

2016

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Recommended Citation

Geng, G., Midford, R., & Buckworth, J. (2016). Comparing Stress Levels of Graduate and Undergraduate Pre-Service Teachers Following Their Teaching Practicums. *Australian Journal of Teacher Education*, 41(9).
Retrieved from <http://ro.ecu.edu.au/ajte/vol41/iss9/6>

Comparing Stress Levels of Graduate and Undergraduate Pre-Service Teachers Following Their Teaching Practicums

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Abstract: In comparison to undergraduate pre-service teachers (PSTs), graduate PSTs have previously completed a three-year bachelor degree and are enrolled in initial teacher education (ITE) programs to become a teacher. Following a review of literature on teachers' sense of stress, reflection and identity development, this study compared the stress levels and concerns of graduate PSTs with those of undergraduate PSTs. One hundred and fifty-one graduate and one hundred and fifty-nine undergraduate PSTs participated in this study. The graduate PSTs had significantly higher stress levels than undergraduate PSTs ($p < .01$). Contributing stressors from both groups' own demographic background and teaching practicum perspectives were investigated and compared. These findings provide an empirical basis from which to develop appropriate strategies to support both groups of PSTs to manage their stress, develop their identity and personal beliefs and increase their retention in teacher education programs.

Introduction

This study explores and compares the perceived stress levels of graduate and undergraduate pre-service teachers (PSTs). A number of variables are considered in undertaking this research. These cover the pragmatics of the assessable academic and practicum tasks, as well as the less directly observable qualities of reflective thinking that are pivotal to building an identity as a teacher. As Friesen and Besley (2013) indicate, teacher identity development is an important step in the initial teacher education (ITE) process, from both developmental and social psychological perspectives. Based upon Erikson's (1964) theory of identity development and Turner, Oakes, Haslam and McGarty's (1994) theory of self-categorisation, pre-service teachers are going through psychological constructions such as epistemological beliefs, self-awareness and reflection, and identity, while at the same time coming to terms with theory studies, and pedagogical and classroom management strategies (Friesen & Besley, 2013). In Friesen and Besley's (2013) report, they also found that understanding professional teacher identity required a developmental and social psychological process, and those PSTs who had a well-formed sense of personal identity were better prepared to assume the role of professional teacher.

There is an increasing acknowledgement of the importance of a teacher's educational philosophy (Mockler, 2011) and personal wellbeing (Sammons et al., 2007). At the same time there is also an awareness that pre-service teaching training programs have the potential

to facilitate or interfere with identity development at both personal and professional levels (Friesen & Belsey, 2013).

All students in ITE programs can elect to specialise as early childhood, primary or secondary teachers. Adding further weight to the differences experienced by these two groups of PSTs is the emphasis on the supervised teaching practicum. The undergraduate trained PSTs undertake the required teaching practicums across the several years of their course, whereas for the graduate PSTs, all practicum teaching is condensed into one or two years. This paper therefore provides an opportunity to better understand how these two different groups develop their personal and professional identity during the course of undertaking their training as teachers.

Overview of Australian Undergraduate and Graduate ITE Programs

Currently, most Australian universities offer both undergraduate ITE and graduate ITE programs. Table 1 provides an overview of the number of current programs offered by state and/or territory, generated from the accredited programs list from Australian Institute for Teaching and School Leadership (AITSL) website (AITSL, 2016).

	<i>Undergraduate ITE</i>	<i>Graduate ITE</i>
	<i>n</i>	<i>n</i>
Australian Capital Territory (ACT)	15	6
New South Wales (NSW)	74	30
Northern Territory (NT)	9	1
Queensland (QLD)	41	25
South Australia (SA)	25	16
Tasmania (TAS)	5	2
Victoria (VIC)	71	44
Western Australia (WA)	30	20

Table 1: Overview of Australian Current National Accredited Teacher Education Programs

The length of undergraduate ITE programs is almost double the length of the graduate ITE programs. The undergraduate ITE program is offered to school-leavers and mature students, while the graduate ITE programs are offered to students who have accredited qualifications in another discipline (see Table 2). Mentoring is used as a support in teaching practicum to provide supervisory context (Ambrosetti, 2014; Brondyk & Searby, 2013). However, there is little difference in the support provided to these two groups of PSTs, although some other support was provided for ITE PSTs such as how to teach their students with additional needs (Naidoo, 2011; Rogers, 2015).

