The Teaching Discipline doesn't Matter? An Assessment of Preservice Teachers' Perception of the value of Professional Experience in attaining Teacher Competencies.

Peter Howley
University of Newcastle, Australia, peter.howley@newcastle.edu.au

Ruth Reynolds
University of Newcastle, Australia, ruth.reynolds@newcastle.edu.au

Erica Southgate
University of Newcastle, Australia, erica.southgate@newcastle.edu.au

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Abstract: This paper is one in a series of papers interrogating some of the fundamental bases of what is seen as good professional experience in initial teacher education (ITE). This paper uses the case study of Health/Physical Education (HPE) students' perceptions of their professional experience, compared to other teaching disciplines, in one regional university to examine the seemingly taken-for–granted view that professional experience in all teaching disciplines can be assessed according to generic professional standards. In this case when HPE students were surveyed on their views of their ability to satisfy the NSW Institute of Teachers' Professional Teaching Standards during practical experience their perceptions differed from students in other disciplines. A number of reasons were posited for this including the notion that each discipline has its own particular pedagogy as suggested by Schulman (1986, 1987). Suggestions as to future research are provided.

Introduction

The role and nature of professional experience (otherwise known as clinical experience or field placement) in University-based initial teacher education (ITE) continues to attract scrutiny despite longstanding and constant research attention (Reynolds, Howley, Southgate & Brown, 2015). Professional experience has been described as being a 'wicked problem' in teacher education, a highly complex socially constructed quandary for which there is no simple solution due in part to the variety of forms it can take, all considered to be of value, and also due to the variety of outcomes it attempts to address (Southgate, Reynolds & Howley, 2013). Internationally there has been a call to better understand how to best teach preservice teachers and how to evaluate teacher education programs (Aubusson & Schuck, 2013; Goldhaber, Liddle, & Theobald, 2013; Korthagen, Loughran & Russell, 2006; Wang, Odell, Klecka, Spalding & Lin, 2010). The role of field placement and experience in teacher education programs is always of key importance but broad discussions of the efficacy of different models of preservice teacher professional experience in developing competencies and craft, linked to a robust evidence base, are relatively rare (Darling-Hammond, 2006; Feiman-Nemser, 2001; Ronfeldt, 2012, Zeichner, 2010) with various stakeholders (preservice teacher, mentor teacher, teacher educator) often holding different expectations of both role and outcome from the experience.

In 2008, the Council of Australian Governments (COAG) committed $77M to the *Improving the Practical Component of Teacher Education* (IPCTE) program*. This three year program, rolled out over all states and territories in Australia, had a strong emphasis on increasing the number of professional experience days offered in teacher education programs.

Since then a greater emphasis has been placed on the quality of the professional experience and the mentors, both university and school–based, associated with it (New South Wales [NSW] Government, 2013) with the newly formulated Australian Institute for Teaching and School Leadership [AITSL] providing guidance. The Australian Professional Standards for Teachers (AITSL, 2011) were developed "to define the work of teachers and make explicit elements of high-quality, effective teaching in 21st century schools that will improve educational outcomes for students" (n.p.). These generic professional standards covered Professional Knowledge, Professional Practice and Professional Engagement at four career stages including graduate teacher standard and they currently inform teacher registration and teacher quality in all states and territories of Australia.

The AITSL standards for Professional Practice for a graduate teacher include broad statements such as: "include a range of teaching strategies" and "demonstrate knowledge of a range of resources, including ICT, that engage students in their learning". However, a key issue, presaged in the work of Shulman (1986, 1987) who identified Pedagogical Content Knowledge (PCK) as an aspect of teaching professionalism, is that notions of quality professional experience may be closely aligned to the discipline taught and so expectations and enactments of professional experience may differ between teaching disciplines. Although teachers can learn generic skills and competencies for teaching there are some aspects of teaching a particular subject area that are unique to that subject area and is related to the knowledge, teaching skills, and abilities of teachers in that subject area (Abell, 2008). Reflecting on the manner of delivering key content ideas, key pedagogical practices for that content and the context together is the 'art' of teaching in that particular teaching area – its unique PCK and synergy (Abell, 2008; Nillson and Loughran, 2012; Wilson & Wineberg, 1988). It could thus be expected that understandings of professional experience differ across subject disciplines due to the fact that PCK differs according to the subject matter field and topic being taught (Dijk & Kathmann, 2007; You, 2011; Rossie & lisahunter, 2013).

