Discipline-related commitments and identities of out-of field early career teachers

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This paper explores the process of developing two on-line surveys for investigating out-of-field teaching. The first survey gains pre service teacher perspectives on expectations of having to be adaptable as an in service teaching, and facing the prospect of teaching out of field. The second survey gains in service teachers' experiences and impressions of the impact of teaching out of field on their teaching identity, feelings of competence and confidence and support needs. The surveys are undergoing face validity tests and a trial. The paper will report on the process of on-line survey construction, decisions that shaped the final survey format, the influence of the trial on the final surveys, intended purposes for research, and potential for informing pre service teachers of the realities of teaching.

Introduction

This paper explores the processes involved, and some of the issues we encountered when developing, trialing and determining the efficacy of surveys exploring issues around teaching out-of-field. The surveys will be used to examine and monitor how the disciplinary-related commitments, professional identity, personal resources, and support needs of pre-service and early teachers change over time when faced with the prospect of teaching out-of-field.

In 2012, we received funding from the Deakin Centre for Research in Educational Futures and Innovation (CREFI) to develop a tool that will generate broad scale data on relationships between context (such as geographic region, school leadership), support needs (such as accessibility and type), and personal resources (such as knowledge, adaptive expertise, confidence and competence) of out-of-field teachers. Given that early career teachers are the most vulnerable in such circumstances, the development of the tool will focus on the transition of teachers from university into schools, and examine: their subject commitments (including expectations and preparedness to teach both in-field and out-of-field); their projected and actual support needs for teaching out-of-field; their professional identity (for example, as discipline specialists or pedagogues); and how teacher education might have contributed to their practice and identity.

The research questions for this project are:

1. What are the features of a tool that can be used to monitor changes to pre-service and early career teachers' identity, personal resources and support needs when faced with the prospect or eventuality of teaching out of field?
2. What is the efficacy of the tool in understanding the:
    - subject commitments, identity and personal resources of out-of-field rural and regional pre-service and early career teachers?
    - influencing factors on teachers' professional response to teaching out-of-field?
    - patterns of support and personal responses associated with out-of-field teaching?

We trialed the surveys in Victorian rural and regional schools and universities. A pilot sample drawn from schools and universities in non-metropolitan centres included: teachers who have taught subjects out-of-field; and final year pre-service secondary teachers completing any method.

The project is part of a larger agenda to, in 2012, examine relationships between the structure of methods training in secondary teacher education programs, the discontinuities that are expected to arise, and the learning and identity shifts expected for pre-service teachers (PSTs) to be adaptable during transition into teaching, such as when crossing boundaries between in-field and out-of-field teaching spaces. The next phase (2013 and beyond) will be to follow early career teachers as they transition from university into schools in order to examine longitudinally relationships between, and changes to, early career teachers' personal resources, support needs and coping strategies, particularly when faced with the additional challenge of having to teach out-of-field.

In the following section we introduce the surveys, their structure, and relationships between the questions. We then track over the processes of survey development, validity checks, and survey trial, and identify the analytical processes we will employ when we have a statistically significant sample. Our learning from this project is identified throughout.

Conceptual framework

This project draws on findings from a pilot study from 2009 (Hobbs, 2012a, 2012b) examining teacher identity and support needs of out-of-field in-service teachers in rural and regional schools in Victoria. Teachers of science and

mathematics, and school leaders, in three Victorian rural secondary schools were interviewed. The study was designed to trial methodology and develop theory that can inform further research examining the issues around teaching out of field across different contexts. The pilot study showed clearly that a number of factors contributed to whether a teacher 'felt' out-of-field. In particular, teacher commitment to the subject and their students was an important factor in determining teacher's identity and feelings of confidence and competence in relation to the out-of-field subject (Hobbs, 2012b). The research also showed that early career teachers were at greatest disadvantage when teaching out-of-field.

