teachers

(Australian Institute for Teaching and School Leadership, 2014a), this paper identifies areas where teachers feel the *least* prepared, and identifies implications for early career teachers. In this discussion, the paper adds further weight to calls for gifted education to be a priority for the professional development of educators internationally.

This paper, therefore, is divided into four sections: the first justifies the focus of this paper with reference to the literature relating to the education of gifted students; the second provides further detail about the design of the SETE project, including methodology, and the data-sets that were built; the third presents teachers' evaluations of their preparedness to teach in regards to a range of areas directly tied to the education of gifted and twice-exceptional students; the fourth and final section identifies implications for the ongoing professional learning of teachers. Emphasis throughout is on mapping early career teachers' beliefs as a precursor to improving the kinds of professional support they might receive in the vital early years of their career.

2. Background, literature and significance: Teachers, diverse learners and gifted students

2.1. Background

Teachers are clearly expected to support and enable *all* students to maximise their learning and achieve their full potential, an expectation that is increasingly explicit within the professional standards and policy frameworks that underpin teacher education and teacher certification processes (Dempsey & Dally, 2014). It is, however, widely acknowledged that the diversity of the student population makes teaching a very challenging profession. There are increasing calls for further research into how well-prepared teachers are to enter this field and into the nature, and extent, of any gaps in preparation. Our paper contributes to this literature.

Specifically we explore early career teachers' beliefs about their preparedness to teach diverse students and contrast this to their beliefs about preparedness in other key areas. Our use of the broad term *diverse students* is intended to signal a growing awareness within educational policy and practice (and related Professional Standards for teachers [Australian Institute for Teaching and School Leadership, 2014a]), that students are not a homogenous group and that some are more likely than others to be marked as "other" to the "mainstream" or "average" learner. Literature exploring the experiences of children in schools has consistently shown that some learners are routinely positioned as "other" to some form of educational norm, as a result of the ways educators respond to factors such as gender, cultural background, first language, religion, disability and academic performance (both above and below expectations). The focus of this paper is on two related groups of students who are often described as at risk of educational alienation and disengagement: gifted students; and students who are gifted and also diagnosed with a disability that affects learning, twice-exceptional students (Townend & Pendergast, 2015).

Through this paper we use the term "gifted students" to refer to *all* students who are gifted, including those who are twice-exceptional: a term explained further below (Townend & Pendergast, 2015). Gifted students are those who have the potential (fulfilled or otherwise), of achieving in the top 10% of the general population in a particular domain (Gagné, 2015), where domain refers to intellectual, creative, socioaffective and sensori-motor areas of giftedness. Twice-exceptional students are those who are identified as gifted *and* as having a disability that affects learning (Schultz, 2012; Townend & Pendergast, 2015). In the Australian context, disability is broadly defined under the Disability Discrimination Act Commonwealth of Australia, 1992. It includes learning disabilities which affect the way a person learns, (for example, dyslexia); and, conditions which affect emotions and behaviour, (for example, test anxiety, and attention disorders), all of which can impact on concentration, academic performance and completion of tests (Howe, 1992). In school contexts, disability is sometimes represented as an inability to do something that most others of the same age, and with similar opportunities and instruction, can do (Kauffman & Hallahan, 2005). This relates to a large number of learners. Seven per cent of children in Australia (between the ages of 0 and

14 years) are identified with disability (Australian Bureau of Statistics, 2012). This number increases to 18% across the general population (Ronksley-Pavia, 2012). A special study on disability, presented by the 2009 Australian Bureau of Statistics, shows that nearly 66% of 5–20 year old students with disabilities attended mainstream schools (Vaz et al., 2015). Additionally, Munro (2002) has argued that up to 30% of gifted students have a disability that affects learning, and therefore, can be considered as being twice-exceptional. This background information indicates the large numbers of students in contemporary schools who can be identified as gifted and/or twice-exceptional and/or with a disability. This provides important background for the literature review that follows.

3. Literature review

Analysis of literature relating to the educational experiences of gifted students and twice-exceptional students reveals three recurring themes that have shaped the writing of this paper. These themes are teachers' impact on gifted students' experiences and outcomes; long-established patterns of underachievement for gifted learners and associated psychosocial risks; and the value of education for shaping and re-shaping teacher skills and attitudes. In the next section of the paper, we explore each of these themes in more detail in order to introduce the particular focus of this paper.

3.1. Theme 1: The impact of teachers on gifted students

First, it is widely acknowledged that teachers have an effect upon the outcomes of *all* their students (e.g. see Feldhusen & Wood, 1997; Fraser-Seeto et al., 2015; Geake & Gross, 2008) and that teachers "make a difference" to the educational experiences of gifted students (Siegle, Moore, Mann, & Wilson, 2010). This "common sense" finding has been consistently endorsed by research (Jung, 2014; Lassig, 2003, 2009b; McCoach & Siegle, 2007; Plunkett, 2002; Rogers, 2007) that teachers "make a difference" (Hattie, 2003). In the words of Lingard (2005) "Of all school variables … it is teachers who have the greatest effect on student learning outcomes" (p. 174). This research has been linked to ongoing calls for investigations into the quality of teacher education programmes, and increasing rigour in terms of teacher education selection processes.

These conversations also increasingly reflect an awareness that students are not now (any more than they have ever been) a homogenous group. Changes to social structure and populations are seen across the globe and, as Wink (2011) notes, "nowhere are those changes experienced more profoundly than in today's classrooms" (p. 435). Students come to classrooms from various different backgrounds, and with very different interests, abilities and skill sets. As such they do not all benefit from the same teaching approaches, no matter how carefully designed they appear to be (Colangelo et al., 2004; Gagné, 2015; Wormald, Rogers, & Vialle, 2015). The growing acceptance that students cannot be grouped neatly into categories and that there is no "one-size-fits-all" pedagogical approach is, of course, directly relevant to the education of gifted students. While gifted or twice-exceptional students are sometimes represented as homogenous in their needs (including a widespread assumption that they simply need to be "challenged", given more work, or offered opportunities to teach their peers) studies of their educational experiences regularly report examples of the multiple ways in which these students are not sufficiently supported by their schooling (Colangelo et al., 2004; Fraser-Seeto et al., 2015; Lassig, 2009a). Research reports both precocity *and* low performance in school work as well as concerns (expressed by teachers, parents and students themselves) relating to behaviour and peer relationships (Foley-Nicpon et al., 2013; Gagné, 2015).

