Mapping geographical knowledge and skills needed for pre-service teachers in teacher education.

Abstract
In Australia, for more than two decades, a ‘social science’ integrated framework was the favoured approach for delivering subjects such as history and geography. However, such interdisciplinary approaches have continued to attract criticism from various parts of the academic and public spheres and since 2009, a return to teaching the disciplines has been heralded as the ‘new’ way forward. Using discourse analysis techniques associated with Foucauldian archaeology, the purpose of this paper is to examine the Australian Curriculum: Geography document to ascertain the discourses necessary for pre-service teachers to enact effective teaching of geography in a primary setting. Then, based on pre-service teachers’ online survey responses, the paper investigates if such future teachers have the knowledge and skills to interpret, deliver and enact the new geography curriculum in primary classrooms. Finally, as teacher educators, our interest lies in preparing pre-service teachers effectively for the classroom so the findings are used to inform the content of a teacher education course for pre-service primary teachers.

Keywords
curriculum, education policy, Foucauldian archaeology, geography, history, social sciences, teacher education

Introduction – A History of the Present (The Context)
‘Turf wars’ (Evans, 1998, 2000) in social studies have been going on for many decades (Marsh & Hart, 2011). There are many schools of thought on a social view of curriculum as
opposed to academic disciplines and reference will be made to these debates as a history of the present is outlined to provide the context for this study in Queensland, Australia.

The Common and Agreed Goals for Schooling in Australia known as the Hobart Declaration (Australian Education Council (AEC), 1989) led to an important mapping exercise in 1991 across all Australian states in many curriculum areas. Of significance to this paper, the mapping exercise conducted by the Australian Education Council (AEC) resulted in a national statement – A Statement on Studies of Society and Environment for Australian Schools (AEC, 1994a) – and a profile – Studies of Society and Environment: A Curriculum Profile for Australian Schools (AEC, 1994b) – for the teaching of an area of study with various nomenclatures: ‘Studies of Society and Environment’ (SOSE) or ‘Human Society and its Environment’ (HSIE) or ‘Humanities, Social Education or Social Studies’ (Reynolds, 2009). The Adelaide Declaration (Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), 1999) which replaced the Hobart Declaration reaffirmed that the national goals for schooling should assist young people to contribute to the social, economic and cultural development of Australia and beyond.

Queensland already had the P-10 Social Education Framework (Department of Education, Queensland, 1989), but with the birth of the Key Leaning Areas (KLAs) in the Adelaide Declaration, the Queensland Studies of Society and Environment: Years 1-10 Syllabus (Queensland School Curriculum Council (QSCC), 2000) replaced the earlier framework. The abbreviated name was SOSE, a fundamentally U.S style integrated curriculum that ‘typically included disciplines such as History, Geography, Sociology, and Economics: cross-disciplinary areas such as Aboriginal Studies, Environmental Studies, Religious Studies, Peace Studies and Asian Studies: and some integrated studies such as Civics, Social Studies and Australian Studies (Reynolds, 2009, p. 1). The Queensland School Curriculum Council (QSCC) advocated that the key values underpinning the Queensland
SOSE curriculum should be democratic process, social justice, ecological and economic sustainability, and peace; values taught using an inquiry method where key concepts should be developed using some core content (Reynolds, 2009). The four main concepts, more commonly referred to as strands, were: Time, Continuity and Change; Place and Space; Culture and Identity; and Systems, Resources and Power.