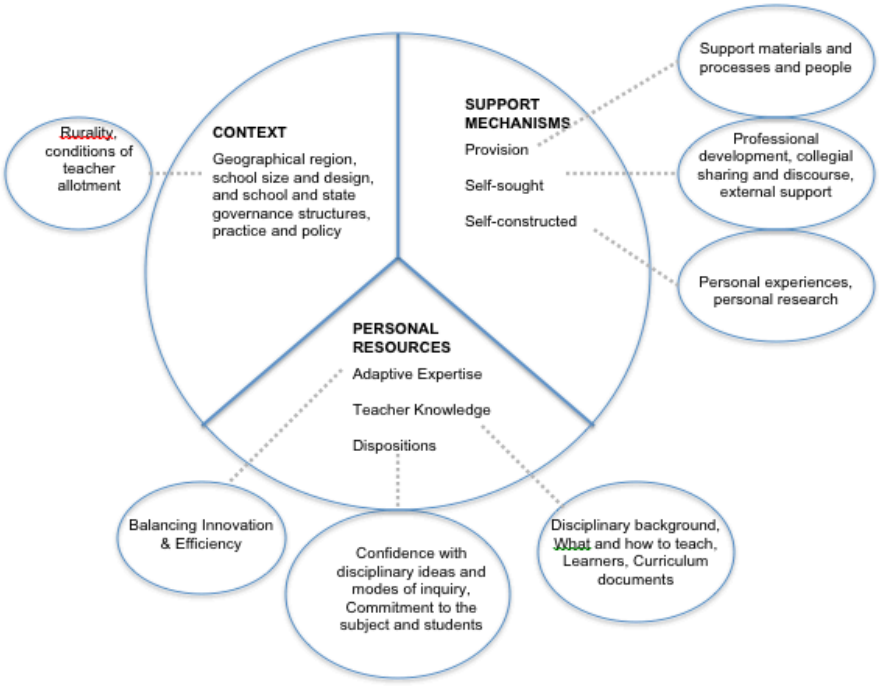

Figure 1. Boundary Between Fields Model.

The Boundary Between Fields (BBF) model (Hobbs 2012a, 2012b) (Figure 1), generated by this earlier work, is used as the conceptual framework informing survey development in the current project. The BBF Model draws from the boundary crossing literature (Star, 1989; Akkerman & Bakker, 2011) to provide a lens for investigating how teachers identify themselves and their practice as being in-field or out-of-field. This theoretical lens enables:

- examination of the movement of students from pre-service to in-service teachers, and from in-field to out-of-field teaching;
- a focus on discontinuities that are expected to arise; and
- learning and shifts in professional identity that are expected to ensure successful boundary crossings.

This theoretical lens provides a platform for re-conceptualising these experiences as opportunities for professional learning occurring within schools as communities of practice, where teachers are supported and enabled to adapt to new fields and expand their professional identity (van Manen, 1990). Akkerman and Bakker (2011) define boundaries as 'sociocultural differences leading to discontinuities in action and interaction' (p. 21), rather than any move between different practices. The emphasis

here is on the resultant discontinuity that arises for the individual. According to this view, for out-of-field teachers, a boundary exists when the differences between the practices and perspectives required to teach the subject are "discontinuous". Such discontinuities can be overcome through a process of 'reestablishing action or interaction' (p.5), leading to learning, and which ultimately leads to identity development (Akkerman & Bakker, 2011). In the context of this project, early career teachers can be seen to utilise "boundary objects" as professional learning opportunities to support this negotiation.

The BBF model identified a range of factors that determine where discontinuities may arise for teachers, which results in them feeling "out-of-field": Contextual Factors, Support Mechanisms, and Personal Resources. The three groups of factors are outlined below in terms of how they contributed to survey development.

Personal Resources refer to teachers' *adaptive expertise*, *knowledge*, and *commitment*. The surveys have been developed to monitor changes in the relationships between these personal resources, knowledge and adaptability overtime.

Out-of-field teachers can display *adaptive expertise* when they apply knowledge effectively to novel problems or atypical cases in a domain (Holyoak, 1991). Adaptability is used in terms of in coping with, and learning through, changes associated with out-of-field teaching. How teacher educators and PSTs view the personal resources required to transition into teaching is a significant focus of the survey.

Teachers draw on a broad range of *knowledge*. PSTs generate knowledge through their teacher education experiences, both through coursework and their professional placements. While a formal account of what a teacher needs to know to begin teaching is given through the state teacher registration bodies, a useful framework for considering subject-specific, generic and professional teacher knowledge can be found in Shulman's (1986) classification of knowledge. PSTs' expected knowledge needs for the profession, and knowledge gains from their teacher education program experiences are explored as they move into teaching.

If an out-of-field teacher is *committed* to their teaching they are more likely to invest time in preparation, seek professional development, and participate in subject department activities (Hobbs, 2012b). The notion of teacher commitment has been explored in Hobbs' prior research on teacher passion and imperatives driving practice (Hobbs, 2012c) where commitment is conceptualised as two imperatives driving practice: a commitment to their students, and a commitment to the subject due to their personal interest in it. The survey provides some indication of the locus of PSTs' commitments to their in-field subjects and if faced with teaching out-of-field.

Contextual Factors refer to factors that situate systems, practice and people into the broader landscape. Generally it can include geographical region, systemic structures (institutional, political), and socio-economic factors that influence teaching. The surveys enable examination of the contextual elements such as: governance structures informing decisions leading to teaching out-of-field and support for teachers, and pre-service teacher experiences.