	<i>Undergraduate ITE</i>	<i>Graduate ITE</i>
Length of programs	2.75-5 years	1-2.5 years
Days of practicums	80-100 days	50-80 days
Entry requirement or pathways	<ul style="list-style-type: none"> • Australian Tertiary Admission Rank score • Vocational Education and Training courses • Tertiary Education Preparation 	<ul style="list-style-type: none"> • Completion of a three year non-education Bachelor degree
Client students	<ul style="list-style-type: none"> • School leavers • mature students 	<ul style="list-style-type: none"> • Professionals pursuing to be teachers
Support from placement schools	<ul style="list-style-type: none"> • Mentors • Other staff in schools 	<ul style="list-style-type: none"> • Mentors • Other staff in schools
Support from universities	<ul style="list-style-type: none"> • Lecturers • Placement Directors • Placement officers 	<ul style="list-style-type: none"> • Lecturers • Placement Directors • Placement officers

Table 2: Differences between undergraduate and graduate ITE programs in Australia

Pre-Service Teachers' Stress Levels during Teaching Practicum

Numerous research has been conducted about the stressors experienced by PSTs to explore their quitting intention. For example, Klassen and Chiu (2011) surveyed 379 PSTs and found teaching practicum is one of three most common factors in quitting intention of ITE programs.

During their teaching practicums, all PSTs are required to complete a range of experiential tasks, such as becoming familiar with the school environment, working very closely with their mentor teachers and schools, and planning their own teaching (Brackett, Palomera, Mojsa-Kaja, Reyes, & Salovery, 2010; Mitchell, Maher & Brown, 2008). Practicums are an important part of teacher education programs. Also known as 'student teaching' (Tabachnick & Zeichner, 1987), the practicum is the period of time that PSTs spend observing and participating in authentic teaching and learning settings. The primary purpose of these periods is to provide PSTs with opportunities to become acquainted with the graduate standards, requirements and practice of their future profession. During this time they learn about the practicalities of teachers' work, implement their university learning and gain experience in schools. However, there is no set limit to the number of hours PSTs spend on professional tasks, and very limited research has been conducted to identify the relationship between their stress levels and the hours the PSTs spend on different tasks during their teaching practicum.

These practicums, while rich and dynamic, remain multifaceted and uncertain, as learners form new professional identities and develop relationships with school-based practitioners. Each placement can differ widely: emotional experiences, the nature of feedback and the quality of relationships all impact the emerging PSTs' professional identity. Where relationships are power based, emergent identities and relationships are particularly vulnerable, demanding that PSTs exercise discreet and informed judgments around how they engage with the social and cultural norms of their placement school and the community it serves. Education students' stress levels were much higher than the levels reported by the general population (Geng & Midford, 2015; Murray-Harvey et al., 2000).

Development of professional identity and the related perception of ability as a teacher are closely linked to effectiveness of classroom practice in terms of both student learning (Chong, Low & Goh, 2011; Pendergast, Garvis & Keogh, 2011) and developmental growth through reflective practice (Hedberg, 2009). An opportunity for identity transformation is an essential component for teacher education courses (Beauchamp & Thomas, 2009; Friesen & Besley, 2013) and there is an added challenge for graduate PSTs, where there is less time to develop as a teacher. While one benefit for graduate PSTs may be the shorter period of study to become teachers, this group encounters issues during the course of their learning, which have the potential to lead to different forms and higher levels of stress. For example, compared to their undergraduate degree peers, graduate PSTs have fewer opportunities for in-school experiences to strengthen reflective thinking and adaptive ability. The literature suggests these skills are pivotal to the development of teacher identity and reflective practice (Beauchamp & Thomas, 2009; Jones, 2009; Parsons et al., 2011; Shoffner, 2011).

Teacher Identity and Reflective Practice

As PSTs embark upon becoming teachers, they face the task of developing a teacher identity. Le Cornu (2009) points out that this identity forms as individuals attend to the dynamic interaction of students and teachers in classrooms that constitute a community of learners. One challenge for pre-service teachers, according to Britzman (2003), is the negotiating, constructing, and 'consenting to their identity' as they become a teacher (p. 221).

Beauchamp and Thomas (2009), however, question the notion of this ‘acquiescence to an identity’, suggesting that this represents acceptance of non-negotiable institutional values, with little room for negotiation or mutuality. Forming an identity at the commencement of their career is crucial to a construction of a new self and, while responsive to discursive interactions with others (Alsup, 2005; Giddens, 1991), may be accompanied by a diverse and divergent range of possibilities and meanings (Zembylas & Chubbuck, 2003). The successful construction of a new self can be augmented by academic programs that are designed to instill an awareness of on-going sense of identity (Beauchamp & Thomas, 2009; Wilson & Deaney, 2010), and by receptively engaging with new ways of thinking with teachers in schools. As suggested by Schön (1983) and Wilson and Deaney (2010), the realisation of a new identity is enabled by reflective practices. Re-awakening of Deweys’ reflective-practice concepts was encouraged by pioneering research by Schön (1983) and Argyris (1976) who, in coining ‘single loop’ learning, elaborated on ways in which reflective practices can better connect learners and community expectations (Ash & Clayton, 2009). In their work, Argyris and Schön also described single loop learning as connecting a strategy for action with a result. The strategy, informed by overt reflection, can direct the individual towards a desired change.