This, of course, leads to questions about the features of effective education for gifted students. More than a decade of research focused on factors that shape the educational experiences of gifted and twice-exceptional students has repeatedly highlighted similar combinations of teacher characteristics, practices and qualities, as being essential for the effective education of gifted students. Characteristics of teachers commonly referenced in this literature include their capacity to identify giftedness (including twice-exceptionality); a positive attitude towards gifted students; an ability to promote individualised teaching which responds to the specific needs of a specific child; the use of critical thinking skills; motivational techniques; and the provision of student-centred activities which are directly connected to their specific areas of talent or ability (e.g. see: Cheung & Hui, 2011;

Foley-Nicpon et al., 2013; Hernández-Torrano, Prieto, Ferrándiz, Bermejo, & Sáinz, 2013; Şahin, 2014). Teachers with this particular combination of characteristics, qualities, skills and dispositions, are most likely, and able, to create learning environments where gifted students experience educational success, whilst also feeling socially and emotionally supported (Cross & Cross, 2012; Foley-Nicpon & Assouline, 2015). Rogers (2007) conducted a review of studies relating to gifted students, identifying this combination of skills as evidenced by environments within which gifted learners:

- are recognised as individuals—and not merely as members of a homogenous group;
- experience daily challenges in their specific areas of talent;
- have regular opportunities to work independently in their areas of passion and talent;
- access various forms of subject-based and grade-based acceleration;
- have opportunities to socialise and learn with like-minded peers; and
- receive instructional delivery that is differentiated in pace, amount of review and practice, and organisation of content (Rogers, 2007).

Summarising the findings of a review of research into gifted education, Rogers notes that:

> no single practice or panacea ….will work in every school setting and with every gifted or talented learner. If one reads the five lessons that can be learned from this study, one quickly comes to understand that there is a need to find some means to group gifted learners *at times* for their learning and socialization, along with a need to move them ahead *in some form* when their learning outstrips the curriculum they are offered. That these students need *some opportunities,* too, to work independently to develop their demonstrated talents is also clarified in the study. But the strongest lesson of all to be gained from the research base in gifted education is that there are many different ways in which these options for gifted learners can be offered in a school. (p. 382)

With these in-class features attended to, it is also increasingly suggested that a teacher's capacity to develop positive relationships with parents/carers is another skill that enhances outcomes for all students (Brown, Harris, Jacobson, & Trotti, 2014; Cox, 2005; Epstein, 2001; Hill, Baker & Marjoribanks, 2004–2005).

3.2. Theme 2: Long-established patterns of underachievement for gifted learners and associated psychosocial risks

However, while research has painted a clear and consistent picture regarding the skills and dispositions teachers need to have in order to maximise outcomes for gifted students, *and* students with disability, studies in the United States of America (Reis & Renzulli, 2009; Tomlinson, 2009), and Australia (Jarvis & Henderson, 2012; Rogers, 2007), have repeatedly found that teachers are, in the main, under-prepared in areas related to gifted education, and have no clear, or accessible pathway to post-graduation, professional learning opportunities and informal support structures that could help them develop in this area. This has multiple consequences.

When teachers lack the skills and understandings necessary to generate an optimal learning environment, students often experience underachievement, alienation and disengagement. It has also been argued that when there is a mismatch between the curriculum and the academic and psychosocial needs of gifted students, many may operate at "less than 50% of their capacity, causing frustration and other problems" (Cross, 2013, p. 82), such as increased psychosocial and behavioural issues (Gentry et al., 2011; Maher & Geeves, 2014; Schultz, 2012; Siegle et al., 2014). It has also been argued that up to 50% of gifted students are underachieving (Siegle et al., 2014), and that this is directly tied to teachers' decision-making actions, for example, in areas relating to differentiation, and their knowledge and use of a variety of instructional techniques.

The percentage of gifted students who are "underachieving" is particularly concerning given the significant numbers of these students in classrooms around the world. It is generally accepted in Australia, that 10% of students in any given classroom may be gifted (Gagné, 2010) and a further 30% may be twice-exceptional (Gullett, 2008; Munro, 2002) although a lack of empirical research in this field means there is no consensus about this number (Foley-Nicpon, Allmon, Sieck, & Stinson, 2011).

Growing concern about the potential underachievement of gifted students increasingly reflects not only a social justice belief in the rights of all learners to achieve their full potential (Jung, 2014) but also economic arguments. These economic concerns refer to current and future skill shortages associated with falling university enrolments in priority disciplines, such as information technology, engineering, mathematics and the sciences. Watters (2010) highlights this fall:

> In the United States, approximately 30% of doctoral graduates in biology are sourced from outside the country. Decreased participation in science and engineering has been identified in a plethora of reports emanating from many countries … indeed in some colleges, it is becoming more competitive to gain places in hospitality than science. These reports describe a perilous situation … (p. 222)

This potential skill shortage is a concern not only in the United States; it is also reflected in multiple policies globally, including in Australia. Despite growing recognition of this as an area of educational and political concern, progress in the area of policy to support gifted students has been slow to develop in many countries (Plucker, 2012; Robinson, 2012). The 1988 Australian Senate inquiry (Commonwealth of Australia, 1988) into the education of gifted and talented children resulted in the Senate Select Committee reporting that gifted and talented children were arguably among the most educationally disadvantaged groups in Australian schools. Thirteen years later in 2001, another Australian Senate Committee inquiry into gifted education (Commonwealth of Australia, 2001), delivered a report, which found little progress had been made since 1988 in providing programmes for gifted children, and appropriate related professional education for teachers. Despite nine recommendations focusing on gifted education provisions and teacher education, there are still no policies or mandates that enshrine, establish or protect the rights of gifted students (including twice-exceptional students), to an appropriate education, or which mandate teacher education which meets the diverse needs of these students (Ronksley-Pavia, 2015). Despite some government initiatives that resulted in the introduction of the *Gifted and Talented Education Professional Development Package for Teachers* (Gifted Education Research, Resource & Information Centre, 2005) within all government schools, the engagement with this self-directed teacher development package appears very limited, with a study showing "little knowledge and virtually no uptake of the support package" (Fraser-Seeto et al., 2015, p. 11).

Meanwhile, inadequately prepared teachers increase the frustration experienced by parents of gifted and twice-exceptional children: frustrations often tied to misunderstandings about what students are "really" like and what they "really" need. This can create relationships that impact negatively upon parents, students *and teachers* (Besnoy et al., 2015; Duquette, Fullerton, Orders, & Robertson-Grewal, 2011; Neumeister et al., 2013).

Understandings of the common problems experienced by gifted students in education systems have led to regular calls—by parents, students and advocacy groups—to investigate ways in which teachers can be supported to better meet the needs of this cohort. This leads to the next theme in the literature: the impact of education, training personal experience and sense of self-efficacy on teachers' ability to support gifted students.