Although there were many advocates for SOSE (Gilbert, 2004; Henderson, 2005; Johnston, 1989; Kennedy, 2008; Marsh, 2005; Tudball, 2007), divisions were still apparent in how SOSE was viewed (Reynolds, 2009). Furthermore, the move towards using strands rather than traditional disciplines was controversial as it necessitated changes in curriculum structure and teachers’ pedagogy (Marsh & Hart, 2011). The emphasis (in SOSE) was on the teaching of concepts as opposed to content knowledge, an approach that was deemed to afford flexibility particularly in the primary setting. SOSE, however, had its critics particularly in terms of the body of knowledge that it offered (Taylor, 2007). Specifically, there was a perceived crisis for history, civics and citizenship education and the loss of national identity. In the same year as Taylor’s criticisms, the outgoing Prime Minister, John Howard, referred to new fads in education such as SOSE as ‘incomprehensible sludge’ (Maiden, 2007). In another editorial he said, ‘There is something both deadening and saccharine in curriculum documents where history is replaced by “Time, Continuity and Change” and geography now becomes “Place, Space and Environment”’ (Topsfield, 2007). The debates and discourses of derision continued but with the release of The Future of Schooling in Australia (Council for the Australian Federation (CAF), 2007), there was a distinctive move back towards the disciplines. Queensland responded by introducing the Queensland Curriculum, Assessment and Reporting Framework (QCAR Framework) (QSA, 2007) and in 2008 the SOSE Essential Learnings (QSA, 2008) were introduced. This was an important move to align the Queensland curriculum with national initiatives that reflected
discipline based knowledge. However, also in 2008, *The Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008) set goals for the curriculum based on the disciplines. It advocated eight learning areas including Humanities and Social Sciences (history, geography, economics, business and civics, and citizenship). This has led to the development of the *Australian Curriculum* under the auspice of the Australian Curriculum and Reporting Authority (ACARA). Although this move has not been without criticism, the *Australian Curriculum: Geography* is being implemented at present and is compulsory in all schools from Foundation to Year 8 with a recommended allocation of between 18 and 50 hours per year depending on the year level. In most primary schools (F – 6 from 2015), geography is delivered by the regular classroom teacher who teaches most subjects (with some exceptions for Music, Languages and Physical Education (PE) where specialists are employed). It should be noted that the authors are not suggesting that the level of pre-service teachers’ geographic knowledge is related to the interdisciplinary approach adopted for many years. Such direct cause-effect would be speculative and is outside of the scope of this study. Rather, this paper, first seeks to determine whether primary teachers (at this university) have an appropriate skill set to deliver the discipline of geography and second the findings are used to inform new courses in teacher education specifically for geography in the primary setting.

The next section of this paper outlines our interpretation of Foucauldian archaeological analysis. In previous work, the current authors have explicated this methodology in detail (see [Author 1] & [Author 2], 2014) in order to analyse academic literature, policy documents and interview transcripts. Here, we extend the method by showing how we traced bibliographic references from the academic literature to set up an online survey. Then, using this methodology, the *Australian Curriculum: Geography* policy document is analysed. This method reveals the dominant knowledge and skills (discourses) portrayed in this document.
Furthermore, the voices of authority that have been heard and reproduced for all teachers to listen to are investigated in order to ascertain whether such players have the right to speak and the expertise to determine what young people in Australia should learn in geography. Then, the knowledge and skills of 112 pre-service teachers at a university in the state of Queensland in their second year of a Bachelor of Education (Primary) are captured through an online survey before their statements are subjected to Foucauldian archaeological analysis. Finally, following the archaeological approach, the data sources are cross analysed to see what transformations (if any) need to occur for the effective teaching of the geography discipline in future primary settings and teacher education courses. With the implementation of a new *Australian Curriculum: Geography* introduced at the beginning of 2014, it is timely to renew interest and investigate such disciplined approaches to geography curriculum and what impact this has for teaching geography in the compulsory years of Foundation (F) to Year 8 (ages 11/12). It is also important that university tutors understand the nature and range of pre-service teachers’ understanding of geography (Catling, 2004) as they begin to consider writing and teaching new courses in line with the *Australian Curriculum: Geography*, especially in the context where many pre-service teachers have never studied geography as a stand-alone discipline themselves. In archaeological analysis, it is common to offer a ‘history of the present’, so the introductory section outlined the current Australian geographical education landscape to illustrate the return to a disciplinary approach. Before presenting an analysis of the discourses in the *Australian Curriculum: Geography*, the methodology for this study is outlined.

**Methodology**

*Construction of the online survey*

Foucault was insistent that he didn’t construct ‘a general method of definitive value’, asserting that ‘what I write does not prescribe anything, neither to myself nor to others’
(Foucault, 1991, p. 29). However, he did delight in others borrowing his ‘gadgets’ of approach or method. As already mentioned, the current authors have distilled this method through multiple publications culminating in a detailed methodological paper outlining how to analyse academic literature, policy documents and interview transcripts archaeologically. Here, we extend this methodology from analysing a policy document and interview transcripts to examining responses from an online survey in the context of the current curriculum policy document.

The first step involved retrieving relevant academic journal articles on the form and function of geographical education and examining these for archaeological isomorphism or ‘sameness’ in the statements. According to Foucault, statements are the atoms or elementary units of discourse so it is important to map when statements emerged and when new statements began to function (surfaces of emergence). Foucault (1972) refers to this as the ‘attribution of innovation’. By this he is not only talking about ‘original affirmations’ (p. 145) but also statements that have been borrowed or even copied from predecessors. He refers to original affirmations as ‘creative statements’ and those borrowed as ‘imitative’ (p. 145). It became clear that certain groups of statements formed the starting point from which other statements were derived.