Support Mechanisms are 'boundary objects' that act as bridges between in-field and out-of-field spaces. Star (1989) describes boundary objects as 'bridges' or 'anchors' between 'intersecting social worlds'. Objects can be human or non-human, and come in the form of artefacts (tools), discourses (as a common language), or

processes that allow coordination of actions (Wenger, 1998). Boundary objects are central to professional identity development because they improve the likelihood of learning through the boundary crossing event.

Drawing from previous work (Campbell et al, 2007; Hobbs 2012a, 2012b), the survey explores boundary objects suitable for this transition period that support PSTs' developing confidence, competence and autonomy, as well as the projected needs and expected availability of support as early career teachers. The project explores both the type, and mode of access (provision, self-sought, self-constructed) to boundary objects as identified in Figure 1.

The surveys

Two surveys were developed: a PST survey explores PSTs' expectations for their practice, and an IST survey explores ISTs' experiences as teachers. Both surveys consist of likert scale and multiple-choice items, and some open response items. Some questions have multiple items that are rated through a likert scale. According to the survey trial, the PST survey has a completion time of approximately 20-30 minutes (two completions of 19 minutes and 38 minutes, trimmed mean = 28 minutes). The IST survey has a completion time of approximately 30-40 minutes (trimmed mean = 35 minutes). The sections of the surveys are summarised and compared in Table 1.

Table 1. Sections of the PST and IST Surveys

Section	Pre-service Teacher Survey	In-service Teacher Survey
School and University demographics	University and placement demographics: • Location and region of university and placement, school size	School demographics: • Location and region of school, school system and size.
Teacher demographics	Sex, age, discipline areas and methods, degree, highest qualification	Same as PST + years teaching, position in school
Subjects taught	Subjects expected to teach and level of comfort Expectations for teaching out-of-field, which subjects	Subjects taught How often teaching out-of-field, which subjects
Factors	Factors expected to feelings of being out-of-field (top 5), compare for in-field subjects Personal resources expected to need. Expected impact on teacher, students, relationships	Factors that make them feel out-of-field (experienced and impact on confidence and competence) What they have needed to learn Impact on teacher, students and relationships
Support	Expectations for access to and usefulness of supports What they would commit to for their out-of-field subject in terms of support and responsibility Expected supports per access mode – seek out, make themselves, provision (school or department) What will be of most help	Supports used and their impact on confidence and competence What has been of most help Additional support they want/would have wanted

Challenges	Expected challenges and expected impact of those challenges	Experience of challenges and their impact on confidence and competence
Opportunities	Expected opportunities and expected impact of those opportunities	Experience of opportunities and their impact on confidence and competence
Critical incident		Description of a time when they have faced challenges or opportunities when teaching out-of-field

In relation to ethical considerations, the process involves Principals and Program or Course directors providing consent to have their teachers or students involved in the survey. This consent is through written consent form, which is returned to the researcher. Consent from survey respondents is gained at the beginning of the survey where there is an introductory statement and plain language statement. Respondents must select the consent option to complete the survey. The survey is anonymous.

Comparison of questions

The BBF Model is incorporated into the survey in various ways. Some questions align specifically with one of the elements of the model, for example, the demographic questions provide contextual information only. Other questions have multiple items that the respondent evaluates systematically. Table 2 provides a comparison of how these items are used in the different sections of the survey, and how they align with three elements of the BBF model.

The surveys are designed to be longitudinal in their use, so that PSTs undertake the survey in their final year of their secondary teacher education, then undertake it annually while an in-service teacher. Therefore, some items deal with the same issues and can be directly compared. Due to the different purposes of the two surveys – one explores mostly expectations, and another explores experiences – the wording of questions differs. For example, an open response question in both surveys asks:

PST Q3.4 In which subject/s would you feel most out-of-field teaching, and WHY? (open)
IST Q3.2 In which subject/s have you **felt** most out-of-field when teaching, and WHY? (open)

Differences in some items recognise the limited experience of PSTs, so different scales are used. For example, Section 4 looks at factors shaping attitude and response to out-of-field teaching. PST survey items ask students to rank the top 5 factors they expect to experience if teaching out-of-field, while the IST survey asks teacher to identify using likert scales which of the factors have been experienced, and degree to which those factors made them feel less confident and competent.

PST Q4.1 Select five (5) of the following factors that might make you feel most out-of-field. Rank these five beginning with 1 as the factor that would make you feel MOST out-of-field.