3.3. Theme 3: The value of education and professional development for shaping and re-shaping teacher skills and attitudes

Given the close relationship that exists between teachers' choices and gifted students' educational and psychological well-being—and associated literature suggesting teachers may be under-prepared in this area—it is not surprising that many investigations into gifted education conclude with recommendations for more training for teachers. There are number of issues relating to the impact of further education on teachers which need to be acknowledged here.

Firstly, it is increasingly accepted that teacher behaviour is tied to teacher self-efficacy. Efficacy beliefs determine how environmental opportunities and impediments are perceived (Bandura, 2006), and also influence an individual's choice of activities, how much effort is expended on an activity and how long people will persevere when confronting obstacles (Pajares, 1997). It has long been argued that a teacher's lack of knowledge about a particular discipline area (such as Mathematics or Science), can lead to decreased self-efficacy (Bandura, 1994/1998). It has also been shown that teachers will likely avoid tasks with which they have low confidence and self-efficacy (Lemon & Garvis, 2015). This is particularly relevant to gifted education, with research suggesting that teachers' efficacy beliefs for working with gifted students are characterised by fear and misunderstanding (Cheung & Hui, 2011; Geake & Gross, 2008).

Secondly, it is equally widely acknowledged that teachers' sense of self-efficacy can be improved through education and experience (Gallagher, 2007). It has been shown that both initial teacher education and ongoing professional development have a direct impact on teachers' classroom practices, such as embracing enrichment, acceleration, and other provisions (Cheung & Hui, 2011; Geake & Gross, 2008; Siegle et al., 2014). In addition to this, focus on both initial teacher education and professional development that provides relevant training for teaching gifted students, leads to a positive change in perceptions teachers have about gifted students, and an increase in their ability to cater for the needs of these students (Cheung & Hui, 2011; Jung, 2014; Matthews & Kitchen, 2007; Schultz, 2012).

This kind of research underpins regular calls to ensure that the needs of gifted students feature prominently in education and development, offered to both pre-service and in-service teachers (Cheung & Hui, 2011; Foley-Nicpon et al., 2011; Geake & Gross, 2008; Jung, 2014; Matthews & Kitchen, 2007; Rogers, 2007; Watters, 2010). As Cheung and Hui (2011) argue: increasing perceived teacher competency to teach gifted learners is possible by providing them "with more training and practical experience so that they could understand these students better" (p. 147).

It is important to acknowledge here that the evident relationship between education, decision-making and self-efficacy is increasingly reflected in the professional standards laid down for teachers, in Australia and internationally. Australia's National Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2014a) were adopted across the country in 2011. Effectively superseding the standards developed by individual states/registration bodies, the seven national standards outline "what teachers should know and be able to do at each of the four identified career stages" and make clear "the knowledge, practice and professional engagement required to be an effective educator" (Australian Institute for Teaching and School Leadership, 2014a). Standard 6 outlines an expectation that graduate teachers will "Engage in Professional Learning". More specifically, it requires teachers to:

(1) Identify and plan professional learning needs
(2) Engage in professional learning and improve practice
(3) Engage with colleagues and improve practice
(4) Apply professional learning and improve student learning

However, "professional development" and professional learning are complicated issues and it is well-known that "professional learning" does not always translate into "improved practice". There are a number of particular issues that need to be referenced here. Firstly, it has been argued that early career teachers' beliefs and self-efficacy are resistant to change soon after the beginning phase of teaching (Barak, 2007; Ertmer, 1999; Ertmer & Ottenbreit-Leftwich, 2010; Ng, Nicholas, & Williams, 2010). This is often linked to the particular challenges associated with transition into teaching. For example, in the first years of their career, graduate teachers experience particular forms of stress that can limit their ability to identify and respond to the needs of their diverse learners. Several studies show that beginning teachers struggle for control, and experience feelings of frustration, anger and bewilderment with initial teaching in classrooms (Korthagen, 2010; Townsend & Bates, 2007; Wanzare, 2007). As well as this, newly qualified teachers often start with more difficult and heavy workloads than their experienced colleagues, and are expected to perform their duties with the same expertise and commitment (Townsend & Bates, 2007). These issues are commonly cited as factors which contribute to large numbers of teachers who leave the profession in their first five years.

Secondly, despite (or perhaps because of) the difficulties associated with the early years of teaching, opportunities for professional development are not always regarded as helpful, particularly when they appear to take away from the time teachers need to spend on their "real" work—and simply stay afloat—or when they are not sufficiently relevant to the challenges of their own classroom (Aspfors & Bondas, 2013; Hoekstra & Korthagen, 2011). To further complicate matters, schools and educational systems generally have limited budgets to invest in the support, including professional development, of early career teachers: in this context they may focus on areas that are widely recognised as educational priorities—such as literacy, numeracy or behaviour management—rather than cohorts who are often mis-represented as self-sufficient and advantaged (Aspfors & Bondas, 2013; Kronborg & Plunkett, 2012; Minott, 2010)

The literature clearly signals both the importance of supporting the development of teacher skills and self-efficacy *and* the various contextual factors that make professional development so challenging. This serves as an important reminder that all attempts to improve teachers' capacity to work appropriately with gifted learners need to be carefully structured to meet teachers' *actual* needs. This is a point well made by authors such as Rogers (2007) who, after reviewing previous research in order to identify "lessons learned" about the features of quality gifted education, offered the following comments on effective ways forward:

> The obvious key to success lies in the comprehensiveness and efficacy of gifted education training provided to regular classroom and GT resource teachers (Hansen & Feldhusen, 1994) … In-service training research in gifted education, however, is consistent in showing the positive applications to classroom instruction (e.g. Hultgren & Seeley, 1982), and positive results are also found when the in-service training is very strategy specific. (p. 392)

With a commitment to improving the educational experiences and outcomes for gifted students, this paper now reports on a research project that focused explicitly on early career teachers' beliefs about their preparedness to teach. This, we believe, provides the kind of background information necessary to ensure that early career teachers are appropriately supported through the development of strategic, targeted and cost-effective professional development.

4. The SETE project: Methodology and data collection

The data reported in this paper were collected as part of a four-year longitudinal study (2011–2014), funded by the Australian Research Council, in partnership with a number of industry stakeholders, including regulatory authorities: the Victorian Institute of Teaching; the Queensland College of Teachers; and, two State Education departments, the Victorian Department of Education and Early Childhood Development and the Queensland Department of Education Training and Employment).

This research project followed 4,907 teachers over the first three years of their teaching career, focusing on issues relating to how prepared and effective early career teachers believe themselves to be.

