Classroom Ready?
Pre-Service Teachers' Self-Efficacy for Their First Professional Experience Placement

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Contents

Summary

Teachers' self-efficacy (TSE) is an essential construct for evaluating teachers' feelings of self-control about completing future teaching-relevant tasks. One important feature of TSE is that it is malleable at the beginning of professional development and difficult to alter once having been established. This study was intended to investigate the level and influential factors TSE among a cohort of pre-service teachers (PSTs) before their first professional practice placement. To answer the two research questions, a survey containing fixed-choice and open-ended questions was used to obtain both quantitative and qualitative data. A total 90 PSTs responded to the survey and the two kinds of data were analysed separately. A relatively lower level of TSE was found in the current study in contrast with previous research, and among the three subscales of TSE in present study, classroom management is of greatest concern for PSTs. With regard to influential factors, PSTs reported several factors such as a lack of teaching experience, previous informal teaching and other relevant experience, teacher education program, personal qualities and characteristics, and teacher-student relationship. Several implications for teacher education programs, limitations, and suggestions for future research were identified.

Authorship Statement

I hereby certify that this work titled "Classroom ready? Pre-service teachers' self-efficacy for their first professional experience placement" has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution than Macquarie University.

I also certify that the thesis is an original piece of research and it has been written by me. In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Faculty of Human Sciences Human Research Ethics Sub-Committee, No.5201700384. See Appendix A.

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1. Introduction

> Beginning teachers have responsibility for student learning from their first day in the classroom. This means they must be classroom ready for entry to the profession (Teacher Education Ministerial Advisory Group, 2014).

There is general agreement that the quality of teachers is a crucial element in improving student achievement (Hattie, 2003). The Australian Professional Standards for Teachers (Ministerial Council for Education, Early Childhood Development and Youth Affairs, 2011) provides a means by which teachers can develop personal learning goals to improve their professional practice. A recent report for the Australian government by the Teacher Education Ministerial Advisory Group (TEMAG, 2014) highlighted the need to ensure that pre-service teachers are classroom ready. The report noted that "evidence must underpin all elements of initial teacher education" (p. ix) and recommended that pre-service teachers develop a range of knowledge and skills for teaching. However, the TEMAG report noted that some stakeholders expressed dissatisfaction with the preparedness of novice teachers. The report identified concerns about teacher education providers' capability to equip their candidates with the ability to fulfil the contemporary school education requirements in Victorian schools and expectations about graduating teacher being unfulfilled in Queensland, and also raised the need for keeping a more rigid and constant assessment of pre-service teachers (PSTs) with regard to professional development standards in South Australia. Thus, a constant rigorous assessment of teaching preparedness after completing teacher education programs should receive more attention.

The high attrition rates of both pre-service and graduate teachers have attracted considerable attention in different countries (Chaplain, 2008). In Australia, about 25 percent of early-career teachers leave the profession within the first 5 years after graduation (Committee for the Review of Teaching and Teacher Education, 2003), and slightly more than 53 percent of first-year teachers report that they considered resigning within the first 10 years (Australia Education Union, 2008). One of the most important psychological factors for novices leaving the profession is their lack of confidence dealing with the challenges of teaching

(Klassen & Chiu, 2011; Wang, Hall, & Rahimi, 2015). Furthermore, professional experience placement has been regarded as being at the heart of teacher educational programs (Yee, S. Tang, 2004; Yuan & Lee, 2014) and equally the most stressful stage during initial teacher education (Klassen & Durksen, 2014). This is because professional experience is the very process by which PSTs combine the university-based theoretical knowledge input with real teaching situations. PSTs could form their realistic perception of teaching by autonomously integrating knowledge acquired from theoretical courses with the reality of school teaching. Professional practice also provides important opportunities for PSTs to test and construct individual cognitions concerning personal beliefs about their teaching ability, from visual anticipation to practical re-evaluation. Thus, as the first formal collision between theoretical knowledge and the reality of teaching, professional practice might be decisive for PSTs to establish their self-image as a teacher.

The concept of self-efficacy has been applied as a subjective indicator of how well prepared a person is to carry out actions in order to achieve future goals. Self-efficacy is an important construct for interpreting personal beliefs in one's capability to achieve certain goals; it can influence individuals' motivation to set goals and to strive to achieve those goals, particularly in the face of adversity. Investigations into teacher self-efficacy (TSE) have identified its role in improving teachers' commitment to the profession, their willingness to implement innovative teaching practices in the classroom, and how they influence the learning achievement of students (Caprara, Barbaranelli, Steca, & Malone, 2006). TSE is most malleable when teachers are undertaking their initial teacher education studies (Winters, 2012) and the most dramatic changes in TSE have been found during pre-service teachers' professional placement (Tschannen-Moran, Hoy, & Hoy, 1998) because teaching practice provides a valuable opportunity for pre-service teachers to integrate the theoretical courses into "real" teaching. Student teaching is also a risk for PSTs, as PSTs tend to adjust their self-set developing standards with their real teaching performance (Hoy, & Spero, 2005). Furthermore, it is extremely challenging to modify TSE once it has been established (Wheatley, 2005).

In this study I examined TSE for a group of PSTs shortly before they undertook their first professional experience placement in order to identify their levels of TSE and the factors that had influenced these levels. Bandura's social cognitive theory, especially the construct of self-efficacy, is used as a foundation for understanding TSE as well as the influential factors from a broader social cognition perspective.

2. Theoretical Framework

Introduction

In this chapter I outline the general structure of the theoretical framework on which this study is based. I commence from the broad theoretical foundations of self-efficacy, namely social cognitive theory, to a mid-level interpreting model of human beings' behaviour, namely triadic reciprocality, and then address the core construct of self-efficacy. Within the construct of self-efficacy, I concentrate on its three variations, the affective processes associated with it, and the four main sources of self-efficacy.

Social cognitive theory

Bandura's social cognitive theory (Bandura, 1997) emphasises how a person's behavioural, personal, and environmental factors interact to determine motivation and behaviour. Bandura described these interactions through the notion of triadic reciprocality. See Figure 1.

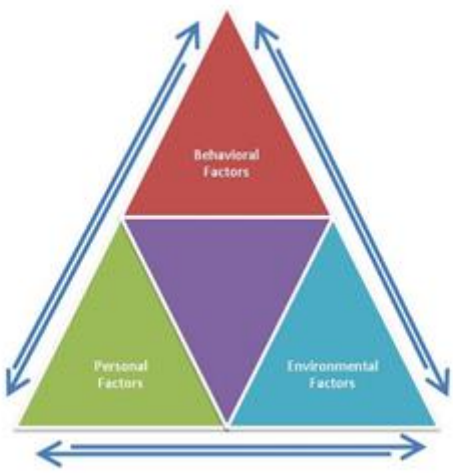

Figure 1. Bandura's triadic reciprocality

According to social cognitive theory, individuals do not simply respond to environmental influences but actively seek and interpret information from the world around them. According to Bandura (2012), individuals act to intentionally influence their life circumstances.

Triadic reciprocality

From the perspective of social cognitive theory, people's behaviour, cognitive and other personal factors, and environmental influences work together interdependently in

determining their actions. Before this theory was raised, two main theories were used to interpret people's behaviours. One was behaviourism, featured with one-side environment control, and the other was social learning theory, distinguished with one-way interaction. Both of them did not take into account the independent role of cognition (Conner,& Norman, 2005). Based on the two previous theories, social cognitive theory asserted the autonomy of human beings' cognition despite of the imposing effect of environment, (Bandura, 1986). As shown in Figure 1, behavioural, personal, and environmental factors could affect each other simultaneously, or not, depending on which aspect dominated a specific situation.

Rooted in a perspective of agency, human beings began to be regarded as being capable of independently symbolising, anticipatorily analysing information, and being self-regulatory and self-reflective (Stajkovic, 1979; Wallace, Buckworth, Kirby, & Sherman, 2000). Similarly, human beings were regarded not only as the products of environment, but also the producers of their own lives with the assistance of their distinct cognitive abilities (Bandura, 2001).

Thus, triadic reciprocality offers a new theoretical model through which to interpret people's behaviours by including their cognitions.

Self-efficacy

According to Bandura (1986, p. 21), "among the types of thoughts that affect action, none is more central or pervasive than people's judgements of their capabilities to deal effectively with different realities". In Bandura's theory, perceived self-efficacy refers to "beliefs in one's capabilities to organize and execute the course of action required to produce given attainments" (Bandura, 1997, p. 3). People's perceived self-efficacy is related to their beliefs about what they can do in a particular setting rather than any particular set of skills they may possess.

Self-efficacy has variations in three dimensions, namely magnitude, generality, and strength. Variations in magnitude mean that people have diverse efficacy expectations when faced with difficulties at different levels, and efficacy levels fall when tasks become more difficult. Generality refers to the degree to which expectations can be generalised across different contexts. The strength of self-efficacy is exhibited through people's persistence in the face of challenging situations. Specifically, weak expectations are easily removed after being confronted with even very slight unfavourable situations, while stronger expectations could remain for a longer time (Bandura, 1977).

Self-efficacy can influence personal behaviours. First, as a distinguishing feature of human beings, people can anticipate the upcoming scenarios. People are inclined to set up

more difficult goals when they believe they have the capability required to fulfil specific tasks, while less self-efficacious individuals have a tendency to avoid the prospect of threats (Locke & Latham, 2006). Second, once being persuaded as being capable, individuals tend to anticipate that certain behaviours could lead to success and that could keep them constantly pursuing fulfilment of goals. This is how self-efficacy impacts on people's motivation. Greater self-efficacy can encourage people to devote more concerted effort and be more persistent in the face of difficulties (Zimmerman, 2000).

Third, levels of self-efficacy play an essential role in individuals' daily perceptions about stress and depression (Bandura, 1995). It is not likely that highly efficacious people feel desperate because of the strengthened belief in conquering difficulties. In contrast, people easily employ avoidance measures if they regard threats as unchallengeable. Fourth, a personal sense of efficacy could also guide individuals to select coping strategies and resources that are suited to themselves. People prefer to choose activities and situations they believe they are more capable of completing than to deal with situations that exceed their ability. It is also through this selecting process that people construct their lives.

Bandura (1995) described four sources from which individuals gain a sense of their efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological feedback. These four factors allow individuals to determine whether or not they believe they are capable of completing specific tasks.

Mastery experiences are the most influential source of self-efficacy since "successes build a robust belief in one's personal efficacy ... a resilient sense of efficacy is firmly established" (Bandura, 1997, p. 80). It is because a person could raise the accuracy of self-efficacy judgement based on the previous cognition of a causal association between behaviour and results (Gist & Mitchell, 1992). Specifically, people's beliefs in their capability would be more resilient if they have experienced success in challenging situations. Furthermore, the perception that success had been easily achieved can be dismissed without much challenge.

Individuals also gain self-efficacy from vicarious experience and that requires a cognitive process of observing information about others' behaviour and results. For example, watching others complete dangerous or intimidating acts without there being any adverse outcomes can allow individuals to believe that they will also succeed if they continue in their efforts. On the other hand, if individuals witness others' failures, their self-efficacy will decrease and they can become less motivated (Brown, & Inouye 1978). Moreover, the similarity between the observer and object is a key factor in determining

the extent to which experience from others could influence an individual's self-evaluation of self-efficacy.