In response to these latter understandings, the present study sought to compare the self-perceptions of student's effectiveness undertaking professional experience between different teaching areas. When differences emerged between the perception of effectiveness of students in the Health and Physical Education (HPE) area of study with the perception of effectiveness of students in other discipline areas of study we explored further to clarify why this might be so. Specifically, we were interested in exploring whether being a student in HPE courses influenced: (a) preservice HPE teacher confidence in meeting professional competencies; (b) feelings of support from the mentor-teacher; and, (c) a personal sense of induction into the teaching profession differently to preservice teachers in other teaching discipline areas.

A literature review on professional experience in ITE is provided with a particular focus on research about the effectiveness of different discipline focused professional experience in ITE, and recent Australian policy initiatives in the area. We then report on results from a survey of over 800 undergraduate preservice teachers involved in either the HPE professional experience or other teaching disciplines We conclude with a discussion of the issue of differentiated professional experience according to discipline areas from the perspective of preservice teachers and discuss implications for the design of models of professional experience in ITE and related policy and research.

Literature Review

A key issue for designing ITE, and particularly professional experience in ITE, is that there is little data as to the effectiveness of the plethora of current programs (Committee on the Study of Teacher Preparation Programs in the United States, 2010). ITE has always incorporated professional experience (Vick, 2006), with students assigned to a teacher-mentor to supervise school experience under the overall guidance of the teacher training institution. It is seen as a crucial aspect of a successful teacher education program (Darling-Hammond, Hammerness, Grossman, & Shulman, 2005; OECD, 2011). The research literature is infused with qualitative accounts of successful and problematic aspects of professional experience from the perspectives of preservice teacher, mentor-teacher and university educator (Allen, Howells & Radford, 2013; Graham, 2006; Zeichner, 2010). Nevertheless teachers often claimed that they needed more professional experience in their teacher preparation (Darling-Hammond, 2006; Dunning, Meegan, Woods & Belton, 2011) and indeed Harris and Sass (2010) found direct links between increased preservice experience and increases in student productivity. In fact results from the study by Reynolds, Howley, Southgate and Brown (2015) indicated that students' perceptions of their ability to function well in classroom situations are dependent on good mentoring in schools plus good preparation in a tertiary setting with extra hours of practice in situ on professional experience of assistance only if either of these two were seen to be lacking.

However there is still uncertainty about what models of professional experience best prepare preservice teachers for a productive working life (Darling-Hammond and Leiberman, 2012; Maandag, Folkert Deinum, Hofman & Buitink, 2007; NSW Government, 2013; Le Cornu & Ewing, 2008, Zeichner, 2010). Key factors other than length of time and quality of mentoring can influence perceptions on the quality of professional experience. In the Australian context where rural placements are often crucial to future career choices (Richards, 2012) the notion of place consciousness in professional experience is seen as important in successful ITE (White & Reid, 2008). Cultural difference between the teacher and the student including the importance of culturally relevant pedagogy implemented in the classroom is also factored into what is seen as important ITE professional experience (Ladson-Billings, 1995; Spooner-Lane, Tangen & Campbell, 2009; Santoro, 1999; Te Ava & Rubie-Davies 2016). Indigenous pedagogy and its practice is a national imperative in Australia (Commonwealth of Australia, 2009; Hart et al, 2012; Moreton-Robinson, Singh, Kolopenuk, & Robinson, 2012; Reynolds, 2014). Others advocate for a wider perspective on teaching as a tool to build societies, responding to local contexts (Brennan & Willis, 2008; Stone 2003) and so professional experience must cater for this. There are few large scale quantitative studies in these areas (Louden, 2008) and yet it appears that preservice teachers can revert to an apprenticeship of observation (Lortie, 2002), a phenomenon where teaching's long-standing cultural scripts are impressed upon the novice (Sykes, Bird & Kennedy, 2010). Many preservice teachers learn to teach in the way they themselves have been taught or have observed in their individual classroom professional experience placements and whatever their professional experience placement entails it strongly effects their subsequent practice and it is often unmonitored (Greenberg; McKee and Walsh, 2013). A key factor in clarifying this apprenticeship of observation is the effect that the teaching discipline can have on what is seen as useful and "good' in professional experience. We now turn to a clarification of the notion of a PCK for teaching disciplines in professional experience.