For the purpose of this study, questions 1 – 4 and questions 6 and 7 were closed questions designed to obtain demographic data about the participants (see Appendix 1 for questionnaire survey). Question 5 was a creative question (statement) included because of the SOSE context as outlined in the History of the Present section earlier. Questions 8 – 12 were also creative questions designed to build on the thoughts of Morley (2012) as to how the participants feel about the subject of geography. Questions 13, 14 and 15 were imitative questions based on investigations of formal education experiences of pre-service primary teachers which can be traced back through the studies conducted by Preston (2014), Morley
(2012), Catling (2004), Martin (2000) and Walford (1996). In 1996, Walford published a paper on how his specialist geography teacher training students between 1990 -1994 defined geography using word analysis as the methodology. He used previous scholars’ classifications (Acheson, 1994; Livingston, 1992; McNee, 1967; Pattison, 1964) to compile his categories, namely: interactionists, synthesisers, spatialists and placeists. In 2004, Catling drew on this study, investigating English primary school teachers’ conceptions of geography and revised Walford’s categories as follows: globalists, earthists, interactionists, placeists and environmentalists. Morley (2012) revised the categories yet again to include global fact finder, global processor, interactionists, facilitators, placeists and synthesisers, and Preston’s (2014) study in Australia to a great extent supported previous categories by the UK researchers. Therefore, it is obvious that some of these categories are imitative statements and some are creative, revealing the changes in the discourse. Catling (2004) added a second line of inquiry to his 2004 work drawing on ideas from Martin (2000) and Barratt-Hacking (1996) about the purposes of geography education. This involved adding four extra (creative) categories, namely global personalists, localists, locationists and map lovers. This relates to our question 15 specifically but for the purposes of this paper has not been reported here. Other writers have conducted similar studies across the globe (Alkis, 2009; Bradbeer, Healey & Kneale, 2004) but to our knowledge none has used Foucauldian archaeological analysis as their investigative tool. Figure 1 reveals the tree of enunciative derivation (Foucault, 1972, p. 147) of the academic geography education discourse which is one of the principal tenets of archaeology.

[Insert Figure 1 near here]

**Delivery of the online survey**
The survey was disseminated through the online learning site at a university in Queensland where students in their second year of a Bachelor of Education (Primary) were asked to complete the survey as part of a class exercise and thus given the authority to speak. The survey, constructed using Key Survey™ consisted of the 15 questions described above. One hundred and twelve Queensland pre-service teachers were invited to engage in this pre-course pilot project to ascertain prior experiences and current knowledge and skills in geography by submitting online anonymously. There are obvious limitations to the use of one online survey instrument in one location, and indeed some of the statements were limited for the purposes of analysis, but the aim of the exercise was to capture as quickly as possible the views of a large number of participants (Catling, 2004). Other studies have encountered this problem also (see Bradbeer et al. 2004; Martin, 2000; Morley, 2012; Preston, 2014) where participants wrote very little or mere lists. In his original study, Walford (1996) rejected word and phrase characterisation claiming that it gave atomistic rather than coherent views on the subject of geography. Our approach which is underpinned with the theoretical insights of Michel Foucault, adopts some of the characteristics of which Walford was critical, but here we present our interpretation of Foucauldian archaeology as a rigorous and innovative research tool.

**Document and survey analysis**

For this part of the analysis, first we paid particular attention to the continuities between statements as well as counting the frequency of terms and words (repeatability) and examining their arrangement and co-location within statements. We also uncovered irruptions, discontinuities, contradictions or distances between statements (fields of initial differentiation) in both the curriculum policy document and the online responses. Foucault refers to this as the analysis of ‘contradictions’ (1972, p. 149). He maintains that
contradictions should be described, ‘they are not appearances to be overcome, nor secret principles to be uncovered’ (Foucault, 1972, p. 151). A coding mechanism was established which consisted of numbering the repeatable terms/words/overlapping themes (frequency/analysis of terminology) running through the curriculum document and online responses. Generative collaboration between the researchers working independently noted and numbered identified themes before cross-referencing to look for comparability. This process was conducted with the help of NVivo™ allowing for a high degree of openness to new interpretations; it was a strongly iterative and comparative process of sorting and resorting data (Akerlind, 2002). The themes were continually reworked and refined until the final set was determined. These themes (core repeatable claims) represented the ‘discourses’ of geography in the *Australian Curriculum: Geography* document and Queensland pre-service teachers’ regimes of truth on geography.