Verbal persuasion works as an easy and widely used means of influencing a person's personal self-efficacy. People can alter their self-efficacy by listening to others whom they regard as credible in that they can be persuaded to believe that they can achieve certain goals if they exert sufficient effort. Self-efficacy based on this source is relatively easy to threaten in the face of unsuccessful results, however, especially if the encouragement is unrealistic and is not accompanied by sufficient information about protective strategies.

Physiological states or emotional arousal is another way of altering self-efficacy beliefs. "People rely partly on their state of physiological arousal in judging their anxiety and vulnerability to stress" (Bandura, 1977, p. 198). Maintaining good emotional health can be influential for people to relieve themselves from pressure and possibly assist in raising their self-efficacy (Bandura, 1986). In this process, it is the personal interpretation of emotion and physical conditions rather than conditions themselves that can influence people's sense of self-efficacy. This is consistent with social cognitive theory's cognitive focus that all sources of information, whether from one's own behaviour and observation, persuasion from others, or personal emotions, can be influential via a person's cognitive processes.

Conclusion

Within this chapter I have described a three-aspect theoretical framework comprising social cognitive theory, triadic reciprocality, and the construct of self-efficacy. I have highlighted the status of self-efficacy for the present study which includes the first two aspects, namely social cognitive theory and triadic reciprocality, as a theoretical background. All aspects of self-efficacy described above could provide a general theoretical background for understanding the self-efficacy of PSTs in this current study, especially the importance and sources of self-efficacy. The next chapter contains a review of previous research relevant to the theoretical framework, followed by identification of the research gaps that this research is intended to address. The two research questions are presented at the end of that chapter.

3. Literature Review

Introduction

In this chapter I provide an overview of previous research and investigate the research gap for the present study. The review of literature focuses on studies of teachers' and PSTs' TSE, and focuses on four main themes: understanding the concept of TSE; the importance of TSE for teachers and PSTs, factors influencing teachers' and PSTs' TSE, and changing patterns of TSE. The two research questions that are addressed in this research are provided at the end of this chapter.

Understanding the concept of TSE

Many researchers have attempted to define TSE. At first, researchers defined teacher efficacy as the extent to which teachers believe they can produce an effect on students' learning (Hoy & Spero, 2005). This idea was based on the construct of locus of control (Rotter, 1966) which regards human behaviour as determined by either internal or external factors. When people believe that their achievement is determined by their own behaviour, it is referred to as internal control. When they consider reinforcement results from outside factors such as luck, fate, and other powerful factors, it is referred to as external control. Thus, TSE here refers to teachers' beliefs about the extent to which they can attribute student outcomes to their own performance (Pfitzner-Eden, Thiel, & Horsley, 2014; Ross, Cousins, & Gadalla, 1996). Researchers have also interpreted TSE in terms of two aspects: general teaching efficacy (GTE) and personal teaching efficacy (PTE) (Tschannen-Moran & Hoy, 2001). GTE is a general belief of an individual teacher about the role that the teaching profession plays in deciding students' development, in contrast with external factors such as family background and social status. PTE addresses teachers' personal belief in whether they have the ability to have an impact on their students' learning. Both of these aspects focus on the perceived causal relationship between behaviour and outcomes, rather than on specific skills required in certain situations. Moreover, some researchers appear to have confounded TSE with the concept of locus of control, resulting in the lower predictive validity of research findings (Klassen, Tze, Betts, & Gordon, 2011; Pfitzner-Eden et al., 2014; Wheatley, 2005;). This is because, despite people believing that certain behaviours can produce desired results, they still do not consider themselves as being capable of exhibiting those behaviours.

Other researchers have defined TSE according to Bandura's construct of self-efficacy. Lemon and Garvis (2016) stated that "teacher self-efficacy refers to the belief a teacher holds about their capability to carry out an instructional practice in an educational context that results in positive student outcomes" (p. 392). Pfitzner-Eden (2016, p. 241) addressed the need to retain closer connection with the construct of self-efficacy by suggesting that

TSE can be "understood as the belief that one holds about one's capability with regard to the domain of teaching". After reflection on the recent definitions given by these authors, in this study I define TSE as the extent to which teachers, including PSTs, believe they are capable of achieving certain specific teaching goals.

TSE is an important construct because it can influence teachers' effectiveness in the classroom. The importance of TSE for teachers and PSTs is discussed in the following section.

The importance of TSE for teachers and PSTs

Importance of TSE for teachers

Bandura (2012) addressed the predictive ability of self-efficacy to inform future actions and therefore researchers began to study TSE more closely. Generally, TSE can not only affect teachers' general opinions about education but their specific instructional activities as well (Bandura, 1997). Research about TSE is important because it seems that TSE can have an impact on, among other things, teachers' commitment to teaching and their classroom practice.

TSE can influence numerous teacher behaviours through its effects on teachers' dispositions (Mashburn et al., 2008). Similarly, TSE is a significant predictor of students' academic achievement (Caprara et al., 2006). Teachers with higher TSE tend to persist with challenging but effective strategies, set high expectations for students, and strive to use effective classroom management strategies (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010). These strategies include noncustodial approaches to student regulation (Dede, Yilmaz, & Ilhan, 2017) and allowing students to take responsibility for learning and use innovative technologies, thus giving more support to difficult students and more attention to students' concerns (Ross, Hogaboam-Gray, & Hannay, 2001; Midgley, Feldlaufer, & Eccles, 1989). For example, teachers with high levels of TSE tend to use mastery goal structures that may help students become more adaptive learners (Wolters & Daugherty, 2007). TSE could also assist teachers in encouraging students to engage in inquiry-based learning activities (Marshall, Horton, Igo, & Switzer, 2009).

Student achievement was found to be higher in classrooms of teachers who had greater confidence in the effectiveness of education (Ross, 1992). For example, preschool children of teachers with high levels of TSE achieved higher vocabulary gains in high quality and emotionally supportive classroom (Guo, Justice, Sawyer, & Tompkins, 2011). However, researchers have not find any significant association between teacher-student relationships and each of three dimensions, namely, instructional strategies, classroom management and student engagement (De Jong et al., 2014).

The importance of TSE for PSTs

TSE is also important for PSTs. Commitment to the teaching profession is an important factor in PSTs deciding to choose teaching as their career (Chesnut & Cullen, 2014) and developing a stronger commitment to the teaching profession (Chesnut & Burley, 2015). PSTs with low levels of TSE tend to withdraw from teacher education programs (Durgunoglu & Hughes, 2010; Kazempour, 2014) while those with higher TSE are more likely to stay in their program and teach for at least 5 years (Bruinsma & Jansen, 2010; Pendergast, Garvis, & Keogh, 2011).

However, it is not true that each of three components of TSE, namely instructional strategies, classroom management, and student engagement is evenly connected with commitment to teaching. For example, Klassen and Chiu (2011) found that an average 3% increase in PSTs' occupational commitment was associated with a 10% growth in PSTs' self-efficacy with regard to classroom managing, but there was no association with the other two aspects. However, Pfitzner-Eden (2016) found a stronger positive association with TSE in instructional strategy than with classroom management. Thus, based on the statistically significant positive correlation (Bilim, 2014), researchers recommend that early development of TSE during PSTs' professional experience placements is important in motivating PSTs to continue in the profession and successfully transition to in-service teaching (Mulholland & Wallace, 2001) with a positive sense of job satisfaction (Klassen & Chiu, 2010b).

TSE was also found to be associated with PSTs' emotions. High levels of TSE predicted positive emotions such as feeling of joy, whereas low TSE was associated with negative emotions, for instance, anger and anxiety (Hagenauer, Hascher, & Volet, 2015). Researchers also examined the relationship between TSE and issues such as burnout and stress. Low levels of TSE have been found to be associated with aspects of burnout and emotional exhaustion of PSTs which could, in turn, raise the possibility of withdrawing from the profession (Klassen et al., 2011). A negative association was also found between TSE and PSTs' burnout with regard to the relationship between TSE and strain factors such as conflict with parents, organizing teaching in an innovative way, conflict among fellow teachers, and disruptive students (Skaalvik & Skaalvik, 2007). Fives, Hamman, and Olivarez (2007) identified negative correlations between PSTs' self-efficacy, their emotional exhaustion, and their depersonalisation of students. This might be a direct protective function of PSTs' TSE on psychological distress and some specific symptoms that could relieve PSTs from undesirable physical and psychological health outcomes, such as sleep problems and anxiety (Chan, 2002).

TSE can have an impact on PSTs' behaviour directly or indirectly. Higher levels of TSE may result in positive intentions about innovative instruction methods such as collaborative learning (Ruys, Van Keer, & Aelterman, 2010), web-based instruction (Kavanoz, Yüksel, & Özcan, 2015), and technology integration (Killi, Kauppinen, Coiro, & Utriainen, 2016; Perkmen & Caracuel, 2016). TSE has also been found to influence PSTs' implementation of reforms in their teaching and to relieve their concerns about the effects of innovative practices (Ghaith, Yaghi, Felder, & Brent, 1997; Guskey, 1988). PSTs with high TSE are more likely to treat students respectfully and to be more patient with students who are experiencing difficulties, while PSTs with a lower levels of TSE may be inclined to take a pessimistic view of students' motivation, relying on strict classroom regulations, extrinsic rewards, and punishments (Woolfolk & Hoy, 1990).

TSE is therefore an important consideration for teachers and PSTs alike and there are several factors that can influence levels of TSE. These are discussed in the next section.

Factors influencing teachers' and PSTs' TSE

There are numerous factors that can influence TSE. These are considered below in three categories: environmental factors, demographic factors, and the role of teacher education programs.

Environmental factors

Environmental factors refer mainly to the influence of cultural identity. Differences in TSE can sometimes be attributed to different cultural backgrounds (Tschannen-Moran & Hoy, 2001). For example, student engagement is more valued as an essential capability by American teachers while it has not gained as much attention among teachers from a Chinese background because of the Confucian tradition associated with the high status of teachers (Kleinsasser, 2014). Higher levels of TSE in instruction, discipline, and guidance were also found among Australian teachers, in contrast to Chinese teachers (Ho & Hau, 2004). Malinen et al.(2013) found that cultural differences could possibly be attributed to the different underlying interpretations of relative dimensions of TSE, which are inevitably inherited from PSTs' cultural contexts (Lin & Gorrell, 2001). Thus, teachers' personal cultural interpretations of TSE elements could impact on the validity of TSE (Hoy, & Spero, 2005). Specifically, being situated in a school with higher collective efficacy, TSE tends to increase under the influence of high-level expectations to be successful within the school setting (Goddard & Goddard, 2001). This phenomenon could be explained by social cognition theory through which teachers are regarded as not working in isolation while mutually influential on each other, and the professional climate therefore influences TSE (Guo et al., 2011). Different school settings were also examined as being influential on PSTs' TSE during their professional placement

(Knobloch, 2006; Knoblauch & Hoy, 2008). PSTs' TSE varied considerably after being put into schools in different economic areas, with a lower TSE found among PSTs practising in urban areas. Other contextual factors, such as TSE of cooperating teachers and schools' collective self-efficacy, also influenced PSTs' TSE during their professional practice (Knoblauch & Hoy, 2008).