Professional Experience Pedagogical Differences between teaching Disciplines

Shulman (1986, 1987) argued that in teacher education in the late 20th century we seemed to forget the importance of the relationship between the content knowledge to be taught and the pedagogy of teaching that knowledge, instead focusing on generic skills of teaching such as teaching behaviours regardless of content area or grade level taught. His conception of pedagogical content knowledge (PCK) included the understanding that a teacher knows the subject matter of the discipline they teach, knows how to teach it and also knows how to clarify and make explicit the key misconceptions and difficulties in the learning (Nuangchalerm, 2011; Ngo, 2013). Thus Shulman (1987) argued that PCK goes beyond knowledge of subject matter:

> *the teacher need not only understand that something is so; the teacher must further understand why it is so, on what grounds its warrant can be asserted, and under what circumstances our belief in its justification can be weakened and even denied. (p.9).*

As Park and Oliver (2008) pointed out PCK also includes the dimension of subject matter knowledge *for teaching* - the particular form of content knowledge that embodies the aspects of content most germane to its "teachability".

> *PCK can be expressed only when teachers deal with the transformation of subject matter for a specific group of students in a specific classroom, and in this regard it is closely linked to teachers' actual teaching performances and student learning (Park & Oliver, 2008, p. 813).*

Hashweh (2005) argued that "pedagogical content knowledge is the set or repertoire of private and personal content specific general event-based as well as story-based pedagogical constructions that the experienced teacher has developed" (p. 277). It is a concept closely aligned to professional experience and classroom performance and the domain of Professional Practice in the AITSL professional standards (2011) and in fact Ball et al. (2008) pointed to the need to delineate differences between generic teaching skills and discipline specific teaching skills and emphases.

Although professional experience in a particular discipline area should encompass some key discipline content and discipline teaching preferences and knowledge the research indicates that in many cases preservice teachers are not aware of the PCK they are observing, with some suggesting they require a discipline specific praxis tool aimed at providing the language and structure for interrogating the practice they observe (Aydeniz & Kirbulut, 2014). Loughran, Mulhall and Berry (2008) specifically taught preservice teachers aspects of the PCK of certain science concepts in their CoRes and PaP-eRs programs to see if their students learnt more successfully. They argued this was important because "so much of the knowledge of teaching is implicit in experienced teachers' teaching — which student-teachers are rarely able to access during their practicum" (p.1302).

With teacher quality being seen as the single most important in-school factor influencing student outcomes (Le Cornu, 2016) it also seems apparent that the connection between good teaching and resultant school student outcomes would be different between different teaching disciplines. Wayne and Youngs (2003), in their review of research on teacher quality, found that there were definite links between level of qualification (content knowledge) in some areas (mathematics) and resultant student scores, and less links in other areas (science, history and English literature). Overall they argued that "subject-specific measures matter" in assessing teacher quality (p. 106). Likewise Edge, Reynolds & O'Toole's (2014) study of Classroom Pedagogical Alignment strategies found that accountability procedures in schools led to teachers in each discipline strongly linked teaching strategies to assessment and curriculum content - easily seen and assessed. However

Ngo (2013), when clarifying the relationship between PCK of Maths education and student outcomes in Cambodia, found background factors militated against this being a simple correlation, finding that student socioeconomic status was the best predictor of the success of PCK in attaining mathematical concepts and understandings.

