

*Project Title***Knowledge Building in schooling and higher education: policy strategies and effects***Aims and Background:*

In the 21st century, education is seen as fundamental to national economic productivity and to producing citizens who can engage successfully with each other and the world. The knowledge society, the knowledge economy, globalisation are a focus of widespread attention and action by policy-makers, education institutions, and those who work in them; but, paradoxically, the issue of knowledge itself is often not the direct or detailed object of focus in these reforms (Muller 2008; Young 2008; Yates & Collins 2010). The central *education policy question* this project takes up is: **'is the emphasis on learning outcomes and on auditing and managing education achievements in schooling and higher education distorting and undermining knowledge-building?'** (Power 1997, 2003; Baert and Shipman 2005; Minelli et al 2006; Shore 2008; Lamont 2009). The central related *curriculum inquiry question* this project takes up is **'how should we think about knowledge today?'** (Young 2008; Karseth 2008; Bok 2006; Tuomi-Grohn & Engstrom 2003; Yates & Young, 2010) That is, do the rapidly changing social and technological world, the new collaborations and forms of research enquiry, and the heightened attention to difference today mean that 'knowledge-building' over the school and university cycle needs to be thought of in ways that are markedly different from past hierarchical conceptions of learning a discipline? These are all big questions drawing a lot of different kinds of theoretical and research attention internationally. The current project aims to undertake **a qualitative and focused investigation of current Australian practices in history, physics and cross-program competencies across the learning cycle, in order to provide new empirical evidence about what is being set in train, and contribute fresh analyses to Australian policy and institutional interests as well as to international thinking and research on the question.**

More specifically, the project will study Australian policy texts and formulations, and practitioner perspectives and experiences of the knowledge-building agenda, in three fields of knowledge (history, physics and graduate attributes/cross-disciplinary competencies); in three state contexts (Vic, NSW and Qld); and across three levels of the education system (secondary schooling; undergraduate higher education; and research training postgraduate education). Through textual analysis and a large body of interviews, it will address the following questions:

1. conceptions of knowledge: What forms of disciplinarity, cross-disciplinarity and capabilities orientations are evident in Australian policy documents relation to secondary schooling, to undergraduate university education, and to postgraduate education? How do teachers, lecturers and supervisors working in history and in physics think about knowledge and what they are attempting to achieve in their practice in particular areas? What, if anything, is changing about this? How do those with cross academic program responsibilities (or working on graduate attributes) think about their knowledge-building aims and agendas?
2. assessment/auditing effects: How are the assessment and auditing demands shaping what is now being enacted as curriculum, both in schools and in higher education?
3. differential approaches and effects: between states, between different kinds of institution, between countries grappling with these issues. How different and how similar are the conceptions and strategies across different kinds of institutions (elite, non-elite) and across different states, and with what social equity implications? How do the conceptions of knowledge evident in Australia compare with those being developed in Europe, Canada, Singapore and the USA?. How parallel and non-parallel are the conceptions and changes that are taking place in a core humanities subject (history), and a core science subject (physics) and for those who teach and work in these areas?

Background:

Over the past 15 years there has been a growing debate about how best to conceptualize and enact the building of new knowledge and of school and university graduates who will flourish and creatively and effectively contribute to this building in the 21st century.(eg Gibbons et.al 1994; Tuomi-Grohn & Engstrom 2003; Young 2008). The issues are also the subject of a large amount of reform attention internationally, as Australia and other countries rework their curriculum policies for schools; as higher education policies grapple with formulations of graduate attributes and research training; and as universities take decisions to restructure or not their undergraduate curriculum. Two kinds of issues are prominent in the reworkings and the debates, and are the focus for investigation in the current project.

(1) The issue of knowledge in the 21st century: and the extent to which older forms of disciplinary organization and teaching need to be protected, reframed or overturned in the face of the knowledge explosion, new technologies, new global communications and relationships. In recent times, for example, much curriculum policy

foregrounds the concern with what kind of world we are now in, and the capabilities required for that world (eg Reid 2009; Dawkins 2009). But another prominent debate (by Young 2008, Muller 2000 and others, drawing on earlier work by Basil Bernstein), argues that this outcomes-based focus has led to some fundamental weakening of the foundations of education, that it fails to take seriously the distinct role of formal education (as compared with broader socialization), and under-values the importance and specificity of disciplines such as chemistry, physics, history and the like. These forms of disciplinary knowledge, it is argued, were socially created, but developed over time in a way that gives a particular kind of more objective and powerful knowledge, different from commonsense knowledge, and not simply aligned with social interests of the elite. A public version of this thinking is somewhat evident in the critical public and media campaigns in the early years of this decade that rejected the ‘essential learnings’ curricula in some states, and that paved the way for the National Curriculum Board (later ACARA) which, initially at least, seemed to exemplify a new disciplinarity in its orientations to the role of schooling.