Further development of Schön’s theory of reflective practice is the central idea of reflection-in-action (Smyth, 1986), which hinges on our recognition of tacit knowledge. Here, a consequence for pre-service teachers is that their reflections can inform new perspectives and transformations for classroom pedagogy. Inextricably professional experience connects the world of the pre-service teacher with reflective practices where meanings are constructed through personal and social experiences. A typology of reflection developed by Luttenberg and Bergen (2008) describes the pragmatic, ethical and moral dimensions that foreground the development of teacher identity. Offering a means to expand upon the open or closed nature of reflection, this typology helps to make sense of the type of understanding that follows the application of new concepts (Hedberg, 2009; Matoti & Junqueira, 2013; Parsons et al., 2011; Shoffner, 2011). A similar framework of reflective questioning, published by Croker, Trede and Higgs (2012), makes clear connections between the readiness, reciprocity and responsiveness of individuals as they form collaborative and productive networks that jointly contribute to the development of teacher identity.

In summary, qualities of active reflection help to build a teacher identity that, in turn, contribute to the readiness for teaching needed in today’s education environments. In addition, although there is research conducted on stress levels among PSTs, it was more focused on PSTs and in-service teachers, or the ITE or non-ITE teacher training programs (e.g. Darling-Hammond, Chung & Frelow, 2002), and there is limited research conducted to compare and contrast the individual stressors experienced by the undergraduate and graduate PSTs. A focus on the associated stresses faced by pre-service teachers at different phases of initial teacher education coursework will add to the body of academic knowledge around pathways into ITE for increasingly diverse cohorts of students. The following research questions guided our study to investigate the nature and stress level of graduate PSTs compared to the undergraduate PSTs:

- What differences in stress levels were experienced by graduate PSTs and undergraduate PSTs during their teaching practicum?
- How do the stressors differ for graduate PSTs during ITE compared to undergraduate PSTs?
- What strategies or support systems are provided for these two groups of PSTs to manage their stress during their teaching practicum?

Of significance to this research was an identified need to better understand the study pressures on both groups of PSTs. Findings from this research may inform the development

of support systems to assist students reduce their stress, complete their course and develop into effective teachers.

Method

This study used comparative research methods, and employed both quantitative and qualitative research methodologies. Quantitative data was collected using the Perceived Stress Scale (PSS) survey, and closed questions in a purpose-developed questionnaire. Qualitative data was collected through open-ended questions in the questionnaire.

Participants

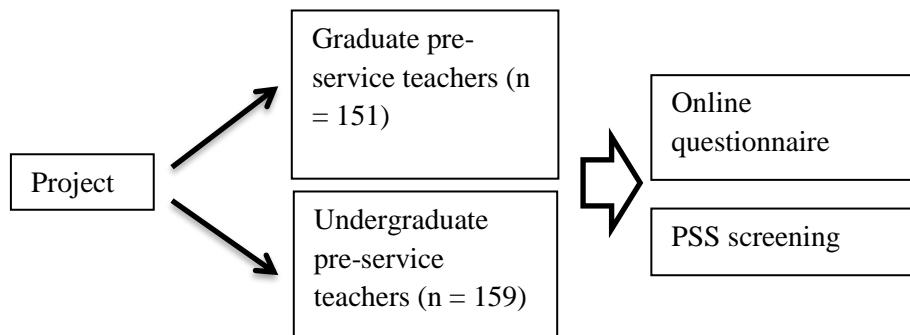


Figure 1: Outline of the Project

One thousand and seventy PSTs who were studying at an Australian university were invited to participate in the study. Out of the total 310 participants who participated in this study, 151 were graduate PSTs and 159 were undergraduate PSTs. Among the participating group of graduate PSTs, 36 (23.8%) were males and 115 (76.2%) were females, while in the participating group of undergraduate PSTs, 18 (11.3%) were males and 141 (88.7%) were females. The predominance of females is due to the fact that in the discipline of Education there are more female than male students.

The demographic characteristics of all students were collected and compared. These demographics included age ranges, gender and full-time/part-time enrolment data. In particular it was noted that while the average age range of graduate PSTs was from 40 to 50 years, the undergraduate PSTs were between 30 and 40 years of age, $X(4)^2 = 26.31, p < .01$. Further, greater numbers of undergraduate students were enrolled in full-time study (59%) compared to graduate students (42%), $X(1)^2 = 8.75, p < .01$. Gender distribution indicated that the graduate program attracted higher numbers of male students (24%) compared to the undergraduate ITE program (13%), $X(1)^2 = 8.17, p < .01$.

Of significance was the correlation of stress to age for graduate PSTs. PSTs in the 41-50 year age group had the highest level of stress, and those aged 18-25 years had the lowest level of stress, $F (4) = 2.53, p = 0.04$. There was no significant correlation between the level of stress experienced by trained PSTs and their age.