5. Research design

The SETE project employed mixed methods research. Mixed methods research is

> ... [a] design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. (Creswell & Plano Clark, 2011, p. 5)

Mixed methods approaches often follow a sequential explanatory design where the quantitative data are collected and analysed, then supported by qualitative data (Azano et al., 2011; Creswell & Plano Clark, 2011). This project employed a recursive strategy that involved four key phases of data collection, where each stage informed the one that followed.

Phase one included an initial mapping of the terrain of teacher education provision in Australia, including courses on offer, pathways into teaching and programme features of diverse providers. This mapping showed that there were 551 programmes from 47 providers at the time of the survey (Rowan et al., 2015) Phase two included four rounds of the *Graduate Teacher Survey* (two in 2012; one in 2013; one in 2014). Phase three surveyed the principals of graduate teacher respondents. This included three rounds (two in 2012; one in 2013). Phase four involved intensive case studies of new graduates in 30 case study schools and approximately 200 teachers with visits in 2011, 2012, 2013 and 2014, respectively. Whilst it is beyond the scope of this paper to explore these substantial case studies in detail, it is useful to acknowledge some of the qualitative *free-text* data (Table 2) as a complement to the analysis and provide some "tacit understandings" in professional discourses on early career teachers' perceptions around their own effectiveness as teachers. Although the exploration of teacher perceptions used vernacular around diverse student abilities, the case study interview data demonstrated that by "diverse", teachers were often referring to gifted and twice-exceptional students: "But there is a major amount of diversity, high ability and low ability ... No, I'm not prepared, nowhere near ready" (Primary school teacher, July, 2012); and, I did a course that claimed to prepare me for teaching those with "difference" but it was just a bit of disability and low socio-economic, nothing for the highly able—I didn't get much out of it (Primary school teacher, July, 2012); and, "in diversity the focus was on the "lower learners" and nothing for the "top-end" kids (Secondary school teacher, October, 2012).

Consistent with our recursive strategy, the first year case study data informed first year survey instruments. In the following year, first year survey findings informed second year case study foci. This pattern continued over the data collection period. This paper focuses on Round 1 of the *Graduate Teacher Survey* which is now discussed.

5.1. The graduate teacher survey

The *Graduate Teacher Survey* was specifically developed for use within the SETE project. The survey included categorical, continuous-scaled and open-ended questions (SETE, 2014). The first round of the *Graduate Teacher Survey* included three scales. The *SETE Technical Report* (2014) details the development of these three scales and the wide range of analyses conducted to establish reliability and validity (Mayer et al., 2014). The three scales were:

- *Attraction to Teaching* (which included 12 items);
- *Preparation for Teaching* (which included 46 items); and
- *School-based Support* (which included 9 items).

This paper focuses on the *Preparation for Teaching Scale*. This scale included nine sub-scales and 46 items, as noted above. These sub-scales—and the items they contain—reflect expectations of teachers that are outlined in the Australian Professional Standards for Teachers and in literature more broadly.

(1) Teaching culturally, linguistically and socio-economically diverse learners
(2) Design and implementation of the curriculum
(3) Pedagogy
(4) Assessment and the provision of feedback and reporting on student learning
(5) Classroom management
(6) Collegiality
(7) Professional engagement with parents/carers and the community
(8) Professional ethics
(9) Engagement with ongoing professional learning

The 46 items within these sub-scales were presented as statements and respondents were asked to rank their perception of preparedness on a 5-point Likert scale: 1 = strongly disagree, 5 = strongly agree.

It is important to acknowledge here that while each of these nine sub-scales were included in the survey in different and discrete sections, this is clearly an artificial divide. Issues relating to classroom management, for example, obviously interact with issues relating to design of curriculum and pedagogy. However, while the survey asked respondents to address each scale separately, in the context of the research which took place in Australia, respondents would typically be extremely familiar with the Professional Standards, which they must meet in order to receive teacher registration, and equally aware of how they interconnect. Thus, there is no suggestion that consideration of how well teachers deal with diverse learners can be separated out from consideration of how well-prepared they assess themselves to be. Rather, we argue that responses to each item necessarily reflect their overall teaching experience.

The *Preparation for Teaching* scale had strong internal consistency with a Cronbach Alpha coefficient of .971. Two sub-scales are considered in more detail within the data analysis that will follow. The *Teaching Culturally, Linguistically, Socio-Economically Diverse Learners* (including teaching students with a range of abilities) Sub-Scale has a Cronbach Alpha coefficient .905, and the *Professional Engagement with Parents/Carers and the Community*, has a Cronbach Alpha coefficient .792 (SETE, 2014).

5.2. Participant recruitment

Invitations to complete the first SETE survey were emailed to all newly registered teachers in Queensland and Victoria (n = 15,034), between March and April 2012, via their state regulatory authority. A total of 1,443 responses were received equating to a 9.8% response rate. Of these respondents only those currently teaching were eligible to complete questions about their preparedness for teaching. The following analysis therefore considers those 971 responses.

Comparison of the Round 1 sample to other major data sources, including Australian Bureau of Statistics, including, although not the focus of this paper, demographic data, suggests that the sample representativeness is broadly consistent with similar data sets. For examination of this in depth, see the SETE *Final Report* (2015).

6. Results

As outlined above, our goal in this paper was to report on findings that emerged from analysis of teacher responses to the 46 items of the *Preparation for Teaching* scale. Our goal was to identify the specific items within the scale that were *most* relevant to gifted education and where teachers feel *least* prepared. This focus is designed to support the development of professional learning programmes that are sufficiently specific in focus and scope to support the work of early career teachers.

The first point to make is that the overall mean score for all 46 items in the *Preparation for Teaching* ***scale was 3.61.*** Figure 1 illustrates the mean scores for each of the sub-scales mapped against the mean score for the whole scale.

Full details of the teachers' responses to each of the 46 sub-scale items are available in the SETE report. This summary graph shows that teachers generally felt most prepared in regards to pedagogy, assessment, and professional ethics and engagement with ongoing learning, and *least* prepared in areas relating to teaching culturally and linguistically diverse learners, design and implementation of curriculum, classroom management and professional engagement with parents.

It is beyond the scope of this paper to explore all of these issues in detail. In the context of the literature reviewed above, in the remainder of this paper we will focus on three items within these sub-scales with two features: (i) the means fall below the 3.6 average *and* (ii) they have been consistently identified as essential for the provision of quality learning for gifted students, including those who are twice-exceptional. These items are:

- My teacher education programme prepared me to teach students with a range of abilities (mean 3.55)
- My teacher education programme prepared me for supporting full participation of students with disability (mean 3.06)
- My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context (mean 3.13)

Figure 1. Mean scores for the preparedness sub-scales.