Foucault (1972) maintains that archaeology is a comparative analysis that is not intended to reduce the diversity of discourses. Rather, the intention is to have a diversifying effect. To accomplish this, the third step in analysis was to look for simultaneous exchanges between different discourses. In this step, we conducted an extensive literature review of the history of geographical and social education in the Australian educational landscape. This has already been outlined in the Introduction - History of the Present (The Context) section of this paper. This part of the analysis also included cross analysing the discourses that emerged from the academic literature, examination of the curriculum policy document and the responses from the online survey. For clarity, we have used Catling’s (2004) category list from the academic literature as he is an influential international voice in the geography education global community with a respectable track record in publications, thus speaking with authority.
Finally, the analysis of transformations reveals the gaps between pre-service teachers’ knowledge and skills to enact and deliver a curriculum, the academic literature, and what the government mandated deliverables are. This obviously has implications for universities and teacher educators and will be used to inform the content for new university courses in primary education: geography.

**Findings from the document analysis**

As part of Foucauldian analysis, it is necessary to determine the authority behind the writing of this document. Table 1 summarises the voices of authority used at various stages of the process with only the state of Tasmania not represented.

[Insert Table 1 near here]

From the beginning of the project in September 2009, various consultation, validation phases, workshops and forums were held nationally. For example, in response to the draft *Shape of the Australian Curriculum: Geography* (ACARA, 2010), 600 online responses were received and 30 written submissions. This shape document also references various institutional reports, for example, the *Erebus International*, 2008, and also academics in the field including Simon Catling. In response to the draft curriculum document, there were 180 online responses and 62 written submissions. In 2012, ACARA held many workshops with teachers and curriculum experts to ‘critique and provide feedback about the pitch, progression and clarity of the achievement standards’ (ACARA, 2013). The website claims extensive consultation with ‘a wide range of stakeholders, critical friend reviews and international benchmarking’ as revealed in Table 1 above. However, no details of precise comments or contributions are supplied. Publication of the F – 10 document went live online
on May 20th, 2013, followed by the senior secondary document in August of the same year. The document from F – 6 which represents the primary sector in Australia is now analysed in more detail.

The *Australian Curriculum: Geography (version 7.0) Foundation (F) to Year 10* (ACARA, 2014) is an online 98 page document. It is divided into 5 main sections. The Introductory section outlines the rationale and aims of the curriculum. Then, the organisation is spelled out including sections on the content structure, the conceptual thinking underpinning the document, a section on student diversity as well as the general capabilities, the cross curricular priorities and implications for assessment shared with the other KLAs. The next section details each year level from Year F – 10 following the same format: short introduction, key questions and content descriptions. The latter are divided into geographical knowledge and understandings and geographical inquiry and skills.

The rationale introduces geography as ‘a structured way of exploring, analysing and understanding the characteristics of the places that make up our world’ (ACARA, 2014). The word ‘geography’ or ‘geographical’ is mentioned eight times in this section co-located with words/phrases such as ‘geographical concepts’, ‘geographical knowledge’ and ‘geographical inquiry’. The repetition of ‘geographical’ leaves the reader no doubt that this document is about the discipline of geography. The geographical concepts are briefly outlined here: ‘place’ (mentioned 5 times), ‘space’ (3 times), ‘environment’ (8 times), ‘interconnection’ (2 times), ‘sustainability’ (3 times), ‘scale’ (4 times) and ‘change’ (4 times) before they are elaborated in much more depth. Each concept will now be further elaborated.

**Place** is co-located with words/phrases such as ‘characteristics of places’, ‘the world’s places’, ‘relationships between places’, where characteristics are seen as both environmental and human. **Space** is co-located with ‘the management of space at different scales’ where students are asked to ‘explore problems’ and ‘look for explanations’. **Environment** is the
concept that is mentioned the most in this section: ‘people and environments’, ‘role of environment’, ‘environmental functions’, ‘cultures and environments’. The lexical linking across these statements relates to the next concept of **interconnection**, variously referred to as ‘relationship’ and ‘interrelationships’. **Sustainability**, also a Cross Curricular Priority (CCP), is co-located with a ‘socially just and sustainable future’ where environments are ‘managed’ or ‘management of space at different scales’ is important. **Scale** addresses the spatial dimension – ‘personal to global’, ‘local to regional’ – and **change** addresses the temporal dimension – ‘a few years to thousands of years’ and how the present can be explained and futures can be predicted. The only word other than the concepts that is repeated is **world** (8 times) – ‘places that make up the world’, ‘the world’s places’, and a ‘socially just world’. Therefore, it can be assumed that geography is about the world.

The Organisation section differentiates geographical knowledge (and understanding) and geographical inquiry (and skills). The first strand, ‘Knowledge’ is defined as the ‘facts, generalisations, principles, theories and models developed in geography’ and understanding is the application of that knowledge. The second strand, ‘Inquiry’, is described as a process with five distinct stages, namely: observing, questioning and planning; collecting, recording, evaluating and representing; interpreting, analysing and concluding; communicating; and, reflecting and responding. This inquiry process is explicitly articulated at every year level after the content descriptors, thus constituting an independent discourse.