In higher education, both undergraduate and postgraduate, institutions and governments are struggling with two different but overlapping concerns. One relates to the extent to which the content of the learning should be derived from *what matters in the world now* (big problems, workplace competencies and the like) – or whether moves in this direction tend to hollow out the learning. A second relates to the *rapidly changing forms that disciplines themselves are taking*, the creative cross-fertilization between fields that is creating new knowledge; and the prominence of big collaborative teams in leading research projects today – but it recognizes that there are both practical and conceptual questions about at what point interdisciplinarity is most usefully developed, and what kinds of ‘foundations’ are relevant to maintaining the sharpness and creativity of the future research.

So there are issues about how knowledge today is changing and also issues about what kind of education and training over time is needed. This ambivalence about what is to be nurtured is evident in national policies themselves (and both within and between DEEWR and DIISR), with many programs explicitly encouraging innovative and cross-disciplinary work and non disciplinary-based ‘graduate attributes’; while ERA and a number of the other forms of assessment of knowledge in universities and indeed funding of different elements of universities, assume the continuing foundational nature of disciplinary units of more traditional types.

(2) The issue of optimizing quality in education and the effects of permeation of education systems globally by what has been called ‘new public management’ or an ‘audit’ culture. (Power 1997; Baert and Shipman 2005; Rizvi and Lingard 2010; Marginson 2007; Karseth 2006, 2008) As Karseth and Sivesind (2010) note ‘organizations like OECD advocate a new political technology where formalized curriculum-making is ignored or even contested in favour of assessment and accountability systems.’ An ‘audit’ culture is one where institutions are publicly scrutinized in terms of process and results; and ‘new public management’ is an approach which sees ongoing measurement and benchmarking as the means by which progress and quality will be driven. In Australian schooling policies, the widespread appeal to PISA data, the prominence given to public assessment and reporting via NAPLAN, the increasing amount of data of all kinds that are being collected about schools by governments are part of this mind-set (exemplified in Dawkins 2009). In the case of universities, measures of outputs such as course completion times and the development of national research assessments are all part of this culture. In relation to the interests of this project, questions about what is happening to knowledge, the accounting culture here has produced strong interventions into the work of schools and universities and a policy context very different to that of the mid- 20th century. This new policy context has a heightened concern with ‘learning outcomes’ rather than the content of the education experience; and learning outcomes are normally expressed in ways that have an instrumental thrust, and that need to be expressed as numbers. Secondly this data-collection is ongoing, and is tied to funding mechanisms, and to performance assessments for teachers and lecturers, so it potentially acquires some new primacy in how they direct their own work with students and in what they begin to attend to in building new knowledge. (Baert & Shipman 2005; Hodkinson 2008; Karseth 2006; Marginson 2007; Minelli et. al. 2006; Shore 2008; Rizvi and Lingard 2010)

This project is designed to draw on my expertise across both schooling and higher education (see F13.2). In HE, I have been focusing on and contributing to international debates on implications of research assessment for knowledge-building. In relation to schooling, my previous ARC DP took the 30 year period from 1975 to 2005 to review across states and over time how the curriculum was being formulated: what was being named as core; how knowledge was conceived; how academic and vocational purposes were being managed, and the like [www.education.unimelb.edu.au/curriculumpoliciesproject/]. Although there were interesting state differences in curriculum values (Collins & Yates 2009), some general conclusions we reached about the trajectories leading up to the beginning of a National Curriculum Board were (1) an increasing emphasis on externally managing and auditing student progress as a key driver of how curriculum policies are being constructed; and (2) a growing emphasis on

approaching curriculum aims in terms of what students should be able to do rather than what they should know (Yates and Collins 2010); and (3) that the particular form of Australian reforms represented a means of bringing together certain progressive social equity interests of curriculum personnel and management imperatives of governments, but with some downsides in terms of knowledge-building.

The move to focus on more generic ‘essential learnings’ or ‘new basics’ or ‘capabilities’ was strong over the 1990s and early 00s, but it was highly contested in the press and parliaments. At the period when my previous study finished, the election of a new government with a commitment to setting up a new NCB seemed, initially at least, to be drawing a reasonably wide public and political consensus to reinvigorate some more systematic forms of disciplinary or more traditional learning, with clearer statements of the form of progression over time. More recently again, that development of a national curriculum-making body has been extended to include all subject areas (of the MCEETYA *Melbourne Declaration*), not just the original four core areas; but at the same time, the body originally called the ‘National Curriculum Board’ has been reconfigured as the ‘Australian Curriculum, Assessment and Reporting Authority’, with a much more prominent agenda of assessment, data-gathering and reporting.