Various studies in HPE provide further indications that there is a discipline specific professional experience pedagogy which adds to the complexity of deciding what is 'good professional experience' and what is not in HPE (Jenkinson & Benson, 2010). You (2011) pointed out that preservice teachers in HPE tended to learn the PCK of HPE during professional experience but did not learn how to implement it. In HPE, discerning the PCK for the various components of the teaching area of PE including assessment, content knowledge and the instructional environment was challenging for preservice teachers (Graber, 1995) but the subject itself is also prone to changes in emphasis and delineation including focusing on physical activity, physical education, diverse community-based healthy lifestyle programs, personal development and physical knowledge (Bryan, Sims, Hester & Dunaway, 2013; Kelder et al., 2014; Pill, Penney & Swabey, 2012, Tinning, 2002). In Australia it is called Health and Physical Education (HPE) reflecting new emphases on "health literacy" in the Australian Curriculum incorporating areas such as mental health promotion, sexuality and reproductive health, food and nutrition as well as physical activity and fitness, games and sports (Lynch, 2015).In physical education classes in elementary school, Ayvarzo and Ward (2011) found that teachers adapted their teaching to account for student differences and their abilities to adapt appropriately reflected their own PCK expertise when adapting HPE to suit particular learners. Barrett and Collie (1996) identified and clarified PCK for teaching lacrosse by observing teachers who were learning to teach it to children, thus adapting the skills associated with a particular sport to the curriculum and to students and teacher knowledge of content and pedagogy.

Internationally numerous policy statements and guidelines have positioned HPE as a platform for improving young people's capacity to be fit, healthy and physically active throughout their lifespan (Scottish Executive, 2003, 2004; Society of Health and Physical Educators [SHAPE] (2014); United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2014). Principals view good HPE programs as those where teachers were expert, knew the subject and skills, prioritised it as a subject, were motivated and community engaged and who focused on a developmentally appropriate programs (Lynch, 2015, p. 99). Dyson (2014) argued that it was lack of content knowledge that affected poor teaching of HPE PCK and advocated greater attention at preservice level and school level to a holistic PCK of HPE. McCaughtry (2006) argued that knowledge of the children added success to implementing HPE PCK.

Peralta and Burns (2012) commented on the impact that professional experience had on notions of professionalism and the interaction between content and practice in Health PE placements. In the example provided by Rossi and lisahunter (2013) preservice teachers in HPE had to learn "sports talk" and be scrutinised as to body size, clothing and personal sporting expertise in the professional staff room space in order to "fit in". Preservice teachers found that their mentor teachers did not have a good knowledge of health pedagogy in studies in England and the USA and instead opted for activity type activities when teaching Health (Armour & Harris, 2013). The latter researchers argued that there was a need for educators to develop and clarify the specific pedagogy required for health, and that it is essential that learning and teaching be individualised. Elliot, Atencio, Campbell and Jess (2013) argued that when examining primary teachers' ability to implement HPE programs socialisation over their entire life span influenced them in their abilities to implement competent programs. Teaching HPE does not appear as a simple formula and yet the Australian professional standards for teachers are relatively generic, not teaching discipline oriented, with only

Standard 2 (Know the content and how to teach it) specifically linked to a content area and the curricular and pedagogical adaptions specific to that content. Disciplines can be seen to have different professional ways of thinking and ways of interacting with students and other staff. However first we need to ask the basic question, can we discern some differences between perceptions as to the ways the disciplines are taught. In this instance we studied preservice teachers' perceptions.

Context for Study

The University of Newcastle (UoN) is a regional university situated in the state of NSW, Australia. Its main campus is in Newcastle and it also has two satellite campuses, one at Ourimbah, 83kms north of Sydney and the other at Port Macquarie 385 kilometres north of Sydney. Since 1949, UoN offers a comprehensive ITE program and has the second highest number of enrolled Education students of any university in Australia. UoN at Callaghan offers ITE in early childhood, primary education and secondary-level Fine Arts, Health and Physical Education, Music, Science, Maths, Technology and a range of Humanities areas such as History, English and Geography.

The Research Questions

This study sought to compare Health and Physical Education (HPE) preservice teachers with Non-HPE preservice teachers from a large tertiary teaching institution in terms of confidence in being able to implement graduate standards during practical placements, how well they felt they were mentored in the school/centre and how well they felt they were inducted into the profession in the school/centre.