Further analysis of the curriculum policy document reveals a dominant ‘discourse of place’ running through the detailed sections for F – 6 with a minor discourse appearing in Year 1 (space) and one in Year 2 (scale). In Year 4, ‘place’ loses its dominance and is replaced by the ‘discourse of environment’. For this year level a minor ‘discourse of sustainability’ is also present. In Year 6 the ‘discourse of place’ shares its dominance with the
‘discourse of interconnection’. These discourses, their repeatability, co-location and lexical linking are outlined in detail in Table 2 below.

[Insert Table 2 near here]

In summary, the ‘discourse of place’ mentioned 119 times is revealed as the dominant discourse in the Australian primary curriculum, explored through a ‘discourse of inquiry’.

In accordance with the Foucauldian archaeological method, contradictions or spaces between statements should also be uncovered. However, thorough examination of this document does not illuminate any. This is noteworthy as it means that the document clearly prescribes what needs to be learned in geography. The document also highlights what needs to be taught and, by implication, the knowledge and skill set of teachers required to teach it. However, whether Queensland teachers are ready and able to maintain the ideals inherent in the document is another question. As far back as 1976, Parlett and Hamilton identified ‘an idealised specification of the scheme: a set of elements arranged to a coherent plan’ (p. 89). They acknowledged that the elements could be ‘emphasised or de-emphasised, expanded or truncated, as teachers … interpret or re-interpret the instructional system for their particular setting’ (p. 90). In other words, to switch from discussing the instructional system in abstract to describing the details of its implementation is to cross into another realm. Hence it is necessary to examine the discourses in the pre-service teachers’ responses to the online survey to ascertain if they do have the knowledge and skill set to enact this curriculum.

Findings from analysis of the pre-service teachers’ online responses

As part of the online survey, demographic data were collected to identify the geographical educational experiences of the participants. This is now reported before the discourses present in the pre-service teachers’ statements are discussed.
Of the 112 participants, approximately 42% identified having studied geographical themes at primary school (F – 7). This ranged from only 15% in Year 1 but increased to 68% by Year 7. Secondary schooling figures were a little higher with an average of 57% identifying themes that were geographical in nature. Closer analysis paints a more detailed picture with 74% identifying geographical themes in Years 8 and 9, with the figures dropping to 59% for Year 10. Year 9 in Australian schools is usually when students elect their specialist subjects for senior (Years 11 and 12). The figures for senior dropped even further to 27%. When asked if they studied a discreet subject called geography, 12% claimed to have done so in primary and 45% in secondary with only 25% taking the subject to senior level. When asked if they liked the subject of geography, 21% said that they didn’t, 43% were not taught by a specialist geography teacher (24% didn’t know) and 80% were not taught in a specialist geography room. For those who did not study a subject called geography, SOSE was most commonly named as the subject where they thought there was geographical content. Other names included Humanities, Social Science, Community and Living, Social Studies, Earth Science, Human Society and its Environment (HSIE), Environmental Systems and Societies, Tourism, Society and Culture, and Social and Environmental Studies.

There are seven main discourses evident from the online responses: a ‘discourse of mapping’, a ‘discourse of history’ a ‘discourse of globalists’, a ‘discourse of earthists’, a ‘discourse of sustainability’, a ‘discourse of excursions’ and a ‘discourse of negativity towards geography’. Other human geography themes emerged such as cultures, population, food, language, poverty and diseases, but their repetition was insufficient to identify a discreet ‘discourse of human geography’.

The first main discourse is the most dominant one: a ‘discourse of mapping’. The word ‘mapping’ is mentioned over 150 times co-located with words such as ‘skills’, ‘mapping and graphing’ and referred to variously as ‘map reading’, ‘understanding the
positioning of countries’, ‘direction on maps’, ‘distance on maps’, ‘learning about maps’ and ‘knowing where places are and being able to point them out on a map’. Common statements from participants include, we learned about the ‘map of Australia and then each state individually’, ‘we were taught about the continents and where they were in the world’, ‘I remember drawing a map of Australia and labelling it’ and ‘we studied maps, continents and the states of Australia in Year 6’. These statements clearly show geographical places taught through mapping exercises.