Demographic factors

Quantitative surveys are commonplace in research about TSE, and therefore demographic factors such as years of teaching experience, gender, subjects and school levels, educational attainments, and previous experiences have been examined frequently.

Years of teaching experience and gender. Klassen and Chiu (2010). Found a nonlinear relationship between years of experience and TSE, with levels of TSE first rising and then falling over teachers' career span. In similar research, Wolters and Daugherty (2007) found that first-year teachers had the lowest levels of TSE for instruction as opposed to teachers with more experience. The researchers reported that those who had taught for 1 to 5 years felt less confident in instruction and classroom management than did their more experienced colleagues, but no effect was found with regard to student engagement. Thus, the researchers asserted that teaching experience could significantly influence all aspects of TSE. Furthermore, veteran teachers tended to keep a stable TSE (Henson, 2001; Wolters & Daugherty, 2007).

Different results have been found between female and male teachers. For example, female teachers have lower TSE with regard to classroom management (Klassen & Chiu, 2010b), but a small association between gender and TSE has been found, although it was not stable in the long term (Pendergast, Garvis, & Keogh, 2011).

Subjects and school levels. TSE is not necessarily uniform across different subjects or year groups. PSTs in certain teaching subjects, such as technology, human ecology, and food and nutrition reported lower levels of TSE for class management and for instructional strategies (Klassen & Chiu, 2011). In terms of different school levels, Lin and Gorrell (2001) found that early childhood PSTs held stronger beliefs than did elementary PSTs in their capability to guide difficult children and apply their professional knowledge. On the other hand, elementary teachers were more confident with regard to parental support and offering culturally appropriate learning experiences. Teachers from elementary and kindergarten grades tend to have high levels of TSE in classroom management and student engagement (Klassen & Chiu, 2010b). PSTs from a graduate diploma of early childhood education were found to have higher levels of TSE than did those from the same level program of primary and secondary education in their first year of teacher education (Pendergast, Garvis, & Keogh, 2011). Elementary teachers were also

reported to have higher self-efficacy for student engagement than did those at middle or high schools (Wolters & Daugherty, 2007; Woodcock, 2011). However, Klassen and Durksen (2014) found that school level was not associated with TSE levels.

Educational attainment. Research about the relationship between PSTs' academic qualifications and TSE is inconclusive. For example, PSTs who graduated from teaching certificate courses have been shown to possess high levels of TSE (Guo, Piasta, Justice, & Kaderavek, 2010). However, there have been differences reported in levels of TSE for teachers who possessed a bachelor degree (Klassen & Chiu, 2011). Differences in levels of TSE were identified between PSTs from undergraduate and master's degree teacher education programs (Pfitzner-Eden, 2016).

Previous extracurricular experience. Previous experience beyond classroom settings could have a positive impact on levels of TSE, as suggested by Chen and Blaise (2002). For example, prior informal experience as a youth advisor or camp counsellor can have long-term beneficial outcomes in the area of student engagement (Tuchman & Isaacs, 2011) while formal teaching experience could improve TSE for instruction. However, not all previous experience was found to support TSE. For instance, prior leadership experience for PSTs studying agricultural education did not appear to influence levels of TSE (Wolf, Foster, & Birkenholz, 2009), with some aspects of TSE greater for those without that experience (Alrefaei, 2015; Guo et al., 2011). Furthermore, it seems likely that previous experience has a greater influence on TSE when it is connected with corresponding subject knowledge and specific teaching situations (Martinussen, Ferrari, Aitken, & Willows, 2015). Having an open mind toward experience such as intrinsically appreciating experiences, being ready for unknown future events, and so on, tends to help teachers have a higher TSE. With that attitude, they are inclined to use more adventurous than avoidant strategies such as waiting for similar, simpler, or non-challenging situations (Hull, Booker, & Näslund-Hadley, 2016).

The role of teacher education programs

Differently structured teacher education programs can have an impact on PSTs' levels of TSE, particularly with respect to coursework and professional experiences (Clift, & Brady, 2005).

Coursework. Many teacher educators (Lancaster & Bain, 2010; Palmer, Dixon, & Archer, 2015; Velthuis, Fisser, & Pieters, 2014; Wheatley, 2005) have examined the relationship between teacher education courses and the level of PSTs' TSE. A skill-based health method course which combined focused content areas, skill-based education, and opportunities to teach in schools, encouraging deeper reflection and providing relevant assessment, was found to be effective on PSTs' levels of TSE and their intention to teach

health education (Fahlman, Hall, & Gutuskey, 2013). A holistic method course for science teaching combining workshops and school placements developed PSTs' self-efficacy for teaching science (Howitt, 2007). A similar result was also found in a science teaching methods course focused on inquiry-based science methods (Flores, 2015; Voet & De Wever, 2017)

Lancaster and Bain (2007) compared the impact of an only-theory delivering method with one-on-one experience and additional complementary tutorials with special students. Higher TSE was found in PSTs who were enrolled in courses that did not have any additional practising experiences. However, higher TSE was found to be associated with a highly structured design in later research, but the result was not statistically significant (Lancaster & Bain, 2010).

Completing focused coursework could possibly be beneficial to the growth of TSE for PSTs (O'Neill & Stephenson, 2012). However, not every course examined was found to be influential in this way. For example, completing an education for sustainability unit (Effeney & Davis, 2013) did not improve PSTs' TSE to teach the subject and keeping the structure and design of the unit correlated well with other parts of the whole course. Similarly, PSTs who completed a special course in teaching methods (Baltaoğlu, 2015) did not increase their TSE significantly due to its loose design.

It appears that there are two key factors in course design that can positively impact on TSE for PSTs. First, there needs to be a focus on developing PSTs' specific content knowledge directly related to their teaching subjects; second, courses need to include different influential elements such as subject knowledge, pedagogical knowledge, previous extra curricula experiences, and professional experiences (Fahlman et al., 2013; Howitt, 2007). For example, an introductory training program focusing on an understanding of inquiry-based learning activities was found to increase levels of TSE for implementing that teaching method (Voet & De Wever, 2016). Similarly, a mathematics inquiry intervention in a teacher education course was reported to raise TSE for instruction and student engagement (Hull, Booker, & Näslund-Hadley, 2016).

The second factor relates to the integration of theory and practice in teacher education (Hagenauer, Hascher, & Volet, 2015). PSTs' content knowledge is more likely to increase PSTs' TSE when it is linked to opportunities for classroom practice (Atay, 2007; Briley, 2012; DeJarnette & Sudeck, 2015). For example, embedding both mathematics instructional practice and mathematics subject knowledge could bring better results in TSE for mathematics teaching (Zuya, Kwalat, & Attah, 2016). This is also true for PSTs who teach reading (Leader-Janssen & Rankin-Erickson, 2013), phonemic awareness

(Martinussen, Ferrari, Aitken, & Willows, 2015), and science (Kazempour & Sadler, 2015).

Professional experience. Different types of professional experience models have been associated with PSTs' levels of TSE, but the results are mixed because of such things as different designs of teaching practice and practice environments. For example, school-based professional experience and microteaching can increase PSTs' levels of TSE (Brown, Lee, & Collins, 2014) for certain aspects such as instructional strategies (Tuchman & Isaacs, 2011), but have also been found to decrease TSE (Plourde, 2002) or to have no impact at all (Atay, 2007; Knobloch, 2006). Key factors appear to include opportunities to participate in the design of professional experience activities, receiving constructive feedback, and modelling instructors' teaching (Arsal, 2014; Cinici, 2016; Goker, 2006). It has been suggested that it is the quality of teaching practice rather than simply the existence of teaching practice that could positively influence PSTs' TSE (Tuchman & Isaacs, 2011).

Different structures for professional experience, such as laboratory-based and field-based models, were also found to influence aspects of TSE at particular professional stages (Gurvitch & Metzler, 2009). In addition, professional experience is more likely to improve PSTs' confidence to teach (Kazempour & Sadler, 2015) through a close connection with coursework, positive relationships between PSTs and their tutors, and a supportive and cooperative atmosphere in the school (Kazempour, 2013; Martins, Costa, & Onofre, 2015; Meristo, Ljalikova, & Löfström, 2013). For example, collaborative mentoring practices can be a positive predicator for TSE, while practices based on showing and modelling did not bring about an equal increase in TSE (Richter et al., 2013). Thus, with within or following assistance and further training, professional experiences could be easily become effective (Malinen et al., 2013). However, it is likely that a combination of these factors, especially being structured in an interactive, collaborative, and organic approach (Clift & Brady, 2005), rather than any individual aspect, is required for a positive impact on PSTs' levels of TSE to occur (Howitt, 2007).

Hence there are many factors which can contribute to TSE for teachers and PSTs alike. The nature of TSE can also change as teachers advance through their careers. These changing patterns are described in the following section.

Changing patterns of TSE

TSE changes throughout teachers' working lives. Spector (1990, as cited in Winters, 2012) discovered that TSE diminished as PSTs gained more exposure to classroom teaching during professional experience placements. A decrease in TSE of PSTs was also found in a study focused on two time points in three 1-year postgraduate programs: the

beginning of the teacher education program and at the end of professional experience (Pendergast, Garvis, & Keogh, 2011). It was interpreted as a result of a "reality shock" that was caused by the mismatch between unrealistically optimistic expectations about their ability and the reality of teaching (Weinstein, 1988). However, Hoy and Spero (2005) demonstrated that PSTs had strong TSE throughout their coursework and it increased during their professional experience. Housego (1992) found that TSE for instructional and management knowledge and skills continued to grow with experience, and Klassen and Durksen (2014) reported a gradual growth of general level of TSE in each week during an 8-week placement. Increases in TSE during professional experience have also been found in all of the three aspects of TSE (Fives, Hamman, & Olivarez, 2007). These increases were attributed to enactive teaching experience, the main and most important source of TSE. Thus, it was regarded that "more experienced teachers had greater confidence in their ability to keep order or avoid disruptions that might make instruction and learning difficult in their classroom" (Wolters & Daughtery, 2007, p. 188). The increase could also result from a continuous overestimation of TSE and support from a simulating practice environment, lessened by the threatening feeling from practising in the environment (Swan, Wolf, & Cano, 2011). Other researchers (Knobloch, 2006) did not find a change in PSTs' TSE after completing student teaching and suggested that it might be because PSTs had previous teaching practice before professional practice and received positive TSE already.

Tracking the changing trends of TSE continues to the in-service years of teaching (Hoy, 2000). After an increase in TSE during professional practice placement, a significant drop occurred at the end of the first-year of teaching, followed by a recovery in second year of teaching, has been reported (Swan et al., 2011). Klassen and Chiu (2010) noted that TSE increased from early career to mid-career and then fell: TSE "showed a nonlinear relationship with years of teaching experience; self-efficacy increased from 0 to about 23 years of experience and then declined as years of experience increased." (p. 748). Similarly, a decrease in TSE was also found in first-year teachers compared with their TSE during their teacher education program (Hoy & Spero, 2005). Furthermore, lower levels in both instruction and classroom management were also detected among beginning teachers in contrast with teachers who were more experienced (Wolters & Daugherty, 2007). Thus, Woodcock (2011) concluded that PSTs' self-efficacy tends to be highest, in contrast with the following in-service teaching years during which declines could be examined, especially in the first year of teaching.