The kinds of development seen here are in line with developments in other countries, and there are major debates about the way in which the new forms of management are reshaping the curriculum, on the one hand acknowledging the rationale and possible benefits of some of the new directions, in addressing quality and equity (Gauthier & le Gouvello 2010), and in developing young people with appropriate capacities for the 21st century (Reid 2009); on the other alerting to dangers of the template forms of assessment and benchmarking and the effects they are having in suppressing creativity (Gopinathan, 2007), and potentially undermining the strengths of the much respected didactics traditions in northern Europe (Karseth & Sivesind 2010).

Significance and Innovation

Significance: Education is now part of the Australian government’s economic ‘productivity agenda’. The need to give fresh attention to knowledge and the work of schools and universities in the 21st century is evident in the research literature not just in education, but in sociology and social theory, philosophy, political science, economics. It is evident too in new policy rhetoric and changes, conference symposia, development of new ranking and comparative mechanisms around the world. But the question of how to proceed in the face of some evident speeded up ‘explosion’ of knowledge, the global context, equity agendas, moves to massification of higher education, is far from settled, particularly in relation to the most effective framing of schools and school curriculum; the shape of the undergraduate curriculum; the most effective form to feed a strong research and innovation culture. **In relation to knowledge-building across schooling and higher education, this project will provide one important means of assessing the strategies Australia has been taking, and of contributing to progress on major, globally recognized, questions for the future.**

The project will deliver new evidence and new insights in relation to the following:

1. What approaches, conceptions of knowledge, priorities are now being developed within the teaching of history and physics in secondary schooling, undergraduate, and postgraduate research-oriented education?
2. How are cross-disciplinary, outcomes and attributes agendas impacting on institutional thinking in each stage?
3. What concepts of disciplinarity, new knowledge and capabilities are now at work in these phases, and with what coherence or problems?
- 4 Across the phases, and in relation to a focus on knowledge (as distinct from access), what differences are evident between elite and non-elite institutional contexts, and with what social equity implications?

The innovative nature of this project is

1. It brings together **a focus across schooling through to research training** in a way that is rarely done, led by a CI who, unusually, has extended experience and expertise both in the schooling curriculum policy context and research literature, and the higher education one. Studies of schooling and studies of higher education normally occupy separate spaces in the research literature and in conferences. In constructing cases or developing new policies, they may refer to each other, but when they do so it is usually with first-hand knowledge of only one side of the institutional lens, and often a stereotyped observer sense of the other. Yet from the perspective of curriculum, the questions about knowledge today and knowledge-building need an approach that can consider starting points, development over time, and also what is happening at the ‘knowledge creation end’ in a given area (Yates & Young 2010).. This project aims to do this, but to keep its scope manageable by taking just three significant areas of the curriculum: history, physics, and guidelines and practices concerned with ‘capability’ or cross-disciplinary attributes, and for each of these areas focusing on what concepts and agendas are at work at different levels.

2. **A focus on knowledge within an education policy and management context.** In the sociological research literature, ‘education policy studies and curriculum studies have usually been considered as separate arenas of theory and practice.’ (Rizvi & Lingard 2010), and this was confirmed in my previous DP where ‘In the interviews we conducted with senior curriculum actors we also noted how rarely “knowledge” came into the frame of their talk about curriculum, compared with a focus on outcomes, politics and management of resources; or compared with a focus on the developing child (from a cognitive developmental perspective).’ (Yates and Collins 2010)

3. A great deal of the interesting work in this area has been theoretical or conceptual, with calls for more detailed empirical studies (Baert & Shipman 2005). This project will contribute some **systematic detailed empirical evidence** about the ways those involved in teaching and training others now think about what they are building.

4. The **methodology is designed to capture developments** and changing consciousness **as they are emerging**. Survey-based methods would be too crude for this purpose; it needs a hermeneutic approach.

5. The CI’s extensive background in equity and gender issues, and her previous DP focus on different state values and agendas in relation to curriculum feed **a project design that addresses knowledge-building but also differential equity and institutional implications** and that will build a further analysis of whether there are more subtle resolutions of some of the disciplinarity/new knowledge agendas sketched in the literature referred to earlier.

In summary, the core agendas of this project are:

- to investigate how, in Australia, knowledge is being conceptualized and developed for education in two ‘disciplinary’ fields and one non-disciplinary area of current prescription for education institutions; and to analyse these empirical findings in terms of, and as a means of contributing to, the broader theoretical questions about knowledge and formal education in contemporary times;
- within this agenda to investigate
 - the form of the development and or changes that characterize different levels of the educational pathway
 - similarities and differences in approaches evident in different kinds of institutions (especially elite and non-elite) and equity implications
 - different states and schooling cultures
 - the impact of audit and new public management forms on the approaches to knowledge-building.