However, the second most dominant discourse, a ‘discourse of history’ could sit as a contradiction to the first discourse. The following statements reveal this – ‘we used to have to mark on maps where landings occurred’, ‘federation and the formation of the state boundaries’, ‘where the first fleet landed, how they got here, where they came from, the route they took’, ‘we looked at the pathways that were taken by European explorers’, ‘ANZAC histories, Australian colonisation’, ‘settlement of Australia’ and ‘we had to explore Germany and Berlin, therefore that required us to find out where they were on the map’. The lexical linking across these statements could be interpreted that even though the participants as students were ‘doing geography’, they were in fact doing it through history. This may be indicative of the integrated approach to social studies where pre-service teachers remember geography because they did so in a historical context. Other statements in response to questions about geographical experiences, however, reveal that the pre-service teachers in this study might not really understand the difference between geography and history – ‘we went to visit a Ned Kelly place’, ‘we performed a play on the history of Australia – the convicts in Australia and where Captain Cook came from’, ‘studying the explorers of Australia, Sturt, Flinders, Blaxland, Lawson and Wentworth’, ‘WW1 and 2 – the locations of countries involved in the war’, ‘I remember doing an assignment on the pharaohs’ and ‘I think we did something about the Gold Rush and we had to research a popular gold mining
town in Australia’. However, as already mentioned the geographic understanding in these cases cannot be directly linked to the previous use of an interdisciplinary approach.

The ‘discourse of globalists’ (term borrowed from Catling and Walford) encapsulated by the frequent mention (over 30 times) of the term ‘knowledge about the world’ is the third discourse present. Other statements to support this include ‘learning about continents, countries and cities’, ‘learning about countries in the library’ and ‘learning about global locations’. However, further analysis of the statements reveal somewhat of a contradiction. Apart from six statements specifically naming six countries (Russia, Papua New Guinea, Japan, Great Britain, the Solomon Islands and China) and one other continent (Asia) – ‘we did a project on another country in Grade 4, mine was Russia’, ‘we did a project on Papua New Guinea and a class project on Japan’, ‘I remember doing a project on Great Britain’, ‘we looked at the effects of logging in the Solomon Islands’, ‘learning about China’, and ‘we learnt a lot about Asia’ – most statements do not extend further than the borders of Australia. Common statements include: [learning about] ‘different states and cities in Australia’, ‘learning about Australia’, and ‘we had to draw Australia and label the states and the capitals’. Therefore, perhaps rather than a ‘discourse of globalists’ this discourse should be referred to as a ‘discourse of Australia’. Any learning outside this realm seemed to be project based, Russia for example being the student’s choice rather than being specified in a curriculum document.

Again, borrowing a term from Catling, the fourth discourse present is a ‘discourse of earthists’ with many statements referring to landforms – ‘geography is the physical landforms that includes mountains, valleys, plains’, ‘landforms and how they are formed’ and ‘different landforms like coasts, rainforests and weather and climate’. The last statement could be interpreted as a contradiction as rainforests and weather and climate are not landforms. However, another interpretation might be that pre-service teachers as students understood the
connection between landforms and climate and how they impact on the way people live, an understanding that we would want students to grasp. Many of the statements for this discourse were not extended statements but merely a list of words or phrases, maybe a limitation of the design of the survey questions; for example, ‘tectonic plates, volcanoes, natural disasters and ecosystems’ and ‘deserts, mountain ranges’. ‘Natural disasters’ got the most mentions (22 times) with 12 statements each referring to weather and climate and rainforests. Weather and climate statements include ‘types of climate’, ‘weather regions’, ‘weather conditions’, ‘types of clouds’ and ‘learning about weather patterns’. Again rather than extended statements, these examples are very list-like and do not necessarily show any understanding of the topics mentioned. One participant stated ‘deforestation, global warming’ but there is no evidence of any elaborate understanding of the link between these processes. Only one other participant referred to ‘climate change’. Physical/human geography links can be seen in the following two statements: ‘climate affects food production’ and the ‘effects of logging in the Solomon Islands’. Such statements could possibly fit with Catling’s interactionists category, but with only two mentions and only a few other generic statements such as ‘how humans impact on it (environment)’, ‘humans and the earth, how they interact’, a discreet ‘discourse of interactionists’ cannot be warranted. Other rainforest statements such as ‘going to a rainforest and taking pictures’, ‘building a rainforest floor, ‘learning about the rainforest’, ‘we stayed near a rainforest’ once again reveal a superficial knowledge of this geographical theme.