Researchers have also examined trends in specific aspects of TSE and found that different dimensions of TSE do not develop evenly at different stages in a teacher's career (Charalambous, Philippou, & Kyriakides, 2008). Pfitzner-Eden (2016)

investigated two cohorts of PSTs at beginning and advanced stages and found a decline in TSE for classroom management among the beginning cohort and an increase in TSE for classroom management and instruction among the advanced cohort during university coursework. During professional experience, TSE for both groups increased in terms of classroom management and instruction while there was no change in student engagement. Wolters and Daugherty (2007) investigated approximately 1,000 teachers with different years of teaching experience and found that first-year teachers tend to report lower TSE for instruction and classroom management. Other researchers (e.g., McCarthy et al., 2009), point out that beginning teachers often lack confidence in managing student behaviour in the classroom. However, no similar connection was found in student engagement compared with much more experienced teachers (Wolters & Daugherty, 2007). While some simple patterns of TSE development can be drawn from previous research, since only a few studies have followed the same cohort of PSTs from pre-service years to in-service years, it is difficult to determine the strength of these patterns.

Research gaps

From the review of relevant literature, many aspects related to the importance of TSE for pre-service and in-service teachers have been examined. These include enhancing PSTs' commitment to the teaching profession, assisting PSTs to maintain a positive attitude toward teaching, and diminishing the impact of negative emotional influences on in-service teachers. Many sources of TSE have also been explored, such as environmental factors, personal factors, and teacher educational programs.

Previous research on TSE has been predominantly quantitative (Klassen, Tze, Betts, & Gordon, 2011), mainly through the use of scales (Kazempour, 2014). This most commonly used method focuses on assessing the changes in TSE but it does not capture some inconsistent trends underlying PSTs' TSE through the whole initial teacher education process (Charalambous et al., 2008). To keep an open mind on any potential factors that could influence PSTs' TSE, in the present study I have obtained qualitative data through the use of the open-ended questions in the survey where participants could provide information about the reasons for their ratings on the scales.

Furthermore, there are currently few longitudinal studies that could perhaps identify developing trends in levels of TSE through different career stages. The present study is a pilot study for my proposed doctoral research which will be a longitudinal study following a cohort of PSTs from their initial teacher education program into their first year after graduation.

Therefore, the following two research questions are proposed:

What are the levels of pre-service teachers' self-efficacy for teaching before their first professional experience placement?

What factors influence pre-service teachers' levels of self-efficacy for teaching before their first professional experience placement?

Conclusion

In this chapter I have presented the main findings about PSTs' TSE such as the understanding of TSE, the verification of importance of PSTs' TSE, the primary influential factors, and the changing patterns of TSE. This chapter not only provides a basic overview of previous relevant research but also reveals important research gaps for the present study to address. The lack of a longitudinal tracking of TSE changes across different professional development stages, and qualitative data in the research on PSTs' TSE, both indicate the need for a longitudinal study with mixed methods. Specifically, the current study, as a pilot study, commences by investigating level and influencing factors of PSTs' TSE for their first professional teaching practice.

4. Methods

Introduction

In this chapter I outline the research design of the study with regard to the two research questions. First, I describe the procedure of collecting data; second, I provide the basic demographic information of participants; then, I introduce the changes made to, and basic information about, the adapted instruments. Finally, this chapter concludes with information about the procedures used in data analysis.

Data collection

In this research I employed a mixed-method research design to survey the level of PSTs' TSE and the factors that have influenced their self-efficacy beliefs. Both quantitative and qualitative data were collected. The methodology aims to provide a more complete portrayal of PSTs' self-efficacy and accords with previous studies that have called for mixed-methods research into PSTs' self-efficacy (Klassen et al., 2011).

Ethics approval was obtained for the study from the Macquarie University Human Ethics Committee. Refer to Appendix A. All PSTs enrolled in the unit EDTE302 (Introduction to Professional Experience in the Secondary School) were invited to participate in the research during a lecture for EDTE302 which took place in the second last week of Semester 1 and 7 weeks prior to the start of the practicum. Approximately 150 PSTs attended the lecture where they were asked to reflect on some of the core teaching skills related to their upcoming professional placement. The lecturer screened videos in which teacher education graduates provided their reflections concerning professional practice. Common challenges, psychological reactions, and suggestions about practicums were included in the video. Foundational aspects that PSTs need to abide by during the whole professional practice were also introduced and addressed, including being on time, how to get along with supervising teachers, and performance evaluation methods. At the end of the lecture, the lecturer invited PSTs to participate in the survey by filling in the questionnaire and an information/consent form simultaneously. Prospective respondents were told that they could use the questionnaire solely as a beneficial way to reflect and appraise their teaching abilities and not necessarily to return it. After PSTs had completed the survey, the lecturer invited them to participate in the research study by returning their surveys along with a signed information and consent form. A total of 90 surveys and signed consent forms were obtained from the PSTs at the lecture.

Participants

Participants for the study were all PSTs who were preparing to be secondary school teachers. They were either in their third year of a 4-year undergraduate bachelor degree or in the first year of 2-year graduate degree at Macquarie University. The participants had completed units in educational psychology and sociology, classroom management, and an introductory curriculum unit for secondary teaching. They had all presented a short micro-teaching lesson in tutorial classes at the university and had received feedback on the lesson from their tutor and their peers. Undergraduates had completed most of the content units in teaching subjects, while the graduate-entry PSTs had already completed a bachelor degree that included discipline-related study for their teaching subjects.

Survey

The survey (see Appendix B) was based on the Scale for Teacher Self-Efficacy (STSE) (Pfitzner-Eden, Thiel, & Horsley, 2014), which is a recently modified version of the Teachers' Sense of Efficacy Scale (TSES, Tschannen-Moran & Hoy, 2001). The STSE has been validated with PSTs in Germany and New Zealand across two different initial teacher education programs and provides a stable three-factor structure for beginning and advanced PSTs (Pfitzner-Eden, Thiel, & Horsley, 2014). Two reasons have been provided for revising the scale. The first was to modify the three-factor scale specifically for TSE research in PSTs. This was because previous researchers (Duffin, French, & Patrick, 2012) noticed that PSTs at different phases of a teacher education program might have differing discriminating abilities on the indicators of TSES. PSTs from the final year of teacher education programs were found to have a better ability to distinguish the different aspects underlying the investigating items, while those at earlier stages did not do so effectively.

The second reason for adapting the TSES was to attempt to make the STSE more closely allied with Bandura's (2006) newly updated guidelines for creating self-efficacy scales in order that they would conform more closely with the construct of self-efficacy. Bandura's recommendations include the following: to discriminate self-efficacy from locus of control by addressing the latter concept concerning whether people themselves decide the outcome or they result from outside factors, to use "can do" in item stems to ensure content validity for present instead of future capability, to highlight the role of rating confidence in the response scale by using "certain can do" as the item stem, and to diminish personal biases by allowing participants to complete the survey anonymously. To measure TSE, PSTs rate their confidence in their capability for each item on a 9-point response scale ranging from 1 (not at all certain can do) to 9 (absolutely certain can do).

The above suggestions were considered carefully in creating the STSE. Adaptations made in creating it from the TSES were as follows: first, the introductory stem for each item was changed from "...can successfully perform the following everyday tasks of teachers" into "How certain are you that you can". This change was intended to ensure that the focus of self-efficacy was kept closer to judgements about confidence. Second, a nine-point response scale was created. It was sequenced from "Not at all certain can do" (1) to "Absolutely certain can do" (9). This was because, when responding to items ranging from "nothing" (1) to "a great deal", participants actually assess how much control they have over the tasks in the scale by comparing internal controllability and external influences. When they fill in "nothing", it could mean they feel helpless in the face of certain challenges and it indicates a high level of external locus of control. While choosing "A great deal" means participants have a high internal locus of control. Third, the selection and organisation of the items were altered. Items for the STSE scale were chosen from the 24-item TSES by identifying the four most representative items from the original eight items for each of the three subscales in TSE.

Thus, 12 items comprised the STSE, with four items relating to each of the three sub-scales: Instructional Strategies (e.g., Adjust lessons to the proper level for individual students), Classroom Management (e.g., Control disruptive behaviour in the classroom), and Student Engagement (e.g., Help students value learning).

For the present study, three questions were asked to obtain demographic information (program, gender, and teaching subject), and there was an open-ended question: Please explain in as much detail as you can the main factors which influenced your responses. The same question was repeated for each of the three sub-scales and therefore the PSTs were asked to explain the factors that they believe contributed to the ratings they gave for the items in each subscale. Table 1 shows how the methods of data collection and analysis were used to address the two research questions.

Data analysis

With regard to the design of two research questions, the two kinds of data were analysed separately. Quantitative data were explored to answer levels of TSE. Qualitative data collected from three open-ended questions that followed each subscale of TSE, were investigated to further understanding of influential factors independently.

Table 1

Relationships between Research Questions and Data Collection and Analysis

Research question	Instrument	Data sources	Data analysis	Purpose
What are the levels of pre-service teachers' self-efficacy for teaching before their first professional experience placement?	Scale for Teacher Self-efficacy (STSE)	Quantitative data from the 12 items on the Survey	SPSS analysis	Calculate the mean and standard deviation for pre-service teachers' self-efficacy in each sub-scale
What factors influence pre-service teachers' levels of self-efficacy for teaching before their first professional experience placement?	Open-ended questions	Qualitative data from the three open-ended questions	Coding the data via NVivo and distributing into different common themes	Detect what factors PSTs take into account when they report their self-efficacy

Quantitative data from the surveys were subjected to descriptive analysis using SPSS. First, the demographic information of all participants was collated, then the frequencies of PSTs in each demographic category were obtained and converted to percentages. Second, the mean and standard deviation for each of the 12 items on the STSE were calculated. Then, each set of four items from the three subscales were added and divided by four, and the means and standard deviations of each of the three subscales were computed. Finally, the mean and standard deviation of overall TSE on the STSE was calculated by adding the three subscales and dividing the sum by three.

Qualitative data from the surveys were transcribed and initially coded through NVivo by applying a process of reflexive iteration or "visiting and revisiting the data and connecting them with emerging insights, progressively leading to refined focus and understandings" (Srivasta, 2009, p. 77). This process is inductive in the sense that

"patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis" (Patton, 1980, p. 306). This process was used to minimise researcher bias by allowing me to remain open to any themes that might emerge from the data. At this phase, all the qualitative data from each of the three subscales were separately analysed for emergent themes. Then, all common themes that had appeared in the three subscales were combined and factors influential on two or one single subscale were also recorded. In this phase, three aspects of data analysis were considered for inclusion: the demographic information; the levels of TSE, both general and concrete; and also the themes clustered from the open-ended questions.