Approach and Methodology

In terms of methodological approach, the project will use analyses of policy and course documents and interviews across 3 states and across elite and non-elite schools and universities with teachers, lecturers, and senior policy-makers. The research is sociological and qualitative or interpretive in its design (eg Schostak 2006; McLeod & Thomson 2009); broadly located within policy sociology as well as in curriculum inquiry, both being fields that must be assembled and addressed and defended discursively rather than through a template methodology (Rizvi & Lingard, 2010). The kinds of questions being investigated here require close attention to meanings, both explicit and implicit. In the project design and approach to interviews, the central interest is knowledge-building; it is not primarily a policy implementation study; nor a study of advocacy interests from disciplinary fields; but an investigation of the understandings and practices being developed in relation to knowledge and knowledge aims expressed by practitioners at different faces and phases of the system. The methodological approach is intended to give some access to the trajectory in train in terms of conceptualizing knowledge and giving it educational form. The project involves sustained attention to the conceptualization and practices being developed:

- in *two disciplinary fields (history and physics)*: including impact of cross-disciplinary agendas and outcomes and competencies agendas within these. The design recognizes that disciplinary changes arising from new forms of interdisciplinarity in knowledge creation are conceptually distinct from those relating to an outcomes/competencies agenda, though they may overlap.
- in *specific cross-disciplinary attributes/competencie/outcomes agendas more directly*, by interviewing personnel at each phase who have some responsibility for the broad academic program development; and by reviewing policy and curriculum documents and websites about these broad agendas.
- *in three states and across elite and non-elite schools and universities*
- *using an international reference group of experts working on related projects to see Australia in comparative context, and to build perspectives on possibilities for the future.*

Choice of subject/discipline area focus: history and physics

History and science are longstanding components of the school and university curriculum and were selected as two of the four subjects initially given priority to be worked up for the first Australian curriculum. For the purposes of the

current project and the debates discussed earlier, they form interesting cases to investigate in terms of the claims being made about disciplinarity and new knowledge today, in that they are (a) recognized disciplines of longstanding and emblematic of differences in form between science knowledge-building and that of humanities (Becher 1994; Becher & Parry 2005; Muller 2000) (b) unlike the other core subject areas, mathematics and English, they are not in school curriculum policies elided with 'general capabilities' of 'literacy and numeracy'; (c) in higher education they are areas that have been consistently recognized as important and fundamental in Australia's knowledge-building enterprise and national standing (history, for example, has by far the largest number of members in total of the Academies of Humanities and Social Science) but (d) they are also areas that in the funding and teaching and reforms of Australian universities over the past decade have often struggled to maintain financial viability, numbers and integrity as departments; and (e) in both fields, there have been a number of pertinent reports and analyses of the previous state of play in Australia by those working in those disciplines on which the current project can build (see Hughes-Warrington et. al, 2009; Lawrence & Palmer, 2003; Mills et.al.2005; Pollard et.al. 2005; Kirkup & Sharma 2009). A number of these recent reports explicitly canvassed the need to orient more strongly to work or service opportunities, and also developed statements about the specific character of that disciplinary field. What the current project will do is to cast a different kind of lens on the issues they have canvassed, (1) in looking at these from the 'outside' point of view of that broader theoretical and research debate about knowledge-building in the contemporary world; and (2) by interviewing directly those working at different levels of the system (schooling/ undergraduate/ graduate; and elite and non-elite), to hear what is being conceptualized or driven in those different contexts.

Choice of institutions for interviewee selection:

For both the schooling and the higher education component of the study the project will draw from at least 2 universities and 4 schools in each of the 3 states: Victoria, NSW and Qld. These three states have some important historical differences in relation to education, and this has been one focus of my previous DP, and the question of what different state inflections persist in the next period of the ACARA agendas and the ERA and compact agendas for universities is of interest. (I realize in universities there is more mobility of staff; but Australian universities are still heavily focused on and tied to the products of their own state's schooling system, though they are now also engaged in attempts to 'internationalize', and in the case of the elite institutions, to draw more out of state students than they once did.) In schooling, NSW has maintained the most consistent belief in a traditional subject-based curriculum, and the highest commitment to history as a subject area; Queensland has had a curriculum designed for a population that was historically less urban in its orientation, having to be convinced of the value of schooling, and it is the only state that has maintained a final assessment that does not use an external examination (something likely to be under challenge in the next phase of ACARA); Victoria has had a system divided between on the one hand some very strong private elite schools and a small number of elite government selective schools, and on the other a government ethos that has been concerned with disadvantage and has in the past encouraged some school-based innovation and devolution. Victoria was one of the strong bases of the earlier move away from history to 'social education', and more recently is one of the strongest state exemplars of a 'new public management' approach. (Dawkins 2009). In relation to universities too the three states offer some potential interesting differences of strategy. (eg, UoM has undertaken a major re-organization of its curriculum, explicitly referencing European and US higher education structures, and representing a different vision of how knowledge building from undergraduate through to doctoral study might be conceptualized; UQ has prominently been developing an assertively research-focused agenda, with important research institutes being developed alongside its reformed faculty structure). For each of the states, interviews for each discipline will be sourced from a G08 university and either a university of technology (in the case of physics), or a non G08 university where history is taught.

Sources for cross-disciplinarity and competencies or attributes agendas:

We will examine national, state and institutional policy documents related to aims for or intended shape of schooling, undergraduate and research training overall; as well as those specifically concerned with competencies and graduate outcomes. In each institution, we will interview people who have some broad academic program responsibility, such as Curriculum Co-ordinators; Chair of Academic Program Committees, Deans of Graduate Research.

Selection of documents and interview subjects:

Documents for analysis will include all current ACARA, MCEETYA, DEEWR and DIISR, policy documents related to the two fields in the period of the project; plus relevant state curriculum documents from the three states in which the study will be located. Course descriptions and department and subject websites will be included in the analysis.

At least 100 teachers will be interviewed across the three states (see summary table below). In each of the three states, we will source teachers with the assistance of HTAA and ASTA, and draw them from at least four schools,

two which are elite or academically selective, with high numbers going on to ‘academic’ courses in high status universities; and two which have a more mixed post-school cohort, so that in each state we interview at least 10 history and 10 science/physics teachers working in ‘academic’ school settings and a similar number working in more general school settings (but have allowed for interviewing more in Victoria where the project is based). We will include 1/3 relatively recent graduates; and 2/3 who have longer experience teaching, and whom we will interview about their perception of changes. (This helps tap generational differences as well as some attention to change as experienced.) We will include teachers who teach across different levels of secondary school, as well as some who are specifically concerned only with the final years. Teachers will be those who have qualified in these discipline areas, and who are teaching subjects in these areas. In each school from which discipline-based interviewees are drawn we will also examine general website and curriculum documents for that school and interview at least one person with broad responsibility for the school curriculum (eg Curric Co-Ordinator or VP or Principal).

Note on numbers: the decision about adequate numbers for qualitative study is difficult, and purpose-based not rule-based (see eg Patton 2002, 242-6). In this case, the interview approach requires senior expertise in the interviewer, and forms of analysis which are time-consuming and costly; but the numbers need to be sufficient to avoid a cohort who are atypical. The prime focus in the project is the whole group picture for each discipline and cross-program group: what, in the eyes of teachers and lecturers, is the conception and approach to knowledge in their area; and the main purpose of the selection is to make sure that group includes different levels of experience, location, gender etc. In terms of differences within the group (say of history teachers, between older and younger, or those who teach across classes compared with those who only teach senior classes), although numbers are smaller, the means of analysis is not how many people say something, or the statistical significance of differences between those with different factors; but an interpretive account which justifies the significance being imputed to any differences discursively and by reference to evidence from within an individual interview as well as across interviews and drawing on other secondary research evidence (discussed in relation to a previous project in Yates 2003). So the approach is a form of purposeful and criterion-based sampling (Patton 2002), with the minimum numbers indicated below, and with some possibility to take up emergent needs as the fieldwork proceeds: if a particular theme of difference is striking, we look for ways of following this up further in future interviews or by additional interviews. But the orientation of this project is not to give an account of who are history teachers today; it is to attend to ‘what is happening to knowledge today?’ by listening to what these teachers say.

From universities we will interview at least 60 teaching and research academics; including 4-6 heads of department (who might have greater exposure to policy/institutional broad directions). Because both organization and curriculum vary considerably across universities, we will be focusing on those who have specifically qualified in either history or physics, and who are doing undergraduate teaching or postgraduate supervision that they would locate as within those fields. This does not mean that the selection mechanism will exclude the possibility of seeing how cross-disciplinarity or capabilities and outcomes thinking are entering the frame, but just that the sample here will be sourced from academics who would see the subject they teach or the student projects they supervise as appropriately located in or deriving from that disciplinary foundation in which they themselves have trained (whether they now see that as having a different and broader form is part of the question to be investigated). At each university from which discipline-based interviewees are drawn we will also interview one or more people with broader academic responsibility for the undergraduate university curriculum eg Provost or DVC (Academic) and/or Chair of Academic Programs Committee; and where possible the person responsible for Research Training in the institution (eg Dean of Graduate Studies); as well as examining website and documents related to any generic and cross-disciplinary aims.