IST Q4.1 When teaching out-of-field, how often have you had the feeling of: (5-pt likert scale per item)
IST Q4.2 Of the factors experienced in Q4.1, to what extent do they make you feel LESS confident or competent? (Carry forward responses from Q4.1)

Table 2. Items per element of the Boundary Between Fields Model (Hobbs, 2012b)

Context	Personal resources	Support
FACTORS Limited or no control of circumstances under which the allotment is made Difference between the culture of teaching the subject in my school and my own beliefs about how the subject should be taught Why do/did you teach out-of-field? SUPPORT Would you have liked additional support? TEACHER EDUCATION Are you aware of the likelihood of teaching out-of-field? (Yes, no, explain – personal expectation, informed by university and school)	FACTORS Am out of my comfort zone Lacking university education/experience in a discipline Lacking teaching qualifications and practicum experiences within the teaching degree Lacking confidence with disciplinary ideas and methods Not knowing how to manage students in different teaching situations Lacking interest in the subject and/or subject matter Lacking a willingness to develop as a teacher of that subject Lacking a language to talk about the subject with other teachers Lacking appreciation for what the subject can offer the students TEACHER EDUCATION Subject knowledge Teaching approaches that could be adapted Knowledge of learners Exposure to other subject areas Behaviour management strategies Knowledge of curriculum How to conduct myself in a professional manner A need to be a dedicated teacher regardless of what I teach Confidence, resilience, initiative How educational theory informs practice CHALLENGES Presentation of content that is disconnected, or unrelated to student interests or lives, due to not understanding applications Negative impact on student learning Negative teaching experiences Use of traditional pedagogies that might be considered less effective Lack of both a personal commitment to the subject and enthusiasm and interest in what I am teaching Less commitment to participating in innovation Less commitment to participating in subject-related discussions OPPORTUNITIES More experience to boost CV Adds another dimension to my relationship with students Improved ability to make links between different subjects Exposes me to new pedagogies that might be translated into my in-field subjects Opportunity to gain an appreciation for how students behave and learn in different subjects Opportunity to develop different strategies for working with students Provides an appreciation for what other teachers do New challenges and possibilities	FACTORS Lack teaching resources Lack knowledge of, and access to, curriculum/syllabus/planning documents Have limited or no support SUPPORT Curriculum or syllabus documents Repositories of activities and resources Formal mentoring/coaching programs Reduction in workload Inter-school collaboration programs In-house professional learning, e.g., Professional Learning Teams External Professional Learning Informal coaching, mentoring, informal advice from other teachers Networks outside school Formal educational theories Subject department activities Learning from my undergraduate degree Principal University lecturers University peers TEACHER EDUCATION How to use general resources, such as text books How to locate resources From whom to seek help Practical experience teaching other subject areas CHALLENGES Reliance on support from elsewhere

Other items recognise the different types of experiences between PST and IST. For example, placement teaching versus in-service teaching experience (Section 1), and subjects taught (Section 3). For example

PST Q3.1 What subjects have you taught, and expect to teach when an in-service teacher? (if relevant respondents select subjects as taught on placement, and expect to teach)
IST Q3.1 In your teaching career, what have you taught? Identify which of the following subjects you have taught by indicating whether you have felt in-field and/or out-of-field when teaching it.

There are three "paired items" in the IST survey that were designed to enable a multiplicative transformation analysis (see below for an explanation of this process) that results in a 'degree of impact score' (in the case of factors, challenges and opportunities). This type of analysis was used in the SIMERR survey (Lyons et al., 2006) and proved to be an interesting way to compare items. Each question lists a number of items that are carried forward if selected in the first question of the pair. For example,

IST Q4.1 When teaching out-of-field, how often have you had the feeling of: …
IST Q4.2 Of the factors experienced in Q4.1, to what extent do they make you feel LESS confident or competent? (Carry forward from Q4.1)

Initially we were going to use this format for the PST survey, but we decided that PSTs were unlikely to be able to make clear distinctions on a 5-point likert scale when the scale referred to only positive impact, or negative impact. So, while similar data is available, it is less likely to be able to be subject to the multiplicative transformation analysis. Items relating to support needs are an example of where the questions are the same, but the scale differs meaning that different analysis process may need to be used:

PST Q5.1 Consider the following supports. (a) What level of access do you expect to have for your out-of-field subject (not sure, none, low, high), and (b) How useful do you expect the supports to be (not sure, none, low, high)?
IST Q5.1 Have you used any of the following supports when teaching out-of-field? Please identify which supports you have used when TEACHING OUT-OF-FIELD by indicating: How you have accessed them, and How important they have been for you. If you HAVE NOT used the support, then select "Not used".

Some items are not directly comparable across surveys. However, this decision is subject to the evaluation of the surveys. For example, the following items could have corresponding items in the other surveys but length of the surveys was restrictive.