Conclusion

This chapter provides an overview of the research design. First, it provides a description of the whole process of data collection. Second, it describes the basic information that was sought from the participants and the instrument that was used. Then, the data analysis processes, for both quantitative and qualitative data, was described. In the next chapter the results are presented.

5. Results

Introduction

In this chapter, the results of this study are presented in three parts: participants' demographic information, reported levels of TSE for the three subscales (Instructional Strategies, Classroom Management, and Student Engagement) and the factors that participants mentioned as having influenced their TSE. The results from quantitative and qualitative data analyses are outlined, including the main themes concluded from the participants' responses to the open-ended questions.

Demographic information

Although 90 surveys were submitted for analysis, five surveys did not include all of the demographic data. Two omitted the academic program, two omitted the teaching subject, and one did not include the participant's gender. Despite missing some demographic information, these five surveys were included in the data analysis. Of the 90 PSTs in the study, 67 (76%) were from a four-year double-degree undergraduate program and 21 (24%) were undertaking a 2-year graduate-entry degree. There were 62 females (69%) and 27 males (30%). The main teaching subjects were social sciences including history, economics, and business studies (32%); English (29%); science (20%); mathematics (11%); and languages (6%).

Levels of TSE

The first research question focused on the levels of TSE that PSTs reported prior to their first professional experience placement. Table 2 shows means and standard deviations for the four Instructional Strategies items.

Table 2

Means and Standard Deviations of Items for Instructional Strategies

Item	N	Mean	Std deviation
Item 1	90	6.66	1.07
Item 2	90	5.98	1.20
Item 3	90	6.32	1.26
Item 4	89[a]	6.22	1.29

[a] One survey had missing data for this item.

These means and standard deviations on these items were fairly similar. The highest mean was found in Item 1 “How certain are you that you can provide an alternative explanation for example when students are confused?” while the lowest mean was in Item 2 “How certain are you that you can adjust lessons to the proper level for individual students?” Item 1 had the largest standard deviation and Item 4 had the lowest which focuses on “How certain are you that you can provide appropriate challenges for very capable students?”

Items 5 to 8 focused on classroom management. The results are shown in Table 3. Similar means were found for Items 5, 7, and 8 which indicate controlling disruptive behaviour in the classroom, calming a student who is disruptive and noisy, and keeping a few problem students from ruining an entire lesson. A slightly higher mean was found for Item 6 which asks “how certain are you that you can get students to follow classroom rules?” The standard deviations for these items are also quite similar, clustered around 1.5.

Table 3

Means and Standard Deviations of Items for Classroom Management

Item	N	Mean	Std deviation
Item 5	90	5.21	1.55
Item 6	90	5.67	1.50
Item 7	90	5.19	1.54
Item 8	90	5.21	1.47

Results for the four items relating to Student Engagement are shown in Table 4 (overleaf). Item 9, concentrating on helping students to value learning, had the highest mean and smallest standard deviation, while the lowest mean and greatest standard deviation were for Item 10 which addresses motivating students who have a low interest in schoolwork. Items 11 and 12 were asked to investigate TSE for improving the understanding of a student who is failing and helping students to think critically; these items have similar means.

Table 4

Means and Standard Deviations of Items for Student Engagement

Item	N	Mean	Std deviation
Item 9	90	6.76	1.27
Item 10	90	6.36	1.49
Item 11	90	6.53	1.36
Item 12	89[a]	6.51	1.27

[a] One survey had missing data for this item.

Means and standard deviations across the four items for each aspect and the total TSE score are shown in Table 5. A similar mean was found for Instructional Strategies and Student Engagement, while the mean for Classroom Management was lower. Classroom Management also recorded the widest standard deviation, while the lowest standard deviation was for Instructional Strategies. The overall mean level of TSE in this study is 6.05 (SD=1.01).

Table 5

Levels of TSE in Different Subscales, and Total TSE

Scale	N	Mean	Std deviation
Instructional Strategies	90	6.29	0.91
Classroom Management	90	5.31	1.37
Student Engagement	90	6.53	1.17
TSE	90	6.05	1.01

Influential factors from qualitative analysis

Some important common themes emerged from analysis of the responses to the open-ended questions. These are presented according to the subheadings in the following subsections.

Illustrative quotations from the surveys also included as examples of the key ideas.

Lack of classroom teaching experience

Lack of classroom teaching experience was the most common theme mentioned by the participants in all three subscales of TSE. Not surprisingly, since the participants were preparing for their first professional placement, they were inexperienced in formal classroom teaching and were "not sure what to expect".

They "honestly had no idea" about whether they were "capable of doing these things [instruction] without any experience at all". Similarly, as to classroom management, PSTs were also "very worried about behaviour management as I have had no experience in managing troublesome students' behaviour." Furthermore, they regarded themselves as being "naïve and thus far know nothing [about student engagement]".

Participants' lack of classroom teaching meant they relied mainly on their theoretical knowledge and they were unsure if that would be helpful in guiding their real classroom practice. As one PST wrote: "In theory, I believe I can do the above; in practice, I'm not sure that's true yet." Similarly, even though they "have learned about differentiation strategies [they] have not been able to practise them". This uncertain feeling was exacerbated, especially when they compared "a lot of theoretical knowledge" with "minimal practice" or referred to "no experience controlling a class" and "only theoretical knowledge".

Some participants commented on how unfamiliar they were with contemporary schools because they had graduated from high school many years previously and had not "learnt in a school for 30 years". Thus, they did not know much about what students are like in temporary schools so that they had very limited ideas about how they would get used to it.

> I have not been at school for over 20 years, hence it is not easy to remember exactly what students know at what stage.

Informal teaching experience

Even though they lacked formal classroom teaching experience, some participants had taught previously as private tutors for friends or siblings, or as leaders of staff training programs in other industries. These informal experiences were connected with all three aspects of TSE by PSTs when they reflected on factors that influenced their TSE. For example:

> I have experience tutoring maths privately to a range of ages/abilities, which involves explaining concepts in a variety of ways.
>
> With experience as a youth pastor, I have gained skills in rewording examples and tailoring for different kinds of students.

These experiences allowed the participants to become familiar in interacting with students and how to adjust teaching content for students. Participants also reported that they developed their instructional skills and gained some ideas about how to explain content in a variety of ways based on differing students' learning abilities.

> Having tutored my brother (who is in Year 7), I have practised in developing my "explaining strategies" and manifesting if he comprehended the content. Preparing challenging tasks is something that I have asked him to do.

Some participants also reflected on their experiences in managing teenagers through activities such as sports coaching and other leadership positions.

> I have experience in hockey coaching & trying to calm boisterous, talkative young girls!
>
> I have lots of experience dealing with teens and so I think this should be an okay task, though sometimes I still struggle with it.

Previous informal experience also provided PSTs with feedback about their teaching. Positive evaluations and feedback motivated PSTs to engage in similar tasks in their teaching practice, especially when they "have seen students improve their performance and received appreciation from parents". Specifically, positive evaluations influenced TSE in the subscale for Instructional Strategies, since "I have had some experience teaching ESC of a private college and was quite successful at the above". PSTs also recalled their smooth interactive experience with teenagers with whom they only "had little problems".

Furthermore, in the subscale for Student Engagement, some PSTs described how they had successfully inspired their students to value learning and achieve better academic results. The PSTs also developed some strategies to engage students with lower motivation through "making the content relevant to their interests".

> I have been fortunate enough to work with low ability students, and have been able to improve their marks, their motivation and their outlook on education as a whole.

However, sometimes these informal teaching experiences were not successful and some PSTs still felt uncertain about their forthcoming professional practice. Previous experience may have decreased TSE for student engagement because of the mixed results.

> I have some experience tutoring unmotivated students to help them value learning, with mixed results.

A similar influence was reported for classroom management. For example, "Sometimes in leadership positions, it's hard for me to be authoritative and control situations".

Personal learning experiences

PSTs also reflected on their own prior learning experiences, such as their individual learning styles, their own school teachers' behaviours, and their motivations to study. With regard to TSE for instructional strategies, PSTs were more likely to believe that they could apply their learning skills to teaching if they had used these during their own learning experiences.

> As a learner I often rely on alternative or reasonable explanation in order to make meaning.

> My own learning style may be an influence to explain further/former or in a different way.

Regarding TSE in student engagement, PSTs who regarded themselves as having been lazy, underachievers, or problematic in other ways at school felt it would be easier to understand and work with students who had similar characteristics to them.

> I was a problematic student in high school. I feel this understanding will allow me to engage with those students of the same nature.

PSTs also reflected on how their own school teachers taught them and felt they could possibly replicate these strategies. They noted how those teachers' ability to control their classes impacted the PSTs' TSE in classroom management. "And my own schooling saw plenty of failed attempts at classroom management." Or, "[I was] well behaved. I was in all of the advance classes".

With regard to TSE for student engagement, PSTs also mentioned they had learnt some strategies from the "excellent role models who taught me these skills and made me value learning". Also, their previous experience in motivating their peers at school could also be transformed into motivating future students.

> Mainly from personal experiences throughout my life … often motivated peers while I was SRC at school.

During their own school time, PSTs observed "plenty of failed attempts at classroom management". Their own teachers' apparent failure in calming disruptive behaviours may have lowered their TSE in this subscale. As one participant wrote:

> Behaviour management in classroom is something I am not confident about, possibly due to my experiences in high school myself. Some teachers gave up teaching the lessons...

The teacher education program

University studies were generally mentioned as positive influences on all aspects of TSE, especially in instructional strategies and classroom management. One participant wrote,

> I have been provided with extensive guidance from lectures & tutors on an array of situations & experiences that can occur in the classroom & how best to overcome them.

Generally speaking, for instructional strategies, PSTs agreed that their university studies equipped them with "knowledge of how to approach a classroom environment & deal with the above scenarios". Similarly, when they thought about classroom management, they also thought they were "aware of the different strategies and approaches that can be used" because of units they had studied in their degrees. Furthermore, for student engagement, PSTs also asserted that the skills "emphasised in pre-service teacher training at university" could "allow me to motivate and enthuse students".

However, a feeling of "insecurity" may have decreased their TSE, even when some PSTs believed they had "book-knowledge about techniques" and "in theory, I believe I can do the above". But "in practice I'm not sure that's true yet." The disconnection between theory and practice was most obvious in classroom management as PSTs believed that "behaviour management is easy to learn however hard to implement" and they had "no experience controlling a class only theoretical knowledge".

In the subscale for Instructional Strategies, PSTs mentioned the shortage of practical elements in their theoretical courses since "I don't feel we have had enough examples / instructions on how to complete/ plan / do a lesson plan." They also felt that some university assignments lacked authenticity because "in doing lesson plans which are hypothetical I am not able to practice my skills in adjusting to students' needs

(differentiation)". "Experience in micro-teaching" and "practice/prior experience from university classes" such as lesson plan writing and assessment, in university classroom were the only two practical factors of teacher education program that were regarded as essential for instructional strategies, but only a few PSTs mentioned those things.

At the time of the survey, PSTs had not yet been assigned a school for their first practicum. Therefore they did not know the age, grade, or academic performance level of the students they would teach and "not knowing the student makes my confidence lower". This lack of knowledge about students impacted their TSE for student engagement.