Instruments

A purpose-designed questionnaire was used in the present study to acquire information from the participants as to their demographic characteristics, workload and opinions (Gay & Airasian, 2003; Leedy & Ormrod, 2005). The questionnaire (see Appendix)

consisted of eleven (11) closed questions covering participants' demographic characteristics and the hours spent on work associated with their teaching practicums and theory units. The closed questions allowed comparison across respondents. The questionnaire also contained six (6) open-ended questions asking for feedback and opinions on assessment of placement and theoretical units. These open-ended questions allowed "for the informants to answer from their own frame of reference rather than being confined by the structure of pre-arranged questions" (Bogdan & Biklen, 1982, p.154).

A well-regarded stress scale, the Perceived Stress Scale (PSS) was also administered to participants (Cohen, Kamarck & Mermelstein, 1983). The original PSS is a fourteen (14) item scale that measures the degree to which the participants believe events in their life are currently unpredictable, uncontrollable and overwhelming. It is a self-reporting, response-balanced instrument that measures the level of perceived stress during the last month, using a 5-point response differential for each of the 14 statements (0 = never, 1 = almost never, 2 = once in a while, 3 = often, 4 = very often). The higher the score, the more stressful the participants perceive their current life situation to be. Summarised by Cohen, Kamarck and Mermelstein (2004), the PSS does not raise the possibility of psychiatric problems; rather it is a tool, used by many researchers such as Cohen and Janicki-Deverts (2012) and Cohen, Janicki-Deverts and Miller (2007) to measure work-related stress in a normal population. The present study used the shorter, 10-item PSS-10, developed from the original PSS-14, to estimate the PSTs' current psychological stress associated with their completion of theoretical learning and assessments, and their teaching practicum. The PSS-10 can be administered in less time, and is easily scored (Remor, 2006). It also provides a slight improvement in explained variance and internal reliability over the longer PSS-14 (Cohen & Williamson, 1988).

Data Gathering and Analysis

The data gathering processes were piloted before the commencement of the main study. This was done to ensure the participants understood the instructions for completing the PSS-10 and the questionnaire items. The PSS-10 and questionnaire were administered online, with data gathering for the main study conducted from May to July, 2014, following the completion of the respective Professional Experience placement periods (Practicums).

The researchers used the Statistical Package for Social Science (SPSS), Version 22, to analyse the responses. T-test was used to analyse the differences in stress level of PSTs undertaking graduate or undergraduate ITE programs. One-Way ANOVA was used to analyse the difference in stressors between graduate and undergraduate PSTs.

Qualitative data, such as the participants' open-ended comments on their understanding of the support system, other work, family commitments and suggestions for improving assessment support were collected, ordered and analysed thematically using NVivo, based upon both linguistic theory (Ainsworth & Hardy, 2004; Fairclough, 2009; Henderson, 2005; Wodak, 2001) and social theory (Habermans, 1990), so as to identify how to best assist their learning experience.

Results

Stress levels

It was found that graduate PSTs' stress was significantly higher than that of undergraduate PSTs, t (299) = 2.25, p = 0.025 (see Table 3).

	<i>n</i>	<i>Mean stress score</i>	<i>SD</i>
Graduate pre-service teachers	151	22.10	6.03
Undergraduate pre-service teachers	159	20.51	6.16

Table 3: Stress Levels between Graduate and Undergraduate Pre-Service Teachers

While graduate PSTs were found to have higher stress levels overall, results indicated that undergraduate ITE PSTs had significantly higher stress in their first placement, Mean (first placement) = 22.13, Mean (other placements) = 19.38, $F(1, 139) = 7.00, p < .01$. In contrast, there was no significant difference in the stress experienced by graduate PSTs between their first placement and subsequent placements.

Allocation of Time to Required Learning Tasks

Participants were asked to indicate the hours they spent on practicum tasks and theoretical tasks. Practicum placement tasks comprised, in addition to in-school attendance: 1) planning for teaching, 2) competency in studying learning materials (understand practicum-related learning materials and complete assignments) and 3) working with mentors. Theoretical tasks comprised: 1) work group collaboration, 2) competency in studying learning materials (understand education theory-related learning materials and complete assignments) and 3) working with lecturers. Participants were asked to indicate the time they allocated to each type of task using the following categories: 1-5 hours per week, 6-10 hours per week, 11-15 hours per week, 16-20 hours per week and more than 21 hours per week.

Graduate PSTs

Table 4 indicates the hours graduate PSTs spent on placement and tasks in completing theory components of their course. In details, Table 5 shows that graduate PSTs spent the greatest proportion of their time on studying materials-related tasks in theory components of their course, with more than half of the PSTs (57.5%) spent more than 11 hours on ‘Studying learning materials’ in theory components, and a great proportion of their time on planning for teaching in placement tasks, with approximately 41% spent more than 11 hours on ‘Planning for teaching’.