PST Q5.2 If you were teaching out-of field, what would you commit to in relation to that subject?
Undertaking further study
Attending subject meetings
Taking on head of department for that subject
Observing other teachers of that subject
External professional development
Working in a team teaching situation in an open plan classroom
Working with a coach or mentor
Membership of subject-based associations

IST Q3.5 Please indicate the degree to which you agree or disagree with the following statements. (5-pt likert)
I will always regard myself as out-of-field in at least 1 subject that I regularly teach
I had to teach at least one of my out-of-field subjects several times before I felt comfortable
I rarely teach in my method area
I sometimes feel out-of-field in my method areas

Developing the on-line surveys

The development of the survey was an iterative process. The first stage of development involved an initial project design on *Survey Monkey* in 2010. The intended use of the survey at this point was in-service teachers in different geographical regions. The survey began with school and teacher demographic information. The subjects taught out-of-field and the teacher's response to their experiences were established per subject: subject, factors that make them feel out-of-field, support used etc. Three subject sequences were available. So a teacher could report on teaching out-of-field or in-field in three subjects by completing the same questions three times. Sections on opportunities and challenges were also included.

In 2012 we received funding from CREFI to develop a survey that could be used to explore issues around out-of-field teaching during the transition period between teacher education and teaching. As a result of the changed agenda, there was a need to make changes to the initial structure. Some of the sections remained similar, particularly in the school and teacher demographic sections; however, a number of alterations were made. These difference are discussed below.

Not one, but two surveys: A move to separate surveys for the PSTs and ISTs was a result of a shift in the research agenda: from up-scaling of the Pilot study into the range of geographical regions, to a longitudinal study following PSTs into early career teaching. The PST survey is for PSTs completion while in their final year of teacher education. The IST survey can be used by the same cohort undertaking the PST survey for a longitudinal study – some questions are set up to detect changes in beliefs, attitudes by asking for 'expectations' in the PST survey and 'experiences' in the IST survey. Alternatively, separate cohorts of PSTs and ISTs can act as respondents in their respective surveys to explore differences. Or each survey can be used individually.

Teacher education experiences: By adding a section exploring experiences from teacher education we could gather baseline data for a longitudinal study, or comparable data for exploring differences between PST and IST cohorts.

Limiting repetition: We removed the cyclic sequence on subjects taught so as to limit repetition. We also used the "carry forward" function in Qualtrics on items specifically requiring subject specificity.

Changed online survey software: We used *Qualtrics* instead of *Survey Monkey* as we received advice that *Qualtrics* has better analysis options, there is greater ease in developing question items, and Deakin has a license (we would have had to purchase *Survey Monkey* ourselves). *Qualtrics* elements used include:

- *Carry forward* – answer choices, statements or scale points are pulled into a later question. For example, in the IST survey, teachers identify subjects they have taught out-of-field in Q3.1, and these subjects are carried forward into Q5.1 where they consider the supports used in those subjects. Also, the challenges and opportunities that have been experienced as identified in Q7.1 and Q8.1 respectively, appear in the next question where respondents measure their impact on confidence and competence. Q4.1 identifies factors experienced, which are carried over to Q4.2 where they evaluate their impact on confidence and competence (See Figure 2)