> However not knowing the students or their contexts I don't know how I could impact or motivate the students.

Having studied the content of their teaching subjects at university was mentioned as especially influential on instructional strategies and student engagement. Their understanding of their own subject knowledge seemed to increase their TSE and make them more confident in explaining core concepts.

> I feel as though I have an in-depth understanding of my teaching subject content that allows me to explain concepts/terms in a variety of ways.

Their understanding of the discipline also made PSTs more confident to engage students.

> I feel like I have quite a bit of knowledge about my subject area which will hopefully help to motivate students.

Even so, PSTs did not yet know which specific topics they would be teaching during their practicum and this may have strengthened their uncertainty toward a "risk of unknown", especially if they were "not certain of syllabus requirements".

In student engagement, a strong personal preference for their teaching subjects also strengthened PSTs' TSE.

> I feel I am very passionate about my subject and I feel this will be useful in helping other students learn + love learning.

With regard to the unknown professional practice arrangements, PSTs predominantly indicated their uneasiness about practising situations such as large numbers of students in a single classroom and teaching subject content. PSTs felt more confident to motivate "some" students rather than all students. They "would like to add "some" students to the question". This makes a lot of difference in each subscale.

For example, in instructional strategies, they "find that adjusting a lesson is difficult as there are so many different learning levels". In classroom management, they thought they "can do this quite well with a class of up to 7. But a class of 25+ my nerves will make it harder". Similarly, in student engagement, one PST "can relate well individually to students and ask differentiated questions well. But I have no experience with a class of 30!"

Specifically, to evaluate TSE in instructional strategies, PSTs reflected "understanding students' comprehension" and they also "need to work out as to what the students have achieved in the past in order to successfully comprehend their ability as students will be good at some things but not others". Similarly, one PST described the nervousness about not knowing "how comfortable I will be with the content area I am required to teach" and also felt "not certain of syllabus requirements".

With regard to classroom management, age of students in practising class is a concerning factor that lowered the respondents' TSE: "These children are older" and "I have no experience in the age group I will be teaching", thus, "I will have to use different strategies to control disruptive behaviour".

Students' social background could also be influential for TSE in engaging students. Sharing a similar background could be meaningful.

> As a student who came from low understanding and low social economic area I believe I may have an advantage in helping other students make the same journey.

However, students' disadvantaged social background could limit PSTs' persistence in making low interest students "changeable".

> I am worried about students with a poor home environment, because there is only so much you can achieve in the classroom.

Supervising teachers' being present in the classroom could be beneficial to enhance PSTs' confidence in controlling students' disruptive behaviour.

> Because there is always a supervisor in the classroom, if there are misbehaving students, that supervisor will help to control the class.

Personal qualities and characteristics

Another common phenomenon existing across all subscales of TSE related to the personal qualities of individual PSTs. Even when they clearly noted the challenges of

teaching, some PSTs thought that “this will be good to learn”, and they were “keen to try” and “be open minded to take the advice of my supervising teacher for improvements”. They intended to “think of any future challenges as a learning opportunity and perfection of practice”.

In contrast, some participants were more likely to regard the practicum as a “risk of unknown”.

> I'm confident in myself but … unsettling feelings that will inevitably come, I can't be certain.

For TSE in instructional strategies, PSTs analysed their personal styles in dealing with difficulties. Two ideas were mentioned most frequently: thinking twice before acting, and to “have a backup plan if things do not go to plan”. These habits allow PSTs to prepare alternative solutions for possible challenging questions from students so that they might feel less nervous.

Another personal characteristic mentioned by PSTs across all three subscales was being a talkative person; for example, in instructional strategies, by giving alternative answers.

> And am often guilty of explaining concepts to friends when they didn't ask for it, so I don't worry too much about high-level students’ alternative explanations.

Likewise, in student engagement, PSTs with good personal communication skills believed they “can properly utilise my social skills to be able to motivate students to love science!!”

Regarding TSE in classroom management, being “assertive”, “outspoken”, and “impressive” were identified by PSTs as beneficial when assessing their ability to control a class. On the other hand, in contrast with PSTs who possessed “a good, loud voice”, PSTs who regarded themselves as being “soft”, “reserve[d]”, and “less outspoken”, reported they were anxious about managing student behaviour. As one PST wrote “It is mainly because of my personality. I am not an assertive person”. These features seem to be closely connected with being more authoritative.

> I am conscious that students will not see me as a viable authoritative figure yet and therefore may not respect me; I am also a soft person by nature.

PSTs who regarded themselves as “altruistic”, “supportive”, “enthusiastic”, or “bubbly” in nature were inclined to have a higher TSE in student engagement.

Personal characteristics were also highlighted, particularly for the TSE Classroom Management subscale. These characteristics often related to the need to present an authoritative personal image in the classroom. For instance, calming disruptive behaviour "can be difficult based on personal stance and appearance to students". Some PSTs perceived disadvantages in certain characteristics such as height, appearance, and gender.

> I am afraid that because I am young and also short … students may take advantage of this.
>
> I am short, and do not have an imposing demeanour; I am female.

The teacher-student relationship

PSTs also rated some aspects of TSE based on their own understanding about the importance of building good relationships and rapport with students. In classroom management, PSTs advocated more patience and time for students to establish a good relationship with them. Participants described their belief that "if I am approachable and respectful, students will also be more respectful". Thus, they believed that "even the most difficult student can be 'fixed' in ways that suit them." They also believed that students often became disruptive when they were bored in the lesson or because they were inappropriately seeking the teacher's attention.

> I believe that most students who are disruptive are often bored. Remembering that students are humans and not beneath you, a lot of the times students just want/need to be listened to.

With regard to student engagement, PSTs mentioned encouraging students to appreciate study by "creating relevant content for them and showing that there is value and meaning in what they are learning" PSTs anticipated how they might motivate students to value learning and cultivate learning interests.

> It is important to make learning valuable and meaningful for students in order to build a love and appreciate [sic] for learning.

In PSTs' perceptions, a teacher's personal behaviour could also be effective in the teacher-student relationship. They asserted that teachers could become students' role models and could guide students to follow their behaviours, for example, if a teacher is "very passionate about my subject and I feel this will be useful in helping other students learn and love learning". Thus, a PST could be assured that "I myself have a deep appreciation for learning science and I believe this appreciation is tangible to students and will hopefully inspire/motivate them".

Conclusion

In this chapter, the main findings of both quantitative and qualitative data have been reported. First, means and standard deviations of all items from the three subscales were calculated separately. Second, means and standard deviations for each of the three subscales of TSE the general level of TSE of PSTs was reported. Analysis of the main influential factors collected from the qualitative data followed and six factors emerged. These were a lack of classroom teaching experience, informal teacher experience, personal learning experiences, teacher education program, personal qualities and characteristics, and teacher-student relationship. In next chapter, these finding will be discussed separately according to the two research questions.

6. Discussion

Introduction

This chapter is also organised in terms of the two major research questions: (1) What are the levels of pre-service teachers' self-efficacy for teaching before their first professional experience placement? (2) What factors influence pre-service teachers' levels of self-efficacy for teaching before their first professional experience placement? An overview of the main findings of this study will be considered together with a further discussion of the key results centering on the influential factors of PSTs' TSE.

Levels of TSE

The overall level of TSE is slightly higher than 6 within the scale that ranged from 1 to 9. Although being completed slightly before PSTs' first professional experience placement, the level of general TSE was just higher than the mid-point of 5 and relatively lower than in comparable previous research with PSTs (Pendergast, Garvis, & Keogh, 2011; Pfitzner-Eden, 2016). Therefore, in the present study the common "unrealistic optimism" (Weinstein, 1988) was not evident from the quantitative data. This high expectation of TSE was usually interpreted as being inflated after the theoretical preparation during a teacher education program (Winters, 2012). There are two possible reasons for this outcome in the present study. First, many PSTs had gained a variety of informal teaching experiences such as private tutoring and sports coaching. These informal experiences might be regarded as having influenced PSTs in terms of their TSE. This type of experience might also be helpful to form a realistic self-evaluation of TSE. In consistent previous research (Lin & Gorrell, 2001; Weinstein, 1988), PSTs were less likely to overestimate their TSE after they have gained practice in teaching. This is because the prior experiences may have caused them to think about the challenges of classroom teaching and led to a lower expectation of what they could accomplish in teaching.

In some previous research (Knobloch, 2006), it has been found that informal experience could be beneficial for PSTs' TSE even during their professional experience placement, but its influence might be limited to certain domains such as student engagement (Tuchman & Isaacs, 2011). Thus, gaining relevant experiences could be beneficial to PSTs to become familiar with teaching situations (Knobloch, 2006; Tuchman & Isaacs, 2011). Then, the influence of informal experience can be determined both by the results of PSTs' experience (Lee & Yuan, 2014) and their perceptions of it (Chen & Yeung, 2015).

Second, in contrast with high TSE levels in surveys administered before the completion of university courses of teacher education (e.g, Hoy & Spero, 2005), the

participants' relatively low TSE might be because the STSE was distributed in a lecture delivered shortly before their first professional experience. At that point in time, PSTs were concerned about the upcoming practicum so it is perhaps understandable that many of them reported feeling anxious about teaching.

According to Bandura (1977), emotional arousal is an important source from which humans judge their abilities to successfully perform a task. Positive emotional arousal can enhance a person's intentions to pursue success, while negative arousal may increase the possibility of avoidance. However, some overestimation of perceived self-efficacy can be helpful (Bandura & Locke, 2003) because it encourages the person to undertake a challenging activity such as classroom teaching. In taking up the challenge and experiencing the highs and lows, people can become more resilient and their level of self-efficacy can become more stable. Hence, unconscious positive self-appraisal might be a necessary step for PSTs to take more adventurous action so that they may perform more effectively than might have been the case. Too much "protection" could prevent an inflation of TSE and result in a more serious shock once PSTs step into the classroom (Knobloch, 2006; Swan, Wolf, & Cano, 2011).

The TSE subscales were Instructional Strategies, Classroom Management, and Student Engagement. The relatively low level of TSE for classroom management is consistent with an international concern about PSTs' lack of preparedness for controlling a whole class (O'Neill & Stephenson, 2012). PSTs perceive that managing student behaviour is the most challenging task in teaching (Evans & Tribble, 1986; Main & Hammond, 2008; Wolf, Foster, & Birkenholz, 2009;). This phenomenon can even transfer into recently graduated teachers among whom a negative association has been found between teaching experiences in classroom management and TSE (Wolters & Daugherty, 2007).

Factors influencing TSE of PSTs before first professional experience

According to the mechanisms underlying efficacy information acquisition, four key information sources of self-efficacy were proposed by Bandura (1977). These were mastery experiences, vicarious experience, social persuasion, and emotional arousal. In the current research, factors influencing PSTs' TSE could also be discussed in terms of these four types of sources.