	Tasks	Mean hours	SD
Placement tasks	Studying learning materials requirement (understand learning materials and complete assignments)	2.15	1.12
	Working with mentors	2.36	1.47
	Planning for teaching	2.43	1.25
Tasks in completing theory units	Studying learning materials requirement (understand learning materials and complete assignments)	2.97	1.26
	Collaborate group work	1.30	0.75
	Working with lecturers	1.15	0.59

Note: 1=1-5 hours per week, 2=6-10 hours per week, 3 = 11-15 hours per week, 4 = 16-20 hours per week, 5 =>21 hours per week

Table 4: Hours Spent on Placement and Tasks in Completing Theory Units by Graduate Pre-Service Teachers (means)

	<i>Tasks</i>	<i>1-5 hours</i>	<i>6-10 hours</i>	<i>11-15 hours</i>	<i>16-20 hours</i>	<i>>21 hours</i>
		<i>n, percentage</i>				
Placement tasks	-Studying learning materials requirement (understand learning materials and complete assignments)	49, 35.0%	43, 31.4%	30, 21.4%	11, 7.9%	6, 4.3%
	-Working with mentors	53, 38.4%	38, 27.5%	14, 10.1%	10, 7.2%	23, 16.7%
	-Planning for teaching	37, 26.6%	45, 32.4%	31, 22.3%	12, 8.6%	14, 10.1%
Tasks in completing theory units	-Studying learning materials requirement (understand learning materials and complete assignments)	15, 10.8%	44, 31.7%	31, 22.3%	27, 19.4%	22, 15.8%
	-Collaborate group work	104, 81.3%	17, 13.3%	1, 0.8%	5, 3.9%	1, 0.8%
	-Working with lecturers	111, 90.2%	9, 7.3%	1, 0.8%	0	2, 1.6%

Table 5: Hours Spent on Placement and Tasks in Completing Theory Units by Graduate Pre-Service Teachers

Furthermore, it was found that the stress level of graduate PSTs had a strong relationship with the time they spent on ‘Planning for teaching’ (see Table 6), $F(4, 129) = 3.25, p = .01$. The longer they spent on teaching planning, the less stressed they felt.

	<i>n</i>	<i>Mean of stress level</i>	<i>SD</i>
1-5 hours	35	24.23	5.78
6-10 hours	43	22.51	6.99
11-15 hours	31	21.81	6.62
16-20 hours	11	21.91	3.67
>21 hours	14	17.64	4.96

Table 6: Hours Spent on Teaching Planning and the Stress Level of Graduate Pre-Service Teachers

Other than teaching planning, graduate PSTs stress levels did not have significant relationships with hours spent on other tasks (see Table 7).

	<i>Hours spent on Tasks</i>	<i>Stress levels</i>	
		<i>F (4,129)</i>	<i>p</i>
Placement tasks	-Studying learning materials requirement (understand learning materials and complete assignments)	0.46	0.77
	-Working with mentors	0.82	0.52
	-Planning for teaching	3.25	0.01
Tasks in completing theory units	-Studying learning materials requirement (understand learning materials and complete assignments)	0.35	0.84
	-Collaborate group work	0.81	0.52
	-Working with lecturers	1.00	0.40

Table 7: Hours Spent on Teaching Planning and the Stress Level of Graduate Pre-Service Teachers

Undergraduate PSTs

Table 8 and Table 9 shows that undergraduate PSTs spent the greatest proportion of their time on studying materials-related tasks in both the placement and theory components of their course, with 44.5% of the PSTs spent more than 11 hours on ‘Studying learning materials’ in placement and 46.5% of the PSTs spent more than 11 hours on ‘Studying learning materials’ in theory components.

	<i>Tasks</i>	<i>Mean hours</i>	<i>SD</i>
Placement tasks	Studying learning materials requirement (understand learning materials and complete assignments)	2.47	1.16
	Working with mentors	2.25	1.45
	Planning for teaching	2.17	1.06
Tasks in completing Theory units	Studying learning materials requirement (understand learning materials and complete assignments)	2.60	1.12
	Collaborate group work	1.42	0.72
	Working with lecturers	1.14	0.37

Note: 1=1-5 hours per week, 2=6-10 hours per week, 3 = 11-15 hours per week, 4 = 16-20 hours per week, 5 =>21 hours per week

Table 8: Hours Spent on Placement and Tasks in Completing Theory Units by Undergraduate Pre-Service Teachers (means)