A further round of interviews (approx 10 - 15 in total) will take place with senior and active representatives of bodies that represent or are organizing the work related to the two disciplinary fields and to the schooling and university attributes and learning outcomes agendas such as ACARA, AHA, ASTA, the Academies, ALTC, AIP.

<i>Institution</i>	<i>Researchers</i>	<i>History</i>	<i>science</i>	<i>General academic</i>
2 elite schools x 3 states	PhD 1, PhD2	25 teachers	25 teachers	6 Curric Co-ord
2 non-elite schools x 3 states	PhD 1, PhD 2	25 teachers	25 teachers	6 Curric Co-ord
3 G08 unis	SRA, CI	12 T&R academics; 3 HoD	12 T&R; 3 HoD	3 - 6 Acad Prog & Research Training
3 ATN or similar unis	SRA, CI	12 T&R; 3 HoD	12 T&R; 3 HoD	3 - 6 Acad Prog & RT
professional and policy bodies (10-15)	CI, SRA, PhD 1, PhD 2	HTAA, ASSA, AAH	ASTA, ASERA, AAS, AIP	DEEWR, DIISR, ALTC, ACARA,

Approach to the interviews:

Interviews are semi-structured and approx 1 hour in each case; and the interviewer will follow up each interview one week later to review issues discussed and provide opportunity for additions and second thoughts. The approach and methodological assumptions regarding the interview methodology are based on those developed and written about in relation to previous projects (eg Yates 2003; McLeod & Thomson 2009). The approach is to ask open questions with the aim of understanding what the interviewees themselves think about and prioritise, and to try to understand the terms in which they are thinking, rather than directly initiating a probe about say the effects of increased accountability regimes. We give attention to what is said explicitly, and in moving beyond quotation to the bigger knowledge questions, take account of micro and macro elements of the interview(s). The approach is one which needs a skilled and expert interviewer, since it aims to elicit new themes as well as coding those already built into the interview protocol. Justifying interviews and interpretations of these as evidence in relation to the project must be part of how evidence is discussed, and needs to include reference to the construction and trajectory of the interview; reflexive attention to context and the identity and embodied presence of the researcher; discursive cultural and policy contexts; as well as what is said at a particular point and in the course of the interview and interviews as a whole. Interpreting meaning is not simply inductive, but in dialogue with the literature referred to earlier in this application; but it does also need to attend to the internal production of the interview and its framing.

History and physics interviewees will be asked to talk about (1. *the disciplinary knowledge focus:*) their own formation and training in their field and whether or in what ways they have seen any changes over time. How do you acquire knowledge and build knowledge in your field? Are particular foundations necessary? Are disciplinary distinctions important? What kind of work is happening now as new knowledge in your field? Are particular types of broader collaborations, interdisciplinary approaches and the like valuable, and if so, at what point? What do you see as the appropriate emphases for schooling, for undergraduate education, and for doctoral work related to your field? (2. *more broadly, when you teach or lecture or supervise, what are you trying to achieve?*); what do you see as the core elements and the most valuable characteristics of your own field? (3 *through indirect questioning, impact of new accountability and outcomes focused context of their work*), What if anything has been changing about how you and your colleagues now teach or supervise in this area? Do policies concerned with developing broader attributes and applied competencies affect how you approach teaching or supervision?

Broader academic program interviewees will be asked about their perspective on agendas for their institution's academic programs overall; including the attributes and outcomes agendas; the mechanisms they are working within; their views of the three phases of the cycle; changes in context of their work and their perspective on what matters in relation to knowledge today.

Documents and Websites:

As with interviews, the context and purpose of each document will be considered, and the interest will be what is emphasized rhetorically as well as what is specifically being organized as practice (through components or assessment practices for example) in relation to the questions about disciplinarity; changes in knowledge; outcomes; accountability and equity/difference.

Summary timeline:

2011: *tasks: setting up, planning, policy context analysis:* appoint all personnel; set up website and communication network/reference group internationally and locally; policy document search and analysis. APAs and RA undertake more detailed literature reviews and PhD proposal development and confirmation; UoM ethics applications for project overall and for specific PhD projects; liaise with key professional bodies; schools, universities, and state requirements to develop selection of subjects for interview; detailed planning of division of tasks and focus between members of the team and of coding and analysis frames for documents and interview materials. Visits to US, Singapore and Europe to examine developments in process on cross-disciplinary and attributes agendas. UoM forums about project to discuss in context of local expertise and other Curriculum and HE projects. *Writing:* (1) framing paper on the state of play of the international debates and related research and initiatives at this point; and (2) initial analysis of the policy context including ACARA, DEEWR, DIISR and professional association documents and websites in relation to (1) their positioning in relation to disciplinarity, competencies, outcomes agendas; (2) their framing in terms of knowledge building from school to doctorate.