Mastery experiences

Information gained from past experience can direct human beings' interpretation of many anticipatory challenges because it offers reliable information for them to evaluate their

capability. It has been regarded as the main and most influential source of self-efficacy (Bandura, 1986). In this present study, the most commonly cited factor influencing PSTs' TSE related to experience, particularly their lack of formal classroom teaching experience. Lack of formal teaching experience was regarded as limiting PSTs' TSE and it left them without any information to draw on when rating their TSE before their first professional placement. This result is consistent with the view that mastery experience is the most powerful source for establishing an accurate self-efficacy as it can provide people with the most informative knowledge about what they need to complete to achieve a task (Bandura, 1995). This phenomenon seems to be clearer when PSTs felt less certain after comparing their theoretical knowledge in all three subscales with "little experience". Previous research has also confirmed than PSTs cannot do well in correctly assessing TSE (Chesnut & Burley, 2015), particularly when attempting to discriminate between the underlying TSE subscales (Duffin et al., 2012).

Many participants in the present study reported that although their theoretical knowledge of teaching was sound, they lacked actual classroom teaching experience and this appears to have adversely affected their level of TSE. This finding is consistent with previous studies where PSTs' theoretical knowledge without actual classroom teaching experience led them to underestimate the difficulties of teaching and to overestimate their TSE (Lancaster & Bain, 2007; Weinstein, 1988. This miscalculation of TSE might be exacerbated by the design of initial teacher education courses, particularly where the links between theory and practice are not made explicit for PSTs. These links are crucial, and teacher education programs that isolate theoretical approaches from teaching practice are seen as problematic (Darling-Hammond, 2006).

In the present study, previous informal practice in teaching was mainly perceived as helpful. Many PSTs agreed that informal teaching provided them with opportunities to get in touch with children and practise teaching skills, especially explaining core concepts, providing alternative interpretations, and assisting students to appreciate study. Informal teaching was also mentioned in relation to the items associated with instructional strategies and student engagement. This phenomenon suggests that there are many similarities in the two subscales of Instructional Strategies and Student Engagement. It seems that more research is needed to identify why PSTs in the present study did not appear to discriminate between the two subscales.

A comparison between the effects of informal and formal experiences on PSTs' TSE was conducted by Tuchman and Isaacs (2011). Informal experience was found to be helpful for enhancing PSTs' TSE, especially with regard to student engagement. The challenge for PSTs is to learn how to transform their previous informal experiences into

formal school teaching because they need to anticipate different teaching situations such as larger class sizes, more fluctuating academic levels, and older students. Similarly, when PSTs in the present study assessed their TSE in classroom management, they mainly referred to their experience with managing teenagers through coaching sport or other nonteaching activities rather than informal teaching contexts. Informal teaching experience that has a strong connection with specific teaching situations appears to strengthen the impact of personal experience on TSE (Martinussen et al., 2015). This is also consistent with the generality feature of self-efficacy raised by Bandura (1977) which means self-efficacy is more likely to be transformed into other situations that share closer similarities with the previous experience.

Furthermore, in previous studies (Arsal, 2014; Mergler & Tangen, 2010), researchers have examined the benefits of microteaching on PSTs' TSE. Microteaching provides PSTs with feedback about their teaching from university teachers and peers. Microteaching has been commonly found to be helpful in familiarising PSTs with teaching tasks and situations (Harte & Reitano, 2015). However, in this present study, PSTs' experience of microteaching and making other class presentations were rarely mentioned in the survey responses. This may be because PSTs did not regard microteaching as a legitimate preparation for actual classroom teaching. A similar finding occurred in research conducted by Lindell (2013) who reported the lack of significant differences in TSE between a control group and an experimental group of PSTs who participated in microteaching.

Vicarious experience

Human beings can not only receive information by mastery experiences but may also interpret efficacy information through observing others' behaviours and the results those behaviours produce. People use the information gathered through these vicarious experiences to anticipate their own capability to complete the same tasks. For example, Bandura (1986) noticed that people could take more adventurous actions after observing others successfully conquering similar challenges. In this current research, the PSTs' own school teachers were considered to have been influential because their classroom practices offered PSTs an opportunity to observe essential information about teaching. Observation of their school teachers provided PSTs with a chance to learn some teaching skills and also reflect on the causal relationship between teaching behaviours and their consequences. This reflects the view of Bandura (1997) that people tend to rely on observing others when they do not have much knowledge to judge whether they could perform the same task.

Both positive and negative vicarious experiences were reported in this current study. Initially, some PSTs recalled the role of an "apprenticeship of observation" (Lortie, 1975). In their comments on the survey, some PSTs wrote that the success of their former teachers in teaching students had positively influenced their own TSE in applying these skills if confronting similar challenges in the future. For example, after recalling their own school teachers' success in managing disruptive students or engaging unmotivated students (including themselves), PSTs enhanced their TSE as they considered themselves capable of replicating those successes. This result also confirms the previous finding (Senler, 2016) that role models can develop PSTs' positive attitudes toward teaching and motivate them to persist longer in the face of difficulties.

Some participants recalled memories of their school teachers' failures in maintaining discipline in the classroom, and these PSTs reported that such experiences lessened their TSE for classroom management. According to Bandura (1977), vicarious experience could enhance individuals' self-efficacy by observing other comparable successes after experiencing hardship. On the other hand, people's self-efficacy might be reduced if they witness others' failures, especially if those people were considered to be more capable than the observers. However, if people consider themselves to be capable, they might be more likely to take more adventurous actions after they witness the failure of others whom they regarded as admirable. In the present study, PSTs noted that observing the failure of teacher role models decreased their motivation to persevere with teaching. This phenomenon is consistent with the view that PSTs' TSE may decrease after they witness an unsuccessful performance by one of their role models (Woolfolk Hoy & Burke-Spero, 2005). A negative influence from role models was also reported by Mulholland and Wallace (2001), who found that a lack of positive guidance from role models might be limiting for both PSTs' and graduate teachers' TSE. Additionally, inheriting teaching skills from school teachers might explain why PSTs still adopt the traditional beliefs and practices they uncritically inherited from their own teachers before entering a teacher education program (Darling-Hammond, 2006).

Social persuasion and emotional arousal

Social feedback plays an essential role in self-efficacy, both positively and negatively. For example, positive appraisal from a trustworthy person could be beneficial for enhancing one's self-efficacy. In the present study, PSTs mentioned the positive effect on their TSE due to appraisal received from students' parents, university teachers, and friends, and also the improvement in students' academic performance, including their grades and motivation to learn. PSTs also perceived that the positive social appraisal of their communication skills enhanced their TSE in all of the three subscales as reported in

the study conducted by Poulou (2007). Furthermore, PSTs recalled the unsatisfying results in managing teenagers' behaviours and when they assumed leadership positions and experienced difficulty managing their teams as being detrimental to their TSE to carry out similar tasks. This is consistent with the previous findings that different kinds of feedback might be the factor determining why not all previous teaching experiences improved TSE (Caires, Almeida, & Vieira, 2012; Guo, Justice, Sawyer, & Tompkins, 2011). It could be concluded that positive feedback is more likely to improve PSTs' TSE, while negative feedback might be more limiting. It is also consistent with Bandura's (1986) view that people's perceptions of causal relationships between behaviour and feedback, rather than direct experience, has a stronger influence on people's TSE.

Among the few PSTs who mentioned microteaching as beneficial, most of them did not discuss the actual teaching itself. Instead, they emphasised and valued the positive feedback about their microteaching lesson from their tutors. So it was the positive effect of the feedback and not the experience itself that most influenced their TSE. This is consistent with the findings of Al-Awidi and Alghazo (2012) who emphasised the value of combining teaching practice with feedback, particularly positive feedback (Brouwers & Tomic, 2000), from experienced school teachers, peers, or university tutors to develop PSTs' TSE. Professional development training without follow-up coaching did not tend to improve teachers' TSE because it lacked opportunities for teachers to receive feedback and assistance (Tschannen-Moran & McMaster, 2009).

In the current study, feeling nervous and stressed was mentioned very commonly in association with the other three sources of TSE. PSTs mentioned feeling anxious, especially when they acknowledged that they were soon to commence their "risky" first formal professional practicum. Similarly, when PSTs considered the failures of their school teachers and themselves, they were more likely to feel nervous. Again, the time when the survey was carried out, namely in a lecture intended to prepare them for their first professional practice, played an essential role in exacerbating these nervous feelings. This might be one reason why PSTs in the present study rated their TSE relatively low compared with results from previous studies (e.g., Pendergast, Garvis, & Keogh, 2011; Pfitzner-Eden, 2016).

Conclusion

In this chapter I discussed the results from the present research and related them to results from previous studies and the construct of self-efficacy, especially its sources and affective processes. I considered the reasons why there was a relatively lower level of

TSE in the present study, the more worrying situations associated with classroom management, the sources of PSTs' TSE, and how sources influence their TSE differently.

In next chapter, I consider general conclusions separately for the two research questions. This is followed by a consideration of implications for initial teacher education programs and the limitations of the current study. Some suggestions for future research are also provided.

7. Conclusion

Introduction

In this chapter I summarise the main research findings and link them to the research questions. Then, some implications for initial teacher education programs and some limitations of the current study are considered. The chapter concludes with suggestions for future research.

Overview of outcomes of the study

Research Question 1: What are the levels of pre-service teachers' self-efficacy for teaching before their first professional experience placement?

A level of TSE slightly higher than the midpoint on a recently adapted three-subscale instrument was found among the cohort of PSTs who were preparing for their first professional experience. The subscale Classroom Management revealed this to be the most worrying aspect for PSTs. On the subscale Instructional Strategies, PSTs considered themselves most confident on the item "How certain are you that you can provide an alternative explanation or example when students are confused?" They rated the lowest level of TSE on "How certain are you that you can adjust lessons to the proper level for individual students?" With regard to classroom management, four items were all rated fairly low little difference between them. On the subscale Student Engagement, the highest level of TSE was located in helping students to value learning, while the lowest aspect of TSE was found in with regard to motivating students with low interest in schoolwork.

Research Question 2: What factors influence pre-service teachers' levels of self-efficacy for teaching before their first professional experience placement?

With regard to influential factors, mastery experience was the most influential source of TSE. A lack of formal teaching experience and previous informal teaching were most commonly mentioned as being influential by PSTs. This means that mastery experiences are the most important source of TSE on which PSTs rely for evaluating their TSE, even though those experiences occur prior to any actual teaching in schools. Positive feedback could enhance the impact of experiences, while negative comments could lessen PSTs confidence in doing similar tasks. On the other hand, many kinds of informal teaching practice were recalled as being essential, and it confirmed that PSTs were not totally inexperienced.

PSTs tended to recall how they had been taught by own school teachers as "the apprenticeship of observation" (Borg, 2004; Lortie, 1975), one source of vicarious

experience. Observation of their school teachers' teaching behaviours and results offered them a chance to collect information about teaching and reflected about whether they could fulfil similar requirements.

Theoretical courses were regarded as beneficial on TSE as they could equip PSTs with the knowledge to understand students and teaching even though they noticed the obstacles in applying it into the reality of teaching. It might be reasonable to conclude that the provision of theoretical information would compensate for any lack of mastery experiences. However, microteaching and classroom presentations were rarely regarded as beneficial. The few PSTs who reported the positive role of microteaching and other classroom presentations associated these experiences with positive follow-up feedback.