	<i>Tasks</i>	<i>1-5 hours</i>	<i>6-10 hours</i>	<i>11-15 hours</i>	<i>16-20 hours</i>	<i>>21 hours</i>
		<i>n, percentage</i>				
Placement tasks	Studying learning materials requirement (understand learning materials and complete assignments)	34, 23.3%	47, 32.2%	37, 25.3%	19, 13.0%	9, 6.2%
	Working with mentors	61, 43.6%	34, 24.3%	14, 10.0%	11, 7.9%	20, 14.3%
	Planning for teaching	45, 31.3%	51, 35.4%	31, 21.5%	13, 9.0%	4, 2.8%
Tasks in completing Theory units	Studying learning materials requirement (understand learning materials and complete assignments)	22, 15.1%	56, 38.4%	38, 26.0%	19, 13.0%	11, 7.5%
	Collaborate group work	90, 68.2%	32, 24.2%	6, 4.5%	4, 3.0%	0
	Working with lecturers	111, 86.7%	16, 12.5%	1, 0.8%	0	0

Table 9: Hours Spent on Placement and Tasks in Completing Theory Units by Undergraduate Pre-Service Teachers

Of the undergraduate students, those who spent 11-15 hours per week studying learning materials and completing assignments had the lowest stress level, while those who worked 1-10 hours, 16-20 hours and more than 21 hours on studying learning materials, had significantly higher stress levels $F(4, 136) = 2.35, p = 0.05$ (see Table 10). The relationship between time spent on study tasks and stress level is not linear; rather it seems that the lowest stress level is achieved by optimising the period of study each week.

	<i>n</i>	<i>Mean of stress level</i>	<i>SD</i>
1-5 hours	34	20.97	5.08
6-10 hours	45	21.71	6.76
11-15 hours	34	17.97	6.69
16-20 hours	19	20.58	4.56
>21 hours	9	23.22	7.60

Table10: Hours Spent on Studying Learning Materials and Completing Assignments and the Stress Level of Undergraduate Pre-Service Teachers

Other than the task associated with ‘Studying learning materials and completing assignments’, undergraduate PSTs stress levels did not have significant relationships with hours they spent on other tasks (see Table 11).

	<i>Hours spent on Tasks</i>	<i>Stress levels</i>	
		<i>F (4,130)</i>	<i>p</i>
Placement tasks	-Studying learning materials requirement (understand learning materials and complete assignments)	2.35	0.05
	-Working with mentors	0.85	0.50
	-Planning for teaching	0.73	0.58
Tasks in completing theory units	-Studying learning materials requirement (understand learning materials and complete assignments)	1.20	0.31
	-Collaborate group work	0.30	0.82
	-Working with lecturers	0.24	0.79

Table 11: Hours Spent on Teaching Planning and the Stress Level of Undergraduate Pre-Service Teachers

Access to Supports

Participants from all courses were asked whether they were aware of or had access to support provided by the university and/or placement schools. One hundred and forty-two PSTs from both groups answered the questions. Table 12 shows that only around one-third of graduate ($n = 50$) and undergraduate teachers ($n = 52$) were aware of or had access to support from the university. However, significantly more graduate PSTs were aware of or had access to support from placement schools than undergraduate PSTs, $X(2)^2 = 11.59, p < .01$.

	<i>Awareness of and access to</i>	<i>Yes</i>	<i>No</i>	<i>Don't know</i>
		<i>n, percentage</i>		
Graduate pre-service teachers ($n = 142$)	Support from university	52, 36.6%	18, 12.7%	72, 50.7%
	Support from placement school	70, 49.3%	51, 35.9%	21, 14.8%
Undergraduate pre-service teachers ($n = 142$)	Support from university	57, 39.3%	19, 13.1%	69, 47.6%
	Support from placement school	53, 39.3%	44, 27.7%	45, 31.7%

Table 12: Awareness of and Access to Support from Graduate Pre-Service Teachers and Undergraduate Pre-Service Teachers

The participants’ awareness of and access to the support, and the stress levels of the two groups of PSTs, were compared, and it was found that graduate PSTs had higher stress levels than trained PSTs when they were aware of or had access to the support from the university, $F(2, 133) = 3.15, p = 0.04$.

Further investigation of graduate pre-service teacher comments identified the university support and the nature of their interaction with this support while they were completing their school placement. This was done to inform ways of providing better support to reduce their stress. A greater number of the graduate PSTs (5%) commented more support was needed in employment opportunities than the undergraduate PSTs (0%). For example, Student #135 commented:

Would be helpful for course specific checklists with such content as working opportunities and developing a reflective practice ... These would help a pre service teacher.

Student #71 also commented:

If they were more related to actual teaching employment.... though understand the reason for them not being so- have to learn. The thing is much of what we covered is not used in practice.

Other stressors for graduate and undergraduate PSTs were similar, including other work commitment (graduate PSTs 73.2%, undergraduate PSTs 61.1%) and negative experience of working as external students. Both graduate PSTs (47.5%) and undergraduate PSTs (44.3%) commented on the external studying experience. For example, the comment from graduate PST #46 is illustrative of the challenging – and negative – experience of working as an external student:

As an external student I feel very isolated and unsure and a bit more personal contact would be great. The rule of not being able to do prac at the school where your children are at is not supportive, financially debilitating and has caused an enormous amount of stress.