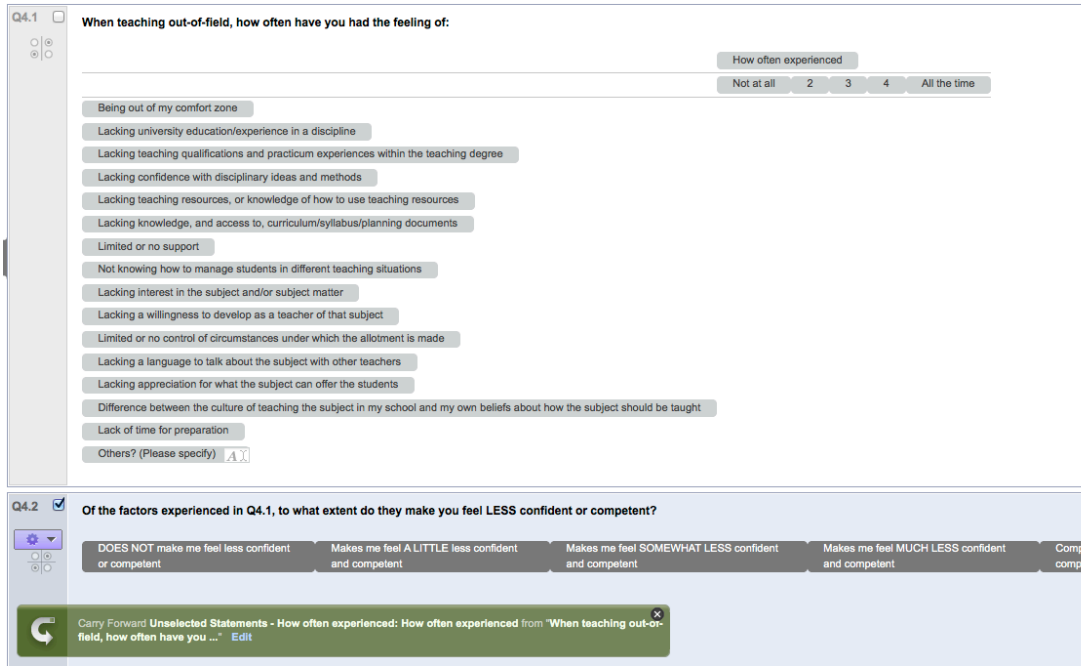

Figure 2. Example of a *Carry Forward* question (IST Q4.1/4.2)

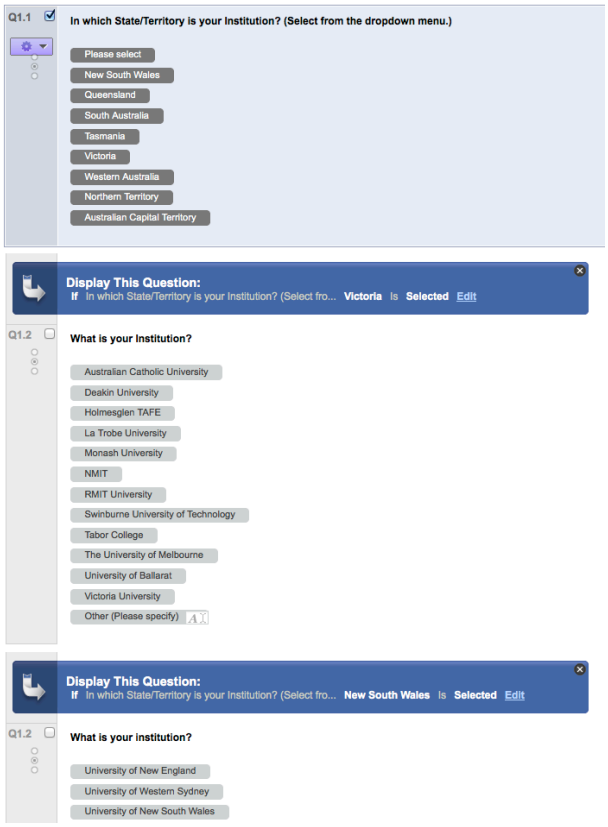

Figure 3. Example of Display logic

- *Display logic* – logic that determines under what conditions a question is displayed, based on previously known information. For example, in the PST survey, the response to State selection (Q1.1) determines the list of universities in the following question. For example, by selecting Victoria, only the Victorian universities appear in Q1.2. (See Figure 3)

Other useful functions in Qualtrics were: the link to the survey could be generated and included in emails to potential respondents; reports of results, including graphs, can be generated, and it is possible to filter for certain questions, carry out cross-tabulations and simple analyses (chi-squares); and the data can be downloaded per respondent.

Getting feedback: A number of academics at Deakin University and other universities provided feedback on versions of the survey. The survey also underwent changes informed by face validity interviews, and when respondents participating in the trial identified issues with the survey in a survey item inviting feedback.

Participants of the trial

Face validity interviews and an online survey trial were used to test the validity of the surveys. Table 3 summarises the consenting schools and teacher education programs, and respondents for the interviews and survey.

Table 3. Respondents for the Face Validity Interviews and Trial Surveys

Survey	Method	Consenting	Respondents
Pre-service			
	Interview	1 postgraduate program	0
	Survey trial	2 undergraduate programs 1 postgraduate program	2 undergraduate
In-service			
	Interview	3 sessional lecturers	3
	Survey trial	4 State schools 4 Independent schools	15 (State system) 2 (Independent system) 3 (Unresponsive)

The intention was to interview three in-service teachers and three pre-service teachers. The pre-service teachers were intended to be undertaking a postgraduate teacher education program at a university in a provincial city; however no students volunteered (required consent from the Course Director). In-service teachers were sessional tutors at Deakin University who were experienced teachers but not employed by a school (avoided consent from principals). Three ISTs were interviewed: two as a focus group, one as an individual. See below for the procedure for the interviews. An incentive of a $30 movie/meal deal was offered to interview participants.

The intention was to trial the surveys with: 30 teachers from schools in a regional town and a provincial city for the IST survey; and 30 PSTs in their fourth year of secondary teacher education programs at a regional university for the PST survey. PSTs from three secondary teacher education programs from a regional university were invited to participate (undergraduate programs = 2; postgraduate programs = 1). Invitations were sent to nine secondary schools in Geelong, the Greater Geelong area, Hamilton and Portland (State schools = 5; Independent schools = 4). One school declined to be involved, and there were two schools that committed to being involved but did not confirm distribution of the survey invitations to teachers. Table 3 shows only the figures for consenting schools and programs.