Personal characteristics were also found to be influential. PSTs have established certain personal beliefs about teaching, especially focusing on teacher-student relationships. They were willing to build a humanistic relationship with students and set up a role model for them to follow. This might be interpreted as being overly optimistic. However, it could also be seen as PSTs having a greater intention to be innovative in their teaching. Additionally, PSTs were found attention to being authoritative, especially in classroom management, and some personal characteristics, such as having a loud voice and being impressive and assertive, were also mentioned as important for PSTs to develop their TSE.

Implications for initial teacher education programs

Based on the findings of this study, several implications can be drawn to improve initial teacher education programs. First, it is important that those programs link theory to practical activities such as observing classroom teaching (in person and via video) and participating in microteaching or making student presentations. As emphasised by Darling-Hammond (2006), bridging theory and clinical teaching practice is one of the biggest challenges facing teacher education course design. In the present study, a lack of integration between the theoretical courses studied in university and the practical activities in schools was a common reason why PSTs felt nervous about their first placement, despite regarding themselves as competent in terms of their content knowledge.

PSTs in the present study reported that constructive feedback about their professional practice was beneficial for their TSE. Therefore, in order to enhance the influence of PSTs' teaching practice, structured feedback that emphasises the positive aspects of PSTs' teaching needs to be provided. Such feedback has greater impact if it comes from

university teachers and other professionals who are experienced teacher educators who are regarded highly by the PSTs.

Second, positive orientations to engage in challenging situations are essential for human beings to persist in activities they find difficult. Some participants in this study acknowledged that the forthcoming professional experience would be very challenging for them. However, they also reported their willingness to experience the potential challenges in their professional practice. Hence, cultivating PSTs' positive intentions toward challenges could also be beneficial; it can help them remain resilient in unfamiliar or daunting teaching situations.

Third, participants in the present study primarily interpreted classroom management as the teacher exercising control over student behaviour, perhaps in an authoritative manner. PSTs considered their "authoritative appearance" when they discussed influential factors related to TSE in the Classroom Management subscale. This focus on being authoritative for TSE in classroom management could indicate the doubts raised by Wheatley (2005) which addressed the potential problem in applying TSE into democratic teaching. He described "the majority of scales do not explicitly reflect the goals and methods of democratic teaching" (p. 752) as they mainly focus on teachers' direct personal control over students, especially in classroom management. Thus, teacher educators might need to consider how they can support PSTs to understand classroom management in a more democratic manner.

Limitations

Several limitations exist in this MRes study. First, the STSE survey was administered only once to the participants. That does not permit investigation of any trends with regard to TSE before and after PSTs' first professional practice. Nor does it permit any ongoing investigation during the entire initial teacher education program. I plan to conduct a longitudinal study of TSE as part of subsequent doctoral research.

Second, the survey was administered a few weeks before the start of the professional experience placement. Therefore, PSTs' TSE might have changed from then during the remaining period leading up to their placement because of the intensive preparation for professional experience that took place subsequently. This preparation could offer PSTs more information that would influence their levels of TSE.

Third, there were some difficulties in the data analysis for the study because of some PSTs' responses. Sometimes, in the open response questions, PSTs identified a factor without explaining how it had impacted on their TSE. More specifically, it was not

always possible to determine whether the factor was reported as having had a positive or a negative influence on the level of TSE.

Also, the qualitative and quantitative data were analysed and reported separately. For instance, PSTs mentioned their personal preference for teaching subjects that were influential on their TSE for student engagement, but there was no statistical testing to determine whether these factors were correlated so that no further numerical confirmation can be ascertained.

Fourth, the sample of this study was drawn from one secondary teacher education program in a single university. This restricted sample from one context limits the generalisability of the results.

Fifth, the results indicate that there were many similarities in the survey responses for the subscales for Instructional Strategies and Student Engagement. It appears that the participants found it difficult to discriminate between these two subscales so a confirmatory factor analysis might have helped to confirm whether the STSE subscales were operating as intended in this study.

Future research

Regarding the findings and limitations of the present study, a few suggestions are helpful for future research. A mixed-method design is helpful to further understand the factors that are influential on TSE for PSTs and can complement the predominantly quantitative research published in this area (R. K. Henson, 2002). To achieve a better understanding of PSTs' TSE and its influential factors, a more integrated research design is appropriate. Specifically, researchers need to use qualitative methods, such as interviews and observation because more details could be concluded from a study employing those methods. Furthermore, longitudinal research could follow a cohort of PSTs through their teacher education studies and into the first years of their careers. Such research is needed because TSE is not stable at different professional development stages (Klassen & Chiu, 2010; Weinstein, 1988). Future research should also include participants from a broader range of PSTs at different stages in their initial teacher education programs. Finally, further research using the STSE could confirm that PSTs recognise the differences among the three subscales, particularly in PSTs from a range of cultural backgrounds in Australia.

Conclusion

The present study revealed a mid-level of TSE, with the lowest level being found in classroom management, among a cohort of PSTs soon before their first professional teaching practice. Several factors were examined as being influential. These were a lack

of prior teaching experience, previous informal teaching experiences, the teacher education program, personal qualities and characteristics, and teacher-student relationship. Based on the findings, initial teacher education programs might be designed to integrate theoretical and practical components more closely, provide PSTs with more constructive feedback about their teaching performance, and assist PSTs to think about classroom management more democratically. However, the shortcomings of the present study need to be kept in mind and a more effective research design should be considered for future research.

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Appendix A

Correspondence Regarding Ethics Approval

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MACQUARIE University
SYDNEY·AUSTRALIA

25 May 2017

Dear Dr Cavanagh,

Reference No: 5201700384

Title: *Classroom ready? An investigation of pre-service teachers' self-efficacy for their first professional experience placement.*

Thank you for submitting the above application for ethical and scientific review. Your application was considered by the Macquarie University Human Research Ethics Committee (HREC (Human Sciences & Humanities)).

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted by:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007 – Updated May 2015) (the *National Statement*).

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website:

http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research

2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol and associated documents must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Human Sciences and Humanities) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely

Dr Karolyn White
Director, Research Ethics & Integrity,
Chair, Human Research Ethics Committee (Human Sciences and Humanities)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

Appendix B

Materials Distributed to Participants

This appendix contains the instructions, consent form, and survey that were distributed to the pre-service teachers in this research.

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Faculty of Human Sciences
MACQUARIE UNIVERSITY NSW 2109

Phone: +61 (0)2 9850 8239
Fax: +61 (0)2 9850 8674
Email: michael.cavanagh@mq.edu.au

Chief Investigator's Name & Title: Dr Michael Cavanagh

Pre-service Teacher Information and Consent Form

Name of Project: Classroom ready? An investigation of pre-service teachers' self-efficacy for their first professional experience placement

You are invited to participate in a study of pre-service teachers' self-efficacy. The purpose of the study is to investigate the levels of pre-service teachers' self-efficacy and the factors that have influenced these levels.

The study is being conducted to meet the requirements of the Master of Research degree under the supervision of Dr Michael Cavanagh, senior lecturer in mathematics education in the Department of Educational Studies at Macquarie University (telephone: (02) 9850 8239; email: michael.cavanagh@mq.edu.au).

If you decide to participate, you will be asked to complete a questionnaire during a lecture for EDTE302. The questionnaire will take about ten minutes to complete. The questionnaire is designed to investigate your levels of self-efficacy for teaching and the factors that have influenced your responses.

Completing the questionnaire may cause you some distress. If so, you can visit Campus Wellbeing or you may also wish to contact a counselling service such as Beyond Blue (Phone (24 hours): 1300 224636).

Any information or personal details gathered in the course of the study are confidential, except as required by law. No individual will be identified in any publication of the results. Only the Chief Investigator and the co-investigator, Mr Kang Ma, a Master of Research student at Macquarie University, will have access to your data. However, the Chief Investigator will not know who has, or has not,

participated in the research part of the exercise. A summary of the results of the data can be made available to you on request by emailing the Chief Investigator.

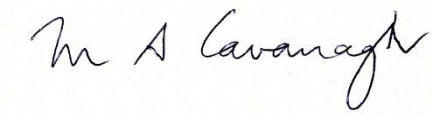
Participation in this study is entirely voluntary: you are not obliged to participate and if you decide to participate, you are free to withdraw your permission at any time without having to give a reason and without consequence.

I, *(participant's name)* have read *(or, where appropriate, have had read to me)* and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.

Participant's Name:_____
(Block letters)

Participant's Signature: _____Date:_____

Investigator's Name: MICHAEL CAVANAGH
(Block letters)

Investigator's Signature:  Date: 30/5/2017

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics & Integrity (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

(INVESTIGATOR'S COPY)

Department of Educational Studies
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MACQUARIE UNIVERSITY NSW 2109

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Fax: +61 (0)2 9850 8674
Email: michael.cavanagh@mq.edu.au

Chief Investigator's Name & Title: Dr Michael Cavanagh

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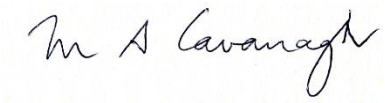
Participant's Name:_____
(Block letters)

Participant's Signature: _____ Date:_____

Investigator's Name: MICHAEL CAVANAGH
(Block letters)

Investigator's Signature:  Date: 30/5/2017

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(PARTICIPANT'S COPY)

Program (please circle): 4-year undergraduate 2-year graduate entry

Gender (please circle): Male Female

What is your first teaching subject? _____

Please rate how certain you are that you can successfully perform the following tasks by ticking the appropriate number ranging from: ***1 = 'not at all certain that I can successfully do this task'*** *to* ***9 = 'absolutely certain that I can successfully do this task'.***									
1. How certain are you that you can provide an alternative explanation or example when students are confused?									
2. How certain are you that you can adjust lessons to the proper level for individual students?									
3. How certain are you that you can gauge students' comprehension of what has been taught?									
4. How certain are you that you can provide appropriate challenges for very capable students?									
Please explain in as much detail as you can the main factors which influenced your responses in items 1-4									

Please turn over …. /

Please rate how certain you are that you can successfully perform the following tasks by ticking the appropriate number ranging from:

1 = 'not at all certain that I can successfully do this task'

to

9 = 'absolutely certain that I can successfully do this task'.

5. How certain are you that you can control disruptive behavior in the classroom?									
6. How certain are you that you can get students to follow classroom rules?									
7. How certain are you that you can calm a student who is disruptive and noisy?									
8. How certain are you that you can keep a few problem students from ruining an entire lesson?									

Please explain in as much detail as you can the main factors which influenced your responses in items 5-8

Please turn over … /

Please rate how certain you are that you can successfully perform the following tasks by ticking the appropriate number ranging from:

1 = 'not at all certain that I can successfully do this task'

to

9 = 'absolutely certain that I can successfully do this task'.

9. How certain are you that you can help students value learning?									
10. How certain are you that you can motivate students who show low interest in schoolwork?									
11. How certain are you that you can improve the understanding of a student who is failing?									
12. How certain are you that you can help students to think critically?									

Please explain in as much detail as you can the main factors which influenced your responses in items 9-12