Similarly, undergraduate PST #129 described her negative practicum experience with no access to the university:

Just email. So hard to get answer to a question is (if) you want to contact them by phone, no-one has ever answered it has always gone directly to a message telling me to email. Frustrating. Discussion board - asking peers but this sometimes is frustrating as sometimes the answers seem to be guesses so hard to know whether feedback is right.

Discussion

This study makes seven useful contributions to knowledge on the level and nature of stress experienced from both graduate and undergraduate PSTs during their teaching practicum.

One, both groups of PSTs spent considerable time completing placement tasks and theoretical tasks that appear to reinforce the linkages with the development of reflective practices in professional learning situations (Ash & Clayton, 2009; Hedberg, 2009). These tasks were highly related to the PSTs' theory studies, and pedagogical and classroom management strategies, which PSTs study to develop their psychological constructions such as the mechanisms of teacher identity development (Friesen & Besley, 2013).

Two, it was found that graduate PSTs' stress was significantly higher than that of the undergraduate PSTs. This could be related to the finding of Parsons et al. (2011) that students undertaking graduate ITE programs have reduced access (around half of the teaching practicums of the undergraduate ITE programs) to opportunities and practices influencing their developing reflective practices and teacher identity.

Three, undergraduate PSTs had higher stress levels in the first placement than other placements, while there was no significant difference between placements among graduate PSTs. In a way, this finding about undergraduate PSTs was consistent with the findings of Mitchell et al. (2008) that working very closely with mentor teachers and schools, and planning their own teaching, can create varying levels of stress. However, these PSTs' stress levels gradually reduced as they gained experience with successive placements. Unlike the undergraduate PSTs, graduate PSTs experienced reduced time to reflect on (Ash & Clayton, 2009; Wilson & Deaney, 2010), learning with resultant high stress levels distributed across all their teaching placements (Geng & Midford, 2015).

Four, the stress levels of undergraduate and graduate PSTs had significant relationships with hours spent on different tasks in completing their placement tasks at school. In completing their placement tasks, the longer graduate PSTs spent on teaching planning, the less stress they experienced. By contrast, undergraduate PSTs, who spent 11-15

hours per week studying learning materials and completing assignments, had the lowest stress level. This suggests that graduate PSTs focused on teaching planning in placement while undergraduate PSTs concentrated on reflective thinking after their planning and teaching in schools. It was found that more graduate PSTs spent their studying time on planning for teaching, instead of using it to reflect and understand the studying materials than undergraduate students. With the limited access to opportunities to develop their teaching identity in their teaching practicum, the PSTs' reflection and beliefs are affected and their sense of stress levels is increased (Beauchamp & Thomas, 2009; Brackett et al., 2010; Jones, 2009; Shoffner, 2011). This finding is again consistent with the statement that lack of time in the classroom could influence PSTs' development of reflective thinking and adaptive teaching strategies (Ash & Clayton, 2009; Wilson & Deaney, 2010).

Five, it was found that most of the graduate PSTs were older than the undergraduate PSTs. The nature of the graduate PSTs meant that the students already possessed a bachelor degree. Most had already worked in an industry or profession other than teaching. The implication of this is that these students possessed more mature levels of understanding of workplace needs (Croker et al., 2012; Wilson & Deaney, 2010), and therefore more of them commented on support for future working opportunities than the undergraduate PSTs.

Six, it was found that undergraduate and graduate PSTs experienced different stressors and hence had different requirements for support. For example, the more hours spent on tasks by undergraduate PSTs did not translate into less stress (11-15 hours per week of study was the optimum), whereas this was the case for postgraduate PSTs. In contrast there was no difference in awareness of, and access to, support between undergraduate and graduate PSTs. This indicates that despite different types and levels of stress there is no difference in terms of support. To date, limited research has been conducted on these two groups of PSTs and the stress they experience while studying for their professional qualification. Consequently there is little understanding of the different types and levels of support they need. An important contribution of this study is that it has provided a better understanding of the different supports needed by these two groups of PSTs to decrease their stress.

Finally, there remains a need for course providers and schools to offer opportunities to support further identity development. Indicators from this study also reinforce a need for further research to investigate the stressors, e.g., employment opportunities for graduate PSTs. While there is an undisputed dual need to meet students' needs and maintain the integrity of ITE programs, emphasis could be added around the development of theoretically and situationally informed approaches to support mature entrants as they embrace fresh stages of their career (Beauchamp & Thomas, 2009; Maotiti & Junqueria, 2013; Wilson & Deaney, 2010).

Conclusion

This paper investigated the stress levels of graduate and undergraduate PSTs, and the factors that contributed to them. Results from the PSS-10 and questionnaire found that the graduate PSTs had higher stress levels than undergraduate PSTs.