Is preservice teachers' participation in the HPE specialisation of a common undergraduate teaching program associated with their perceptions of:

1.   success in meeting NSW Institute of Teachers' Professional Teaching Standards;
2.   levels of school-based teaching support to meet NSW Institute of Teachers' Professional Teaching Standards;
3.   school-based early induction into the teaching profession; in their professional experience course?

Method
Survey Instrument

Part 1 of the survey, corresponding with Research Question 1, listed twenty aspects of competency which corresponded with the seven key NSW Institute of Teachers' Professional Teaching Standards (2005) beginning teacher elements, or core competencies, see Table 1. The twenty aspects allowed clarification within each of the core competencies and a respondent's element rating was obtained by averaging across the respective aspects surveyed. Students identified their perceived level of success in applying each of the twenty aspects in their most recent prac/internship by responding to a ten-point Likert scale additionally labelled as 1 – None, 2 to 4 - Limited, 5 to 6 - Satisfactory, 7 to 8 – Good, 9 to 10 – Excellent. Students were previously assessed in their formal professional experience placements as to their achievement of these standards and so were very familiar with them.

It should be noted that the Australian Institute for Teaching and School Leadership (AITSL) has subsequently developed seven elements for professional standards for teachers and although they are slight differences, the NSW Institute of Teachers and its Quality Teaching Council (2012) has accepted that overall there is similarity between them that would enable our study to be similarly applied to other States in Australia and possibly overseas.

Element, or Core Competency	Description	Aspect of competency surveyed
1	Teachers know their subject/content and how to teach that content to their students	1. Knowledge and skills of pedagogy 2. Syllabus/Curriculum Framework 3. Lesson planning and preparation 4. Knowledge and skills in Information and Communication Technology 5. Subject content knowledge
2	Teachers know their students and how students learn	6. Knowledge of the social, physical and intellectual development of students 7. Learning theories 8. Strategies for addressing ATSI, NESB, Special Ed, and Challenging Behaviour students' needs
3	Teachers plan, assess and report for effective learning	9.Strategies for assessing students
4	Teachers communicate effectively with their students	10. Strategies for leading, directing, and facilitating group work 11. Techniques for questioning students 12. Methods for communicating clear directions to students about learning goals 13. Techniques for facilitating class discussion
5	Teachers create and maintain safe and challenging learning environments through the use of classroom management skills	14. Strategies to create a positive and safe classroom environment 15. Strategies to manage classroom discipline
6	Teachers continually improve their professional knowledge and practice	16. Critical reflection to improve your teaching 17. Strategies to engage with the professional community within the school (i.e., teachers, the executive, administrative support)
7	Teachers are actively engaged members of their profession and the wider community	18. Strategies to engage with parents and other stakeholders external to the school 19. Knowledge of the laws and regulations relating to rights and responsibilities for students and teachers 20. Knowledge of ethical conduct in the teaching profession.

*NSWIT, (2005)

Table 1: Seven core NSW Institute of Teachers' Professional Teaching Standards beginning teacher elements* and corresponding aspects surveyed

Part 2 of the survey, corresponding with Research Question 2, listed the same twenty aspects of competency used in Part 1. For each of these twenty aspects students were asked to indicate their perception of the level of support they received from their school-based teacher in applying the area in their most recent prac/internship, using the same ten-point Likert scale.

Part 3 of the survey, corresponding with Research Question 3, required students to rate how well their school-based teacher performed in each of two elements of competency, see Table 2, in their most recent prac/internship. These focussed on assessing the level of induction students felt they received from their school-based teacher. Eight aspects corresponding to the two key elements were surveyed. The same ten-point Likert scale was used.