We argue that these items are areas of great importance and ones in which teachers report feeling least prepared. The means relating to each of these items are illustrated in Figure 2.

Responses were positively skewed, indicating greater levels of agreement than disagreement that initial teacher education prepared graduates for these aspects of teaching. However, it is also important to consider the percentages of teachers who: did *not* agree *or* strongly agree (that is to say: teachers who either disagreed, *or* strongly disagreed, *or* neither agreed nor disagreed) that they were prepared for issues relating to each of these three items (see Table 1).

As this table indicates: only 63.7% of graduates agreed or strongly agreed that they were prepared to teach students with a range of abilities; only 42.5% indicated that they were prepared to support full participation of students with a disability; and only 46% indicated that they felt prepared to communicate sensitively with parents and carers.

It is, of course important to acknowledge here that these data reflect teachers' self-reported levels of preparedness and is not an audit of their actual university or in-school experiences. The respondents to the surveys may have been given extensive opportunities to learn about each of these issues within their teacher preparation programmes, but these teachers nevertheless may not readily recognise, or relate these opportunities to their current teaching contexts. Similarly, it is important to note that teacher preparation programmes clearly cannot prepare teachers fully for all issues they might need to address throughout their careers. Rather, we would argue that "teacher education" is most usefully conceptualised as an ongoing process that necessarily involves a partnership between universities and schools, with both having a vital role to play, in different ways and at

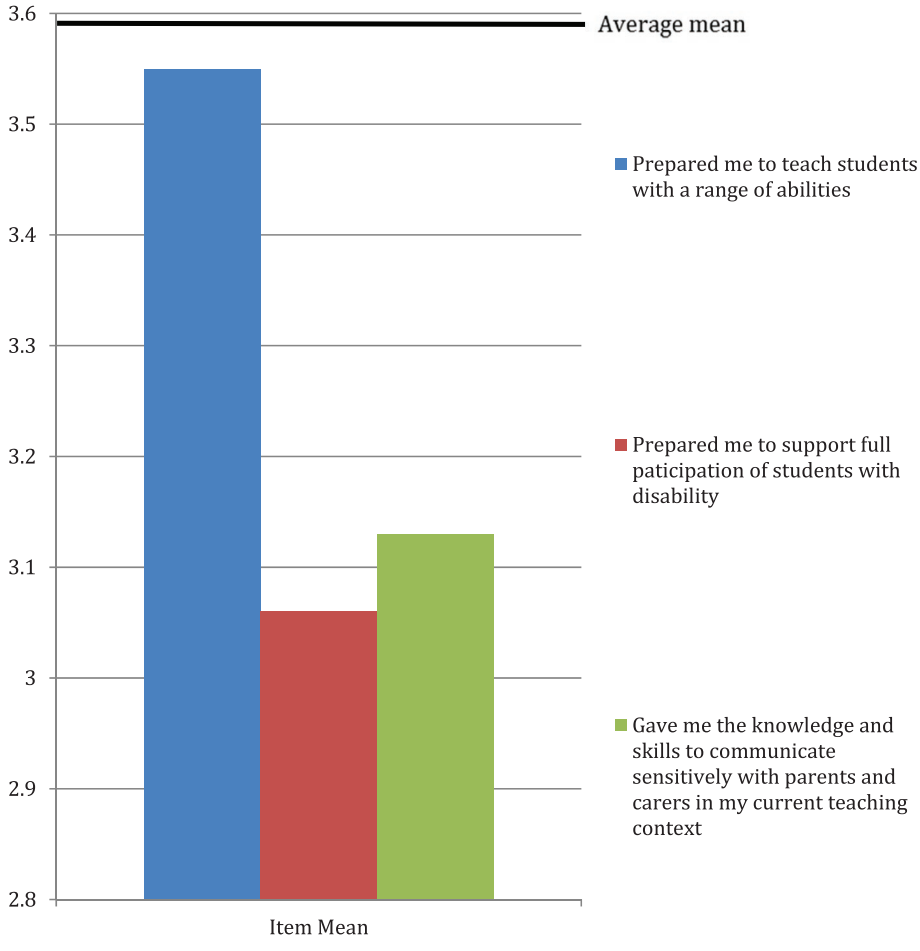

Figure 2. Mean scores for items from the preparedness sub-scales (SETE, 2014).

Table 1. Items examined within their sub-scales with percentage response rates

Sub-scales	Mean	SD	Responses % agree or strongly agree	Responses % neither agree or disagree	Responses % disagree or strongly disagree
Teaching culturally, linguistically and socio-economically diverse learners					
My teacher education programme prepared me to teach students with a range of abilities	Below average 3.55	1.003	63.7%	18.3%	18.1%
My teacher education programme prepared me for supporting full participation of students with disability	Below average 3.06	1.152	42.5%	22.7%	34.8%
Professional engagement with parents/carers and the community					
Gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	Below average 3.13	1.173	46.6%	20.5%	33%

different times, in developing teachers' skills and confidence. The analysis of the mean scores in the items above, therefore, is intended not to critique the content of teacher education programmes, but instead to identify areas where teachers appear to require ongoing professional development opportunities: specifically:

(1) Teaching students with a range of abilities: directly relevant to gifted education
(2) Supporting full participation of students with disability: directly tied to the education of twice-exceptional students
(3) Communicating sensitively with parents and carers in my current teaching: an area that has also been repeatedly identified in literature and policy as a pressing concern for parents and carers.

The literature reviewed above also noted that professional development for early career teachers of gifted students need to be as specifically focused as possible. The first round of the teacher survey also allowed for the collection of "free text" data responding to the question:

- What are two key challenges faced by graduate teachers?

These data provides some valuable additional insights into the survey responses above. Of the 1,898 hundred free text responses provided in Round 1, most respondents listed three challenges:

- 28% related to behaviour/classroom management
- 14% related to catering for diverse learners
- 7% related to communication or interactions with parents

Examples of the comments made are provided in Table 2.

When read alongside the quantitative data, these free text responses indicate that there are a large number of factors relating to each of the three sub-scales that might cause teachers to regard themselves as under-prepared or in need of further support. This provides an excellent point of reference for those involved in mentoring, or providing various forms of professional development to early career teachers.

However, consideration of how this professional development could most usefully be focused must also consider any variables that shaped the teachers' responses and whether or not there were some members of the graduating cohort who were better prepared than others. This is the focus of the following section.