Face validity interviews

The face validity (Bryman, 2012) of the questions were tested using a small sample of students and teachers (n=6) using structured interviews prior to survey distribution. The face validity interviews involved the interviewer asking a series of questions while the survey was being completed. Due to technical issues, two teachers were interviewed in a focus group using only a hardcopy of the survey. The second interview involved one teacher using both the online and hardcopy versions. The interviews lasted for about one hour, were audio-recorded, and notes were taken

leading to changes to the survey after each of the two interviews, such that the second interview was based on an updated survey.

The PST survey was to involve three PSTs from a graduate program at a university in a provincial city, however, no students accepted the invitation to be involved, despite the incentive. Given that the two surveys had similar items, some of the changes recommended for the IST survey could be translated into the PST survey.

The interviews focused on the following areas:

1. Clarity of each question and the survey overall
2. Interpretation of what each question is asking, possible alterative meanings of the key terms in each question
3. Whether the purpose of the survey is understood
4. Other aspects of the experience of teaching out of field that are not covered

The IST survey interviews resulted in changes focusing on a range of elements of the survey, as outlined below. Examples of feedback from the interviews and resultant actions are provided:

- *Meanings of particular words*: "Q4.1. Item 2. What does 'exposure mean? 'Exposure' as in 'experience'? Suggestion: 'Have you had experience…?" **Action → used 'experience' instead of 'exposure'**
- *Relevance of content*: "Q4.1. Item 3. Questioned the relevance of 'practicum' experiences – may be way in the past for some respondents: 'Seems like you could get rid of that'" **Action → reworded to emphasise practicum in teaching degree**
- *Suggestions on structure*: "General comment on Q4.1: needs to be re-worded so that all the 'background' stuff is together and all the 'experience' stuff is together." **Action → kept the items random to encourage thinking per item**
- *Expression*: "Q4.1. Item 7. Doesn't read well. Could it read 'access to?'" **Action → change wording as suggested**
- *Clarity of what to do in the question*: "Q4.1. Comments on "Impact column". Impact in what direction? Better or worse? Assumption that if you indicated a 'high' impact then my confidence and competence would increase rather than decrease – false assumption…" **Action → splitting the question into two to make purpose clearer**

Survey trial

For the IST survey, school principals were contacted and invited to participate via a phone discussion, followed by an email with plain language statement and consent forms for the principals, and an attached email directed to teachers with an introductory message and plain language statement and consent form. Two Independent schools were contacted first, then state schools once ethical clearance from DEECD was provided. It was difficult to get hold of principals at times, and even more difficult to get them to distribute the survey to teachers. After 3 weeks, we'd had limited survey completions, so a second wave of school recruitment was initiated.

For the PST survey, the same process of phone discussion followed by email was undertaken with the three program directors. Some of the program directors also

posted noticed on Blackboard and Facebook sites for their programs, and during tutorials. The timing meant that distribution to PSTs was during the last two weeks of semester, which is notoriously busy and stressful for PSTs.

The target of 30 respondents per program was not met, with 2 PST responses and 20 IST responses. In an effort to generate data, academics who had experience of teaching out-of-field were invited to complete the survey.

Some of the issues around recruitment were:

- Timing for both surveys – the survey was distributed at the end of the year, which made it difficult for exiting PSTs and very busy ISTs.
- Resistance to survey completion - ISTs in government schools under an embargo by the unions to not complete surveys.
- Some principals were positive about the survey, but needed to be reminded to distribute the survey to teachers.
- Some of the 20 IST survey responses were incomplete.

What have we learned:

- Distribute the survey away from busy times of the year
- Work within existing relationships and connections to raise awareness to the survey. For example, a colleague had links with one of the school and was able to recommend the survey to teachers once the principal had issued his consent.
- Gentle reminders to principals can be beneficial! It may be more effective to personally address the teachers through staff meetings or other means rather than rely only on principals for communication.

Reflections post survey trial: The feedback question at the end of the surveys provided important feedback about the confusion created by the paired questions:

> Survey Respondent: Some of the questions are extremely confusing and I'm not sure what they meant. I got a bit confused following what the questions were asking, especially when there were two questions in columns side by side because often they seemed to be asking for the same thing. (Respondent #3)

Following this, we split the paired questions into two, as previously there were two parts to each question (see Figure 4 for an example of Question 4.1, which is now Q4.1 and 4.2 as shown in Figure 2). As the third response, the first three responses do not have data for the second part of each of the paired questions. We also took advantage of the *Carry forward* mechanism in Qualtrics.