Element, or core competency	Aspect of competency surveyed
1. Induction into managing the teaching process	1. Equipped you with new teaching strategies 2. Encouraged you to try new teaching strategies 3. Assisted you to overcome teaching difficulties
2. Induction into the professional world of the teacher	4. Made you feel like a welcome member of the teaching staff 5. Communicated with you in a collegial manner 6. Helped you understand routines, policies, and procedures of the school/centre 7. Made you feel like a member of the teaching profession 8. Knowledge of ethical conduct in the teaching profession

*NSWIT, (2005)

Table 2: NSW Institute of Teachers' Profession Teaching Standards core areas of induction* and corresponding aspects surveyed

Further, the following student demographics were recorded: degree within which currently enrolled; Age group; Country of Birth (categorised as English Speaking or not); Gender; Aboriginal and Torres Strait Islander status; Primary Language (categorised as English or not); Current Year of Professional Experience (PE Year).

Procedure

Students in all teaching programs at the Callaghan campus were given a paper-based survey by a research assistant known by the students to have no influence on their program, and told about the purpose for the survey at the completion of their course lecture. Students were asked to complete this survey knowing their decision would have no consequence on their course results in any way. The study was approved by The University of Newcastle Human Research Ethics Committee (HREC 2009-0262). Students were asked to reflect on a recent Professional Experience placement and as these placements were at different times for different programs the surveys were handed out over a period of weeks in the second semester of 2010 and first semester 2011.

Analysis

For each of Parts 1, 2 and 3 of the survey, a respondent's mean score of the surveyed aspects was obtained for each defined element. Multiple linear regression was used to fit models having each of the defined elements' mean scores as the outcome variable. Demographics that differed significantly between the HPE and non-HPE samples (based on

Pearson chi-square tests) and were also significant in predicting an element's mean rating (based on ANOVA) were included as predictors in order to adjust for potential differences in types of respondents between the HPE and non-HPE groups. HPE status (identifying whether student was enrolled in HPE or not) was then tested for significance in the model.

Results

There were 801 respondents, representing a response rate of 46%. There were 102 HPE students and 693 non-HPE students, with a further 6 not identifying their current degree program. The numbers (and percentages) of respondents for each of the key demographic variables are presented by campus in Table 3. Gender, Age Group and Year of Professional Experience were each associated with HPE status (p=0.000, 0.025 and 0.000 respectively). Mean ratings for elements were also associated with Age Group and Year of Professional Experience (p<0.05) so these two demographics were included in the multiple regression models before testing if HPE status was a statistically significant predictor of mean rating for an element.

Demographic	Categories	HPE students		Non-HPE students	
		n	*%*	*n*	*%*
Gender	**Male**	47	46.1%	147	21.2%
	Female	55	53.9%	546	78.8%
Age at enrolment	**Under 22**	88	86.3%	534	77.1%
	23 to 30	12	11.8%	89	12.8%
	Over 30	2	2.0%	69	10.0%
	Missing	0	0.0%	1	0.1%
Year of Professional Experience	**2nd**	1	1.0%	135	19.5%
	3rd	64	62.7%	300	43.4%
	4th	37	36.3%	257	37.1%
	Missing	0	0.0%	1	0.1%
ATSI	**Yes**	5	4.9%	18	2.6%
	No	97	95.1%	673	97.1%
	Missing	0	0.0%	2	0.3%
COB	**English Speaking**	100	98.0%	672	97.0%
	Non-English	1	1.0%	17	2.5%
	Missing	1	1.0%	4	0.6%
Primary Lang	**English**	99	97.1%	689	99.4%
	Not English	1	1.0%	3	0.4%
	Missing	2	2.0%	1	0.1%

Table 3: Frequencies of demographics by HPE status

Research Question 1

After adjusting for significant demographic predictor variables for each element, HPE status was statistically significantly associated with a student's mean score on their perceived ability to apply Element 4 (p=0.04) and Element 7 (p=0.006), see Table 4, with the HPE students exhibiting slightly higher mean ratings. The differences in mean scores between the HPE and non-HPE students ranged from 0.03 to 0.49 across the seven elements, on the ten-point Likert scale. Means ranged across the seven elements from 6.8 to 7.8, indicating students irrespective of HPE status rated their ability to apply the elements in the range from satisfactory to good.