Table 2. Free text survey data from items relating to diverse learners

Sub-scale	Items in sub-scale	Free text data—Key challenges identified by beginning teachers
Teaching diverse learners	Prepared me to teach students with a range of abilities	• Important in my context is classroom management and differentiation of learning • Planning for diverse learners • Catering for diversity/diverse learners • Getting a good grounding for students with additional needs • Catering for diversity while maintaining classroom management • Authentic assessment of the students so that [we] can cater for their needs • Lack of specialisms (sic) at university: I would prefer to see pre-service institutions offer streams after the first 2 years of university, so that teaching skills can be developed more specifically into specialisms (sic)
	Prepared me to support full participation of students with a disability	• We need more disability specific specialisation training • I need to know more about diverse learners— catering for kids in care, autistic, hearing impaired, kids with depression, behaviour problems, etc. • Catering for the special needs of students
Professional engagement with parents/carers and the community	Gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	• Engagement with parents • Need greater understanding of [diversity] and the expectations of parents and schools to support students • High expectations from parents about their children and our ability to provide for them • We need more training about working with and giving advice to parents as we have insufficient experience to have as much credibility as a more experienced teacher • Report writing and conducting parent interviews • Engaging with the parent community when a new teacher has few life skills to share and reflect on

6.1. Variables shaping teacher responses

We have noted above that students are a diverse group. Similarly, of course, beginning teachers are a cohort characterised by significant differences in both personal characteristics, past experiences and pathways to teaching. In order to identify the impact of these differences on teachers' beliefs about their preparedness in these key areas, additional analyses (independent samples t-tests and one-way between groups analyses of variance) were conducted.

Variables reported on in this paper are:

- The *type of programme* respondents completed (Bachelor's degree, Graduate Diploma, Master's degree);
- Respondent's *age* (less than 25 years of age; 25–29; 30–34; 35–39; 40–44; 45–49; 50 years of age or above);
- *School type* in which the graduate teacher was employed (primary, secondary, combined, special education setting); and
- *Gender*.

Each of these variables was used to conduct further analysis of teachers' responses to the three sub-scale items that rated below the overall sub-scale mean, that is:

- my teacher education prepared me to teach students with a range of abilities
- my teacher education prepared me to teach students with disabilities
- my teacher education programme prepared me to interact with parents and carers

6.1.1. Impact of school type

One-way between-groups analyses of variance (ANOVAs) between teachers in primary, secondary, combined and special education settings, revealed statistically significant differences in the mean scores for the school types[1] for perceptions of preparedness for two of the three selected sub-scale items. The means for the three items are presented in Table 3.

For the items "My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context", and "MY teacher education programme prepared me to teach students with a range of abilities", statistically significant differences at the $p < .05$ level were found for the four school type groupings:

- "My teacher education programme prepared me to teach students with a range of abilities": F (3, 626) = 2.87, p = .036. Robust Tests for Equity of Means (Welch) were used as the assumption of homogeneity of variance was violated. The difference in mean scores between groups was small (eta squared = .01).
- "My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context": F (3, 58) = 2.8, p = .039. Once again, Robust Tests for Equity of Means (Welch) were used.

Illustrative mean plots are provided at Figures 3–5.

These data show that teachers working in secondary education felt the least prepared to work with parents and carers, and teach students with disabilities, but graduates in *all* school types can be considered under-prepared to teach students with disabilities.

6.1.2. Impact of teachers' qualifications

In this research project the variable "qualification" refers to the initial teacher education programme completed by the participants. The options were a Master's degree, a Bachelor's degree or a Graduate Diploma.

With the three items considered, only the item around supporting students with disability showed a statistically significance difference at the $p < .05$ level in perceptions of preparedness for the three groups: F (2, 961) = 4.8, p = .01. The difference in mean scores between groups was very small (η^2 = .001). The means for each qualification group is presented in Table 4.

Post hoc comparisons using the Tukey HSD test indicated that the mean score for those who completed a Bachelor's degree (N = 431, ***M* = 3.17**, SD = 1.15) was significantly different from those who completed a Graduate Diploma (N = 462, ***M* = 2.94**, SD = 1.14). Scores for graduate teachers who completed a Master's programme (N = 71) did not differ significantly from the other two groups (M = 3.1, SD = 1.28)

6.1.3. Impact of gender

Independent samples t-tests for the three sub-scales using gender, revealed statistically significant differences in the item "My teacher education gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context". This is seen in the difference for males (N = 196, M = 2.97, SD = 1.17) and females (N = 775, M = 3.17, SD = 1.17; t (969) = −2.12, p = .03, two-tailed). In other words, females reported being more prepared for this aspect of teaching than males. The magnitude of the differences in the means (mean difference = −.198, 95% *CI:* −.38– −.02) was very small (η^2 = .005).

Table 3. Impact of school type: Perceptions of preparedness

		N	Mean	*SD*
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me to teach students with a range of abilities	Primary	312	3.63	.990
	Secondary	261	3.43	1.027
	Combined	41	3.56	1.097
	Special education setting	16	4.00	.730
	Total	630	**3.55**	1.012
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	Primary	312	3.21	1.141
	Secondary	261	3.00	1.195
	Combined	41	3.17	1.243
	Special education setting	16	3.69	.946
	Total	630	**3.13**	1.171
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me for supporting full participation of students with disability	Primary	312	3.08	1.177
	Secondary	261	2.95	1.159
	Combined	41	2.95	1.284
	Special education setting	16	3.25	1.238
	Total	630	**3.02**	1.178

Note: Means that are below average is highlighted in bold.

Interestingly, neither males nor females reported being particularly prepared for the other two items. The means are outlined in Table 5.

6.1.4. Impact of age

One-way between groups analysis of variance revealed statistically significant differences ($p < .05$ level), and were found in the mean scores for the seven [age] groups for perceptions of preparedness in the item "prepared me to teach students with a range of abilities": F (6, 964) = 2.2, p = .04. The magnitude of the differences in the means was very small (eta squared = .01). Post hoc comparisons indicated that the mean score for those in the 30–34-year-old age group (N = 125, M = 3.37,