Q4.1 A number of factors can make a person 'feel' out-of-field, whether they are in-field or out of-field. Rate the degree to which each factor HAS MADE YOU FEEL OUT-OF-FIELD at some point in your career. (Leave blank the factors you have not experienced)

	How often experienced					Impact on my confidence and competence				
	Not at all (1)	2 (2)	3 (3)	4 (4)	All the time (5)	LOW (1)	2 (2)	3 (3)	4 (4)	HIGH (5)

Figure 2. Initial structure of Question 4.1.

The two PST surveys were fully completed, while only 11 of the 20 (65%) IST surveys were fully completed. For the IST survey, the major point of respondent drop off was at Q4.2, the first of the paired questions. The data shows that the second question in each of the three paired questions received fewer responses:

- Factors: Q4.1 (85%) and Q4.2 (55%);
- Challenges Q7.1 (65%) and Q7.2 (50%); and
- Opportunities Q8.1 (60%) and Q8.2 (40%).

Even when the first three responses using the single question format is accounted for, there is still evidence that the paired questions were not fully completed. This may have been because the two questions in the pair may have been difficult to distinguish, or they were labouring a point that was not considered important for the respondent. It will be important to consider which ideas would better suit this type of distinction. The PST survey includes none of this question type, which may have contributed to the full completion of the two surveys.

Intended analyses

The analysis will employ simple frequency tables or cross-tabulation tables for displaying patterns and trends.

For the paired items (Questions 4.1/4.2, 7.1/7.2, and 8.1/8.2) multiplicative transformation (as applied by Lyons, et al., 2006) is used to combine the ratings of degree to which factors are experienced and the perceived influence on efficacy to produce a 'degree of impact' score. The formula is:

Degree of impact = Influence x (6-Experinced).

This analysis identifies items that are strongly experienced but have low influence, and items with low degree of experience but high degree of influence. Principal components analyses is run on these scores to yield components whose defining items exhibit similar patterns of 'degree of impact' and 'needs'. MANCOVAs compare component scores across classifications of respondents (based on selected program and PST demographics variables).

Open response questions undergo thematic analysis (van Manen, 1990).

Informing future research

This survey is intended to be used to follow PSTs through their transition into teaching. Therefore, based on the evaluation of the survey, some changes to the surveys could be made to maximise the number of PSTs and teachers undertaking the survey, completing it fully, and producing reliable data. The key problems of the survey and possible resolutions are summarised in Table 4.

Table 4. Survey problems and resolutions

Problems with the survey	Possible resolutions
Long completion times (over 20 minutes)	• Reduce times to 20 minutes in order to recruit more interest
Only 65% of IST respondents completed the test fully	• Reduce the number of questions, removing less useful questions, such as 'age' and 'position in school' • Make questions clearer • Role out some of the questions over a

	number of survey iterations • Use some of the questions for interviews only
Many of the questions with high response rates were in the first half of the survey, whereas, the more interesting information is in Section 4-8.	• Move demographic information to end of the survey. Reduce the number of these questions.
Low completion rates of the paired questions	• Limit the number of paired questions • Make distinction clearer through different wording or emphasis
Low response rate by ISTs and PSTs	• ISTs – physical presence at schools to raise the issue for principals and teachers • PSTs – give a brief presentation to the PSTs to promote the issue (education) and recruit for the survey and forthcoming longitudinal study (research)
• Only 50% of ISTs completed Q9.1 (critical incident) • Only 30% of ISTs completed the open response sections of Q6.3 (awareness • 50% of PSTs completed the open response section of Q4.3 (expected personal resources or experiences)	• Limit open response questions to a minimum • Accept that these will receive low response rates.
Some questions provided opportunity to suggest 'other' items, e.g., an additional support was 'teacher generated units of work'	• Include other items as options if they are relevant.
Differentiation of mode of access to support needs was too obvious for some items (IST Q5.1).	• Reconsider format of this question.
The question inviting comments on the survey provided some valuable feedback on the paired questions	• Consider whether to remove form the final survey

Final remarks

Survey development was an iterative process that required being flexible and not holding strongly to items or approaches. The survey has undergone various iterations of reflection and change: from the initial survey development to re-development during the current project, following feedback from other academics, following the face validity interviews, during the trial in response to feedback and issues emerging, and when examining the completion rates and where respondents appeared to drop out of the surveys. The online survey development tool, *Qualtrics*, played a role in how the structure of the questions, opening up possibilities that had not been expected. Finally, knowing the type of analyses to be used with the survey can be informing of structure, but it can also be restrictive if content does not easily fit the mould, as was the case with questions designed to use multiplicative transformation where the questions need to be reworked in order to improve clarity and boost completion rates.

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