Element	Mean (*HPE*)	Mean (*NonHPE*)	Difference (*HPE - NonHPE*)	Standard Error of Difference	p-value	95% CI for Difference
1. Subject content and teaching	7.79	7.60	0.19	0.115	0.103	(-0.04, 0.42)
2. Knowledge of students and how they learn	6.99	6.80	0.20	0.157	0.209	(-0.11, 0.51)
3. Plan, Assess and Report	7.20	6.91	0.29	0.179	0.106	(-0.06, 0.64)
4. Communicate	7.61	7.33	0.28	0.135	0.042^	(0.01, 0.54)
5. Classroom management	7.70	7.67	0.03	0.145	0.824	(-0.25, 0.32)
6. Professional knowledge and practice	7.57	7.51	0.06	0.155	0.680	(-0.24, 0.37)
7. Community engagement	7.33	6.84	0.49	0.176	0.006#	(0.15, 0.84)

Significant at 1% significance level
^ Significant at 5% significance level

Table 4: Mean scores of ability to apply each element, accounting for significant demographic variables, by HPE status

Research Question 2:

After adjusting for significant demographic predictor variables for each element, HPE status was statistically significantly associated with the mean score of the level of school-based teaching support for Element 6 (p=0.015), see Table 5, with the HPE students exhibiting slightly higher mean ratings. The differences in mean scores between the HPE and non-HPE students ranged from 0.23 to 0.59 across the seven elements, on the ten-point Likert scale. Means ranged across the seven elements from 6.6 to 7.9, indicating students irrespective of HPE status, rated their school-based support to apply each element within their most recent Prac/Internship in the range of satisfactory to good for all elements.

Element	Mean (*HPE*)	Mean (*NonHPE*)	Difference (*HPE - NonHPE*)	Standard Error of Difference	p-value	95% CI for Difference
1.Subject content and teaching	7.41	7.12	0.29	0.213	0.170	(-0.13, 0.71)
2.Knowledge of students and how they learn	7.04	6.63	0.41	0.240	0.088	(-0.06, 0.88)
3. Plan, Assess and Report	7.34	7.04	0.30	0.259	0.255	(-0.21, 0.80)
4. Communicate	7.56	7.15	0.41	0.227	0.073	(-0.04, 0.85)
5. Classroom management	7.94	7.71	0.23	0.222	0.303	(-0.21, 0.67)
6. Professional knowledge and practice	7.75	7.17	0.59	0.241	0.015^	(0.11, 1.06)
7. Community engagement	7.20	6.71	0.50	0.256	0.053	(-0.01, 1.0)

^ Significant at 5% significance level

Table 5: Mean scores of levels of school-based teaching support to meet each element, accounting for significant demographic variables, by HPE status

Research Question 3

After adjusting for significant demographic predictor variables for each element, HPE status was not statistically significantly associated with the mean score of the perceived level of school-based teacher's performance in inducting students into the management of the teaching process and into the professional world of the teacher ($p > 0.19$), see Table 6. The differences in mean scores between the HPE and non-HPE students ranged from 0.17 to 0.32 across the seven elements, on the ten-point Likert scale. Means ranged across the two elements from 7.5 to 8.3, indicating students irrespective of HPE status, rated their school-based teacher's performance in the 'good' range for both elements.

Element	Mean (*HPE*)	Mean (*NonHPE*)	Difference (*HPE - NonHPE*)	Standard Error of Difference	p-value	95% CI for Difference
1. Induction into managing the teaching process	7.85	7.53	0.32	0.243	0.191	(-0.16, 0.80)
2. Induction into the professional world of the teacher	8.29	8.12	0.17	0.226	0.453	(-0.27, 0.61)

Table 6. Mean scores of levels of school-based teacher performance in inducting students to meet each element, accounting for significant demographic variables, by HPE status

Discussion

The research literature suggests there are possible pedagogical skills unique to the discipline you teach. As noted in the research literature on how teachers teach HPE there is a variation of emphasis on focusing on physical activity, physical education, diverse community-based healthy lifestyle programs, personal development and physical knowledge (Bryan, Sims, Hester & Dunaway, 2013; Kelder et al., 2014; Tinning, 2002). In the case of HPE different sorts of experiences are available to HPE students than other students and this can lead to the development of different emphases in pedagogy. It was also apparent from the research literature that other disciplines emphasise other aspects of teaching pedagogy (Loughran, Mulhall & Berry, 2008; Wayne & Youngs, 2003). A professional experience placement can elicit different skills and competencies from students in different teaching disciplines and there would thus seem to be some support for the notion that professional experience in ITE would need to be adjusted to cater for the teaching discipline being taught. It could therefore be said that a key factor in the seeming inability of researchers to discern a definitive approach to professional experience could be found in the complexity of various pedagogical skills required for each teaching discipline.