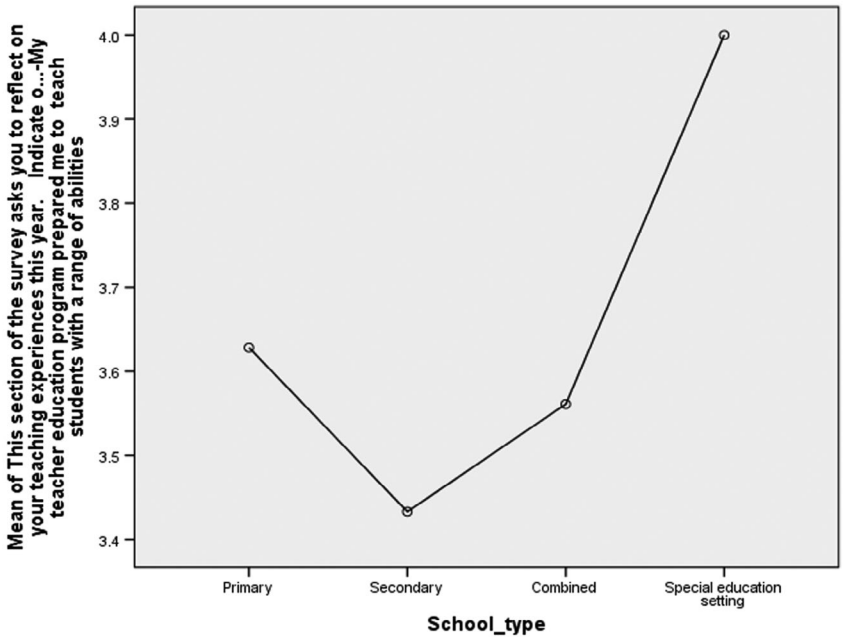

Figure 3. Impact of school type on preparedness to teach students with a range of abilities.

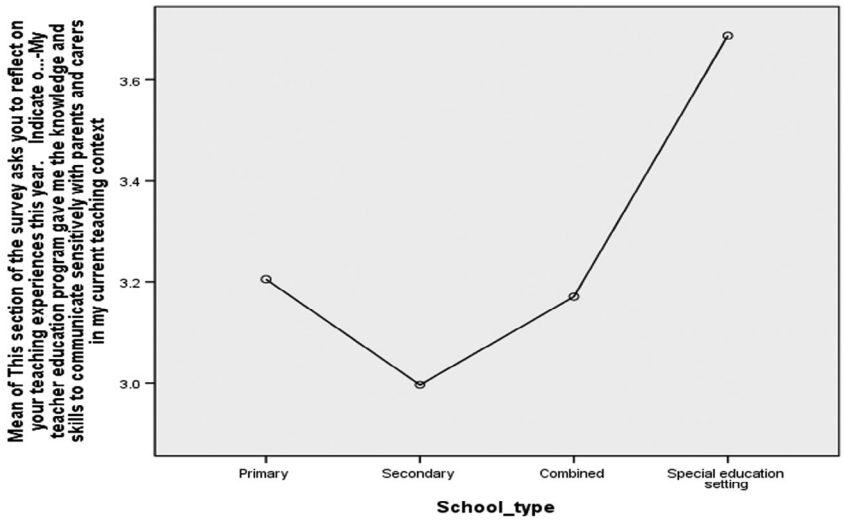

Figure 4. Impact of school type on preparedness to communicate sensitively with parents and carers.

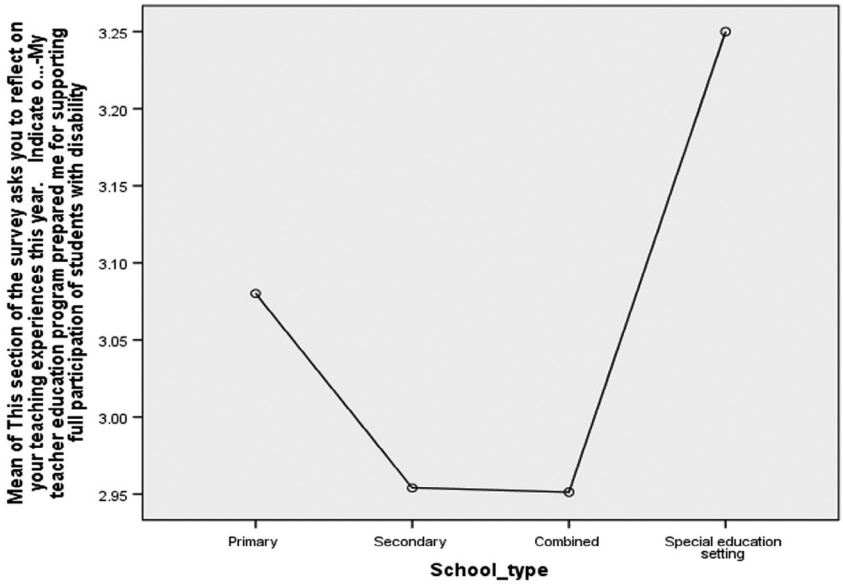

Figure 5. Impact of school type on preparedness to teach students with disabilities.

SD = 1.03), was significantly different from those in the 35–39-year-old age group (*N* = 79, *M* = 3.8, *SD* = .94).[2] Scores from graduate teachers in the other age groupings did not differ significantly from each other. These are displayed in Table 6.

6.2. Summary of results

Analysis of the 46 items to which teachers responded shows that, as a group, teachers felt less prepared in three areas directly relating to the education of gifted students: catering for diverse abilities; supporting students with a disability; and interacting effectively with parents. Analysis of the differences *within* the teacher cohort further showed that:

- Gender had little impact upon perceptions of preparedness in these areas, at this time-point, although females felt more prepared to communicate with parents and carers.
- Age has a significant impact upon perceptions of preparedness to teach students with a range of abilities with those in the 35–39-year-old age group more prepared than those in the 30–34-year-old age group.

Table 4. Means for each qualification group

		N	Mean	*SD*
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me to teach students with a range of abilities	Master's degree	71	3.66	1.095
	Bachelor's degree (including double degrees and honours)	431	3.62	.983
	Graduate or postgraduate diploma	462	3.48	1.007
	Total	964	3.55	1.005
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	Master's degree	71	3.27	1.242
	Bachelor's degree (including double degrees and honours)	431	3.19	1.145
	Graduate or postgraduate diploma	462	3.06	1.188
	Total	964	3.13	1.174
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me for supporting full participation of students with disability	Master's degree	71	3.10	1.278
	Bachelor's degree (including double degrees and honours)	431	3.17	1.145
	Graduate or postgraduate diploma	462	***2.94***	1.136
	Total	964	3.05	1.156

Note: Means that are below average is highlighted in bold.

Table 5. Means for gender

		N	Mean	*SD*
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me to teach students with a range of abilities	Male	196	3.49	1.025
	Female	775	3.57	.997
	Total	971		
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	Male	196	2.97	1.165
	Female	775	3.17	***1.172***
	Total	971		
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me for supporting full participation of students with disability	Male	196	3.05	1.131
	Female	775	3.06	1.158
	Total	971		

Note: Means that are below average is highlighted in bold.