The fifth discourse present, if somewhat minor, is a ‘discourse of sustainability’ where participants referred to ‘renewable and non-renewable resources’ ‘creating their own sustainable town’, ‘eco-friendly homes’, ‘school recycling’ and ‘sustainable living projects’. This discourse is similar to Catling’s environmentalists but once again is quite limited by a narrow interpretation of the word ‘sustainable’.
Although some participants did enjoy school geography, describing the subject as ‘fun’, ‘interesting’, ‘enjoyable’, ‘fascinating’, ‘real life’, ‘educational and relevant’, the next discourse present is a ‘discourse of negativity towards geography’. Common statements to reveal such negativity include ‘outdated’, ‘tedious’, ‘boring’, ‘maps…zzzzz’, ‘the geography classroom that I vaguely remember had a boring and depressing feeling about it’, ‘reminded me of Maths’, and ‘boring mapping activities’. The participants offered reasons for these sentiments – ‘bombarded with colouring in, filling in worksheets and making posters’, ‘the lessons were just not interactive’, ‘chalk and talk’, ‘transfer of information with discussion discouraged’, ‘reading textbooks and filling in worksheets was horrible. We did it week in week out’, ‘rote learning, and not fun activities’ and ‘what was the point of memorising countries and capital cities’. These statements are critical of the pedagogical approaches used to teach geography, two participants describing their experiences in more detail: ‘we had an unenthusiastic geography teacher who would fall asleep in class or read the newspaper, while we completed worksheets’ and ‘I don’t think I was taught geography particularly well’. Another participant recalls that ‘outstanding experiences in geography are not very memorable; I don’t really remember much of it – either we didn’t do much or it wasn’t very memorable’. However, the next statements pose a contradiction – ‘I hated timelines, as I was never good at them’, ‘knowing where the first fleet landed, I can’t recall that being useful’, ‘I found the historical things to be boring’, and ‘I didn’t like the ancient Egypt stuff’. These statements beg the question that perhaps the pre-service teachers’ recollections of geography are not really of geography after all.

However, there was one part of geography that appeared to emerge from the data favourably and is revealed in the final discourse, a ‘discourse of excursions’ referred to variously as ‘field trips’, ‘gardening experiences’ and ‘school camps’. Common statements refer to ‘going on excursions and learning all about caves’, ‘going camping and sleeping in
tents and exploring rainforests’, ‘bush walks and trips to the creek’, ‘I really enjoyed geography in primary school as we got to do a lot of hands on activities and for one of the school camps we went searching for fossils’. However, there does seem to be evidence that school camps which are a popular activity in primary schools are being regarded as geography which may not have been their prime purpose – ‘Year 7 camp was to Ewen Maddock Dam. Loved, loved that place and the range of outdoor activities such as canoeing, high/low ropes, abseiling’. Orienteering was also mentioned as a popular activity where ‘we learnt to use a compass’ but also appears to be part of camp activities – ‘I remember orienteering on Year 5 camp’. The presence of the word ‘fossils’ throws confusion on geography as the studied subject. This is further shown in the following statements: ‘science, walking fieldtrips to look at waterways – drains and the local creek’ and ‘I remember I made a terrarium in grade 8 science which was a memorable geographic experience’. For these respondents, geography appears to lack both boundaries and a core. Again, this could be because of the integrated approach to the subject resulting in some mix-ups but it could also be that trips taught geography in context. The next section outlines the cross analysis between the data sets highlighting an important step in archaeological analysis.

Cross analysis between the academic literature, curriculum document and the online survey responses

The following tables detail the cross analysis between the curriculum document and the academic literature specifically using Catling’s categories as the voice of authority. Table 3 reveals that there are many statements throughout the curriculum document that provide evidence for the presence of Catling’s categories. This is not surprising as Catling was mentioned as a voice of authority in the formation of the document.
Table 4 below juxtaposes the discourses that emerged from examination of the curriculum document and Catling’s categories. As can be seen from the table, there is considerable overlap with only the ‘discourse of inquiry’ not being found in Catling’s categories. Again, this is not surprising as the aim of Catling’s research was not to find out the method by which geography should be studied. The distinct ‘discourse of inquiry’ inherent in the document suggests to the reader that this is the method for studying geography in Australia.

Continuing with the cross analysis as shown in Table 5, the academic literature (Catling’s categories) is positioned alongside the pre-service teachers’ discourses on geography. Catling’s ‘globalists’, ‘earthists’ and ‘placeists’ align with the discourses of ‘globalists’, ‘earthists’ and ‘mapping’ and Catling’s ‘environmentalists’ show continuity with the ‘discourse of sustainability’. A major discontinuity or gap is, however, evident between the two data sets; that of ‘interactionists’. In other studies (Alkis, 2009; Bradbeer et al., 2004; Catling, 2004; Morley, 2012) this category featured quite strongly albeit more predominant in studies of pre-service secondary school teachers. A study that does concur with the findings here is that of Preston (2014) in the Australian state of Victoria, a state that had also endorsed SOSE. This reveals that the higher level relational thinking needed for the teaching of geography (Bradbeer et al., 2004; Preston, 2014) is absent, not only in Queensland but in other Australian states which are also responsible for national curriculum implementation. Discourses that emerged superfluous to the academic literature are the discourses of ‘history’,

[Insert Table 3 near here]

[Insert Table 4 near here]
‘excursions’ and ‘negativity towards the subject’. In 2006, Hutchinson remarked on the
demise of geography at the hands of SOSE stating that ‘the damage to the teaching of
geography in Australian schools was considerable’ (p. 196). However, the presence of these
discourses perhaps highlighting the extent of the damage is unsubstantiated.