The study produced two main findings with implications for the design of and policy regarding ITE professional experience and standards across disciplines. First, as discussed in Reynolds, Howley, Southgate (2015), preservice teachers were, on average, highly satisfied with their professional experience regardless of the specialisation they were undertaking. The second key finding is that in 2 of the 7 elements HPE students felt their skills and their mentoring was superior to the other teaching disciplines. In particular the data indicated that HPE students' scores on their ability to satisfy graduate standards were significantly higher in the areas of communication and community engagement. These differences occurred despite there being no statistically significant differences in the ratings of their school-based teaching support in these elements. HPE students did score significantly higher than other teaching disciplines when assessing their cooperating teacher's ability to develop professional knowledge and practice. As the overall focus of this study is to establish the case for examining a teaching discipline effect when designing and judging the quality of professional experience, this provides some evidence for further exploration towards this. This could be one of those confounding aspects that prevents easy comparison of professional experience placements in ITE.

Limitations

While the scale of the study is relatively large compared to other studies undertaken into professional experience in ITE in the Australian context, it was conducted at only one university. Further, this study was based upon preservice teachers' perceptions of their abilities and school-based mentors via quantitative methods. Additional research is required that attempts to triangulate subjective and objective measures of competence and support from the perspectives of preservice teacher, cooperating school-based teacher, and university teacher educator. There may be many influences on student perceptions other than the actual teaching and learning they were given from the university or school teachers. An evaluation of additional data obtained through focus groups and interviews would add to the fabric of the conclusions. This will be something for future consideration. Additionally, the researchers were not in a position to ascertain the outcomes of the teaching episodes; although the preservice teachers generally felt they had taught well, it is unknown whether the school children learnt well.

Conclusion

Recent accreditation standards that do not differentiate between discipline focused teaching run the danger of not appreciating the complexity of the teaching task from a discipline perspective. In the Australian context the AITSL national professional standards for teachers are very generic and are open to interpretation. In our study the HPE preservice teachers perceived the acquiring of these in a different manner to other teaching disciplines. Anecdotally we can posit answers for this when communication in classrooms and out of classrooms is such a major factor in this discipline teaching area if only for safety reasons; and where community engagement in organising sporting teams and other community events is possibly a much stronger element of the job than other disciplines. It would stand to reason that HPE teachers would be given more experience in this than other teaching areas. However when a key function of such generic standards is to compare teachers across teaching areas and assess their performance the aim is confounded when there are different expectations of different discipline areas. This also affects preservice teacher education when standardisation of courses and approaches in recent teacher accreditation processes does not take into account the differing pedagogical needs of the teaching disciplines.

It thus seems to be true that yes teaching discipline matters but we need more evidence in exactly what way and to what extent indicators posited by research-context of place, context of culture, context of what is the particular discipline pedagogy, and what a teacher of a particular discipline will 'look like". Many of these are unknown or not really presently addressed in our teacher education programs. Although teachers can learn generic skills and competencies for teaching there are some aspects of teaching a particular subject area that are unique to that subject area and is related to the knowledge, teaching skills, and abilities of teachers in that subject area (Abell, 2008). Reflecting on the manner of delivering key content ideas, key pedagogical practices for that content and the context together is the 'art' of teaching in that particular teaching area – its unique PCK and synergy (Abell, 2008; Loughran, 2006; Nillson & Loughran, 2012; Wilson & Wineberg, 1988).
Globally we seem to have followed the road of standardisation for professional experience in teacher education. Is there room for variation on this road?

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