For undergraduate PSTs, the main stressors were substantially associated with completing studying materials and lack of knowledge about support provided by the university and placement schools. In comparison, for graduate PSTs, the main contributing stressors included:

- Age and future employment opportunities;
- Lack of time in classroom and away from university environment; and

- Lack of development of reflective thinking and adaptive teaching strategies.

There are limitations to the study. The data were drawn exclusively from one Australian university. Moreover, while the causes of PSTs' stress level were identified, these were not investigated in fine detail. For example, the actual tasks that the PSTs worked on with their mentor teachers, and the issues they had to deal with on placement, were not identified for both groups of PSTs. Furthermore, while the study found that institutional support was not well accessed by the PSTs, it did not investigate the reasons for this in any great depth. Consequently little comment can be made as to how support should be improved to reduce student stress. Further research is needed to identify the causal factors of stress, and how policy and support structures can be amended within schools and universities to reduce both groups of students' stress levels.

The particular contribution of this study is its identification of the differences in stress levels between two groups of PSTs: graduate PSTs and undergraduate PSTs. This gives a better understanding of relative need and provides added focus to the complex area of teacher education programs. In addition, this study provides greater understanding of the stresses associated with completing tasks in placement schools and universities for both groups of PSTs. This will furnish an evidence base for developing better support systems, including appropriate strategies, policies and procedures to help both groups of PSTs to reduce their stress levels and achieve better study outcomes.

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Appendix: Questionnaire

Section I Background

There are 5 questions in this section that seek background information about you. Please respond to all the questions by placing a √ in the appropriate box or circling the number that corresponds to the rating you select. This section should take about 5 minutes of your time.

1. By placing a √ against one of the following, please indicate the age group to which you belong:

18-25 years old	<input type="checkbox"/>
26-30 years old	<input type="checkbox"/>
31-40 years old	<input type="checkbox"/>
41-50 years old	<input type="checkbox"/>
>50 years old	<input type="checkbox"/>

2. By placing a √ against one of the following, please indicate your gender group.

Female Male

3. Please indicate which placement are you currently completing by placing √ against one of the following?

1 st teaching placement	<input type="checkbox"/>
2 nd teaching placement	<input type="checkbox"/>
3 rd teaching placement	<input type="checkbox"/>
4 th teaching placement	<input type="checkbox"/>

4. Please indicate your current placement school/educational settings type:

Child care centres	<input type="checkbox"/>
Foundation to year 6	<input type="checkbox"/>
Year 7 to year 9	<input type="checkbox"/>
Year 10 to year 12	<input type="checkbox"/>

5. Please indicate which placement are you currently completing by placing √ against one of the following?

Undergraduate teacher education program (You have never completed degree)	<input type="checkbox"/>
Graduate entry teacher education program (You have already completed a three year degree)	<input type="checkbox"/>

Section II Your understanding/opinions towards teaching practicum assessments

There are 4 questions in this section that seek background information about you. Please respond to all the questions by placing a √ in the appropriate box, typing/writing numbers in the spaces provided and providing brief amplifying comments where requested. This section would take about 5-10 minutes of your time.

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6. When you are doing your teaching practicum, what kinds of activities/work are you involved in? Please also indicate the percentage of time you spend on each activity/work per week.

Activities/work	Percentage of your time be spent per week				
	1-5 hours	6-10 hours	11-15 hours	16-20 hours	>21 hours
Planning for teaching					
understanding learning materials and completing assignments					
Working with mentors					
Other:					
1.					
2.					
3.					

7. In terms of your current **placement**, do you think you have access to support provided by the School of Education?

Yes	
No	
I do not know	

If yes, what kind of support?

8. Other than support from the School of Education, do you receive other assistance/support your placement school and/or the university?

Yes	
No	
I do not know	

If yes, what is the additional assistance/support?

9. In relation to your current placement **placement**, what do you think can improve your learning experience by completing the **placement** assessments?
-

Section III Your understanding/opinions towards theory units assessments

There are 3 questions in this section that seek background information about you. Please respond to all the questions by placing a √ in the appropriate box, typing/writing numbers in the spaces provided and providing brief amplifying comments where requested. This section would take about 5-10 minutes of your time.

10. When you are doing theory units assessments, what kinds of activities/work are you involved in? Please also indicate the percentage of time you spend on each activity/work per week.

Activities/work	Percentage of your time be spent per week				
	1-5 hours	6-10 hours	11-15 hours	16-20 hours	>21 hours
Collaborative group work					
understanding learning materials and completing assignments					
Working with theory unit lecturers					
Other:					
1.					
2.					
3.					

11. Do you consider you have access to support provided by School of Education?

Yes	
No	
I do not know	

If yes, what kind of support?

12. In relation to the **theory units**, what do you consider could improve your learning experience in completing the assessments?
-

Thank you for taking the time to complete the survey.