2012: *Tasks: institution website and document analyses; interviews in Vic, Qld*

(1) Sem1: Analyse websites and available online academic program documents of the elite and non-elite schools and universities from which interviewees in 2012 interviews will be drawn (Vic and Qld); negotiate state and institutional permissions; review and update policy developments in Australia and internationally. (2) May 2012-May 2013: The interview and institutional document collections across the 3 states will take place across at least 12 months to spread

the heavy administrative burden for these arrangements and to enable researchers and doctoral students to approach interviews actively, with sufficient reflective and reflexive attention and building of developing analysis.

(3) RA and SRA will actively track and review new policy documents (from ACARA etc) and maintain lit searching and communication network. *Writing: conference papers for AARE; HERDSA; and for 2013 AERA, ECER.*

2013: Tasks: NSW interviews and fieldwork. Source and update policy change and analysis; summary papers; project seminar: Sem 1: (1) NSW school and university and ACARA website, document analyses and interviews. (2) Update policy developments across Australia and international context via networks and visits. Sem 2: (3) Prepare initial mapping of: (i) discipline perspectives in history and in science in school, undergraduate, research training; (ii) cross-disciplinary agendas and impact across the learning cycle (4) Focus colloquium: International and Australian perspectives on disciplinarity and knowledge-building policies across the school/university cycle

2014: Tasks: Integrating the analysis and theorizing the implications and possibilities in international context.

(1) Analyzing knowledge-creation and knowledge-management trajectories, problems and possibilities in the light of the evidence; (2) Difference and equity: what are we finding about what is being set in train; and are different resolutions possible here?; (3) Australian education policy and knowledge-building: issues for ACARA and higher education policy. Sem 1; PhD students complete their theses and theorization of school subject developments; RA updates international policy developments via literature and reference network; CI and SRA build analysis of equity and difference implications across the study. Sem 2: Integrated analysis and writing from the project on findings, issues and future directions, including organizing international symposium (and book) at ECER conference.

National Benefit:

Education in the 21st century is fundamental to national economic productivity and to producing citizens who can engage successfully with each other and the world. Governments are taking a much more active role in steering and managing the form that schooling and higher education take, and in seeking ways to measure their quality and progress. This project will produce *new kinds of evidence and insights for these knowledge building agendas, ones that are complementary to current forms of tracking education quality and outcomes, and are important for policy development and for providing strong foundations for Australia's research enterprise and its citizenship enterprise.*

Methodologically the project complements assessment and learning outcomes data currently available, in that it is qualitative, fine-grained and providing findings on the *substance* of the education being developed in history, science and graduate attributes, not just working with process or numerical indicators. The value of this approach is that it can look up close at issues that are epistemological, and that it can gain a dynamic sense of what is being put in train for the future, not just describe 'what is'. More specifically the project provides new data and evidence for Australian education policy in the future, both for schooling (especially via ACARA) and HE (especially in relation to what is expected of the undergraduate curriculum and the form of the research training pathway agenda) in 3 key areas:

1. how to put together concerns about knowledge change, attributes and competencies, with concerns about rigour and the adequacy of foundations and building blocks. This project will draw on a large number of interviews and document reviews across three Australian states and across the schooling to research training levels of the system, to produce up to date findings about how these agendas are currently working in Australia. By actively bringing together this investigation with international research and theorization, it will build perspectives that can provide better foundations for future approaches to considering education at all levels in relation to these often divergent types of agenda, and will make an important Australia-grounded contribution to the international academic and policy rethinking and innovation regarding these issues.

2. The project provides new data and perspectives on knowledge-building in terms of its staged dimensions across school, undergraduate and research focused higher education. Here the project's new contribution is to take a 'knowledge-focused' perspective rather than one that begins with management agendas for that institutional phase; or that takes a perspective that is internal to a particular discipline and its interests in maintaining itself. By taking two key disciplines, plus cross-disciplinary graduate attribute aims for each stage, the project will track the coherence of the imperatives at work in Australian developments, and it will also provide a new body of empirical perspectives from practitioners in these areas about the adequacy and appropriateness of the way development from foundations through to creation of new knowledge is being framed.