- Graduates with a Bachelor's qualification felt more prepared than those with graduate diplomas to support students with a disability.
- School type has an impact upon perceptions of preparedness, with graduates working in secondary schools feeling less prepared than their counterparts elsewhere in terms of communicating with parents and carers and teaching students with a range of abilities.
- Even those teachers in the groups above who felt *more* prepared than others expressed levels of preparedness that were *below* the average mean for all 46 items.

In the final section of the paper we outline some recommendations and implications that flow from these data.

7. Discussion and implications

The data reported above raise important issues for those involved in the education and development of pre-service and in-service teachers. In the context of the literature, there are three implications for the design and delivery of education and professional development for teachers that are particularly important. These can be related to all of the three areas identified in the literature: teachers' impact on gifted students' experiences and outcomes; long-established patterns of underachievement for

Table 6. Impact of age on preparedness to teach

		N	Mean	SD
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me to teach students with a range of abilities	≤24	348	3.56	.992
	25–29	223	3.52	1.004
	30–34	125	3.37	**1.028**
	35–39	79	3.80	**.939**
	40–44	93	3.58	.993
	45–49	64	3.75	.959
	≥50	39	3.36	1.135
	Total	971	3.55	1.003
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme gave me the knowledge and skills to communicate sensitively with parents and carers in my current teaching context	≤24	348	3.14	1.129
	25–29	223	3.05	1.188
	30–34	125	3.08	1.235
	35–39	79	3.24	1.201
	40–44	93	3.17	1.194
	45–49	64	3.38	1.120
	≥50	39	3.03	1.246
	Total	971	3.13	1.173
This section of the survey asks you to reflect on your teaching experiences this year. Indicate o...—My teacher education programme prepared me for supporting full participation of students with disability	≤24	348	3.05	1.144
	25–29	223	3.00	1.137
	30–34	125	2.86	1.247
	35–39	79	3.25	1.149
	40–44	93	3.24	1.036
	45–49	64	3.22	1.161
	≥50	39	3.00	1.192
	Total	971	3.06	1.152

Note: Means that are below average is highlighted in bold.

gifted learners and associated psychosocial risks; and the value of education for shaping and re-shaping teacher skills and attitudes.

Firstly, the data reported above clearly support previous research which indicates that teachers may not be sufficiently prepared to deal with gifted students. This, in turn, adds weight to regular calls for schools to invest more time and money in professional development focused on gifted education. Teachers reported low levels of preparedness in areas relating to diverse learners, students with disabilities, and interactions with parents and carers. The consistent concern expressed by teachers about each of these areas suggests that they could usefully be addressed in both initial teacher education programmes, induction and mentoring programmes and ongoing professional development.

These data are useful not only for those involved in planning various initiatives to support the induction of new teachers and facilitate their transition into teaching. It also supports consistent calls for teacher preparation and teacher education to be considered as an ongoing process that involves partnerships between schools, universities, and the broader community (Aspfors & Bondas, 2013).

Secondly, there is a lack of evidence in the data, (including the free text comments) demonstrating that professional development opportunities are not readily available to graduates. This provides a useful reminder about the importance of ensuring that professional development is sufficiently focused on the development of practical strategies. These practical strategies relate to differentiation, time management, extension activities and positive parental relationships. Differentiation of

learning on a day-to-day basis includes the challenge of dealing with classrooms that involve students whom teachers perceive to have "high" ability, and "low" ability. Time management strategies are required in order to respond to the unique needs of diverse students. Further knowledge of how to conceptualise and enact "extension" activities for gifted students is also needed. Strategies aimed at building and maintaining positive relationships with parents are also significant.

Thirdly, analysis of the impact of the cohort's differences on their responses shows that there are very few factors that ameliorate feelings of under-preparation. Based on mean scores it is possible that graduates whose initial teacher education qualification is a graduate diploma, who are aged below 25 and aged 35–49 years, and who are working in secondary schools, may be in particular need of targeted, early and ongoing support. Similarly, those in the age range of 25–34 and over 50 years, and/or those with a Bachelor's degree may be well positioned to play a key role in supporting their colleagues.

Finally, throughout the teachers' free-text responses, emphasis was regularly placed on the powerful impact of several elements on the nature of their early experiences and associated sense of preparedness. These elements included areas such as, direct experience with diverse needs of students (including relating to their parents) on practicum or early in teaching; teachers' access to mentors, role models and safe-space to try out new ideas; tailored coaching, for example parent–teacher meetings; and input from parents in relation to their child's diverse needs.

8. Notes and limitations

This paper reported on only the first round of survey data as this was the only survey round within which all 46 items relating to the 9 sub-scales were included. Nevertheless, this round is particularly significant as it provides insights into the preparedness of teachers at the time they first enter employment.

The survey did not use the terms gifted or twice-exceptional within the sub-scale items. Teachers were asked about their preparedness to work with students who have a range of abilities, including students with disabilities.

Also of note is that although this paper identified a number of teacher education programmes and individual teacher characteristics associated with statistically significant differences in perceptions of preparedness, the effect sizes are generally small and the size of the sample increases the likelihood of small differences being statistically significant.

When considering analysis in one-way group analysis of variance between school type, it is noted that there were far fewer responses from teachers working in special education settings.

9. Conclusion

Gifted students, including those who are twice-exceptional, are consistently identified in the literature as being at-risk of educational alienation, disengagement and underachievement. In-service education (including school-based professional development), for teachers, is equally consistently advocated as a way of improving the educational experiences and outcomes for this significant and growing cohort of students. In an increasingly complicated schooling system that is crisis-rich, but poor in time and resources, the in-service support offered to teachers needs to be as carefully focused and strategically targeted as possible. The data presented from the SETE project demonstrate that, as a cohort, beginning teachers feel least prepared for their teaching effectiveness in areas relating to teaching students with a disability (a finding with particular relevance to twice-exceptional learners); creating partnerships with parents (a finding with significance to all gifted children); and preparation to teach students with a range of abilities. This provides an excellent starting point for development of in-service support related to these areas. It also challenges those working in all aspects of teacher preparation—within universities, schools, policy-making and registration bodies—to work actively to ensure that teacher preparation is conceptualised as an ongoing process and one that is appropriately and consistently resourced.

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Author details
Leonie Rowan[1]
E-mail: g.townend@griffith.edu.au
Geraldine Townend[1]
E-mail: g.townend@griffith.edu.au
[1] School of Education and Professional Studies, Griffith University, Queensland 4215, Australia.

Declaration
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Notes
1. There are statistically significant differences but Post Hoc tests could not assist with identifying these because the number of responses for some groups were too small. However, the mean plots were used to support these figures.
2. Robust Tests for Equity of Means used as the assumption of homogeneity of variance was violated.

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