[Insert Table 5 near here]

What is worrying about the last finding is revealed in the cross analysis between the
discourses in the *Australian Curriculum: Geography* document and the discourses from the
pre-service teachers. As can be seen from Table 6, the ‘discourse of interconnection’ present
in the curriculum document and sharing dominance with the ‘discourse of place’, particularly
in Year 6 is absent in the pre-service teachers’ responses. On the subject of place, Catling’s
placeists category or the ‘discourse of place’ found in the curriculum document is not
identified in the discourses from the pre-service teachers. However, it is assumed even if not
specifically named that this notion is present in the ‘discourse of mapping’ and the ‘discourse
of globalists’. That said, it became apparent that the places studied by pre-service teachers in
this study were limited to Australia. The other notable gaps are that nowhere did any of the
pre-service teachers mention the inquiry method and their definition of fieldwork appears to
be limited to school camps rather than geography fieldwork *per se*.

[Insert Table 6 near here]

The full cross analysis is summarised in Table 7 which reveals that certain
transformations have to occur if the current pre-service teacher cohorts at this university are
to teach the discipline of geography effectively in the primary setting.
Conclusion

This study highlights that transformations in pre-service teacher education (at least at this university) need to occur for the effective teaching of geography in the primary setting. These transformations include changing pre-service teachers’ conception of geography from a narrow information-oriented (Martin, 2000) view to one that encompasses ‘a structured way of exploring, analysing and understanding the characteristics of the places that make up our world (ACARA, 2014). Teacher education courses need to be taught by lecturers/tutors who have geographical expertise in the subject discipline as well as pedagogical knowledge. They need to enable a deep understanding of how to think conceptually, for example knowing the difference between place and space and the importance of the interconnection between the physical and human worlds. Place cannot just be confined to our own locality but should take us to the Asia region and beyond building a much broader mental map of the world. Teacher educators need to role-model and teach with passion, innovation and creativity diminishing any negativity from previous experiences. This could be through hands on fieldwork or using the variety of virtual on-line geospatial technologies available rather than ‘death by worksheet’ or rote learning. These more experiential learning episodes will develop ‘a sense of wonder, curiosity and respect about places, people, cultures and environments’ (ACARA, 2014). Furthermore, it is the teacher educator’s job to develop the capacity of pre-service teachers to be competent, critical and creative users of the inquiry method so they can instil in their primary students the ability to be informed, responsible and active citizens who can contribute to the development of an environmentally and economically sustainable and socially just world (ACARA, 2014).
Australia now has a mandated curriculum that purports to focus on the discipline of geography but a cohort of emerging teachers (in Queensland) responsible for geography who lack a clear understanding of the nature of the discipline. The implications for schools, teacher education and university geographical education are widespread. This university has allocated more time to the teaching of geography in the primary courses and has employed discipline specific personnel who are well versed in the discipline, pedagogy and conceptual thinking needed for effective practice.

Furthermore, many existing teachers may have the same misconceptions so it is probable that professional learning episodes will be necessary for those already in the field to bring them up to speed as geographers who can interpret the curriculum document for students. Geography teacher educators have to make informed decisions about the content of their courses particularly for primary. The Australian experience is not unique so how are other institutions dealing with this crisis?

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Appendix 1: Questionnaire for pre-service teachers – Definitions of geography

1. Were there any topics that you experienced (through projects/themes, integrated studies, humanities etc) at primary school that included geography?

2. Were there any topics that you experienced (through projects/themes, integrated studies, humanities etc) at secondary school that included geography?

3. If, yes, please list the topics that you regard as geographical.

4. Please check (tick) the years of schooling in which you studies topics/themes which you regard as geographical.

5. Were the subjects where you studied topics/themes that you regard as geographical called geography or something else?

6. If you did study geography, were you taught by a specialist geography teacher?

7. If you did study geography, were you taught in a specialist geography classroom?

8. Did you enjoy studying topics that you regard as ‘geographical’ at school?

9. Please describe those aspects you enjoyed?

10. Please describe those aspects that you did not enjoy?

11. Please describe aspects that you found useful?

12. Please describe aspects that you have not found useful?

13. What do you understand by geography/geographical knowledge?

14. Please list any skills that you regard as fundamental to geography.

15. Please list your educational reasons for the inclusion of geography in schools.