3. The project will test out some issues about difference and social equity across the education cycle, not in terms of access or results, but in terms of its substantive content, and the kinds of knowledge and formation being constructed at elite and non-elite institutions, and the implications of this in relation to opportunities for transfer or for powerful

understandings that are being made available to different groups (cf Muller 2006, Young 2008; Teese et.al.2007; McLeod & Yates 2008).

Communication of Results

A website will be set up for the project, and a communication and discussion list established with key academics working in this area around Australia, and in Singapore, UK, Scandinavia, Canada and USA. Papers will be presented at national and international conferences of education research and higher education research; and refereed journal articles published from the results, including 'special issue' publications which set the results here in relation to research in other countries. The project here is one of a number of important related projects taking place at the University of Melbourne, in relation to curriculum and policy (one of the MGSE's key research strengths); and in relation to higher education policy (through CSHE and Martin Institute). 'Knowledge Engagement' (between university, community, industry and government) is a key agenda of the University, and public forums are regularly held which bring together key external and university speakers (including leading policy actors in schooling and higher education), and which draw large audiences, media attention and publication outputs.

Role of Personnel

CI Yates: *project leader, expertise in curriculum theory and inquiry and in sociological policy studies in education.*

Principal supervisor of both APAs, and will mentor SRA. Will take an active role in designing interview and document analysis protocols, and will share with SRA interviews related to the higher education stream of the study, and take a small number of teacher interviews, both because methodologically I believe some first-hand involvement is important for qualitative analytic studies; and because in some cases my seniority and PVC position will be helpful and in some cases off-putting to potential interviewees. Also will actively lead engagement with international and national colleagues on theorising the knowledge and education policy questions, and in attending to new developments in train in the course of the project.

Senior Research Associate: *expertise in higher education, and one or more of disciplinarity; science; management research and theory; policy studies; globalization.* Major responsibility for planning higher education stream of the project, for carrying out a large number of interviews related to that, and for related writing and analysis. Level B is needed because of the interpretive/theoretical form of the project, and because interviews need to be actively conducted (and analysed reflexively) by interviewer with high level of knowledge. Experience with previous Curriculum Policy DP indicated that appointment of a RA without a high level knowledge of the area in question was of limited use; and that we were not able to attract people of sufficient quality and experience on a part-time basis. The SRA will benefit by mentoring and career development from the CI and from being part of a stream of work in MGSE, CSHE and Martin Institute; but will be sufficiently senior to take supervisory responsibilities of the RA in the project and a project management role, and to lead designated streams of the project writing..

2 x APAs: One APA will undertake a project on history curriculum; and one on senior science and physics curriculum. The project and its location is an excellent research environment for doctoral training, and these students will bring specific expertise in their respective discipline areas to the project. I have found from experience that there needs to be care about the way in which the overall project needs and the needs of a doctoral candidate are planned, as related but distinct (eg that the APA should not be thought of as a kind of research assistant carrying out a pre-designed project, since the doctoral confirmation requires that they contribute to designing their own project). The time-frame for the project reflects my experience with students and with this kind of work; and the kind of time they will need to build the foundations of their own enquiry in year 1 of the project and the writing and analysis time they will need along the way. The PhD scholarships have been budgeted in years 1-3 of the project, but it is more likely that the candidates would begin in March or April of year 1 and be completing in the first part of year 4. In this project, each APA will have a co-supervisor who is not part of the project and has specific expertise in their disciplinary area. They will carry out the bulk of the interviews related to the schooling stream of the project, and will contribute reports on that to the project; as well as joint and individual writing.

RA (level A): Administration of the project; setting up and maintaining website; literature searching as required; organizing arrangements for some 180 interviews; arranging transcription; under supervision checking and doing initial coding of interview transcripts; organizing travel for project researchers and arrangements for forums and for international colloquium; maintaining active ongoing communication with Australian and international academic reference group and international and national policy and literature developments.

Reference group: Discursive international comparative engagement is an important component of the project. There is a range of related projects (both empirical and conceptual) underway, and a range of policy developments in other countries that may influence or be salutary for Australian developments; and establishing a network of these researchers (and other key Australian researchers) to build the relationship of the Australian focus to global developments is important to project design. This expert group will be based on the networks with whom the CI has

been actively engaging in the previous DP, with some expansion, and includes expertise across both schooling and higher education; and across some of the contending lines of argument regarding knowledge referred to in the project description. Australian scholars include Lingard (UQ), Maton (USyd), Kemmis (CSU), Luke (QUT), Green (CSU); Reid (Unisa); Marginson (Melb); international include Young (London); Karseth and Sivesind (Norway); Rizvi (Illinois); Gaskell (Toronto); Gopinathan (Singapore); Muller (South